European Union Aviation Safety Agency

Notice of Proposed Amendment 2018-14

Runway safety

RMT.0703

(includes also RMT.0704 'Runway surface condition assessment and reporting)

EXECUTIVE SUMMARY

The objective of this NPA is to mitigate the safety risks associated with runway safety, from an aerodrome's perspective, focusing mainly on the prevention of runway incursions and on runway surface condition assessment and reporting, but also addressing issues such as ground collisions, runway confusion, foreign object debris (FOD)-related occurrences as well as runway pavements' maintenance.

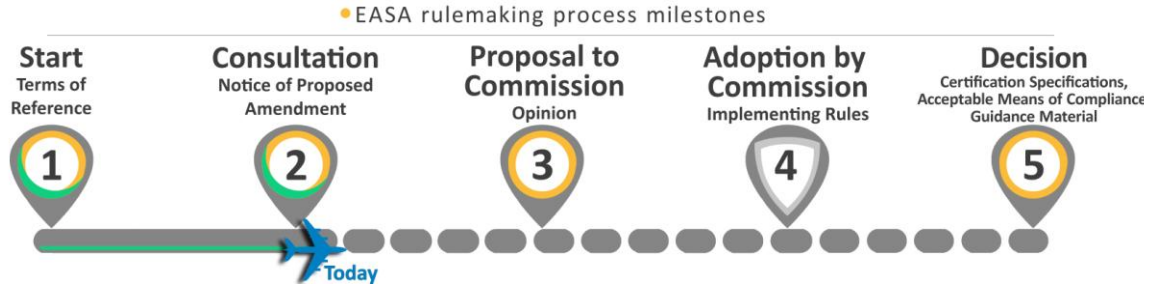
This NPA proposes changes to existing operational requirements of Regulation (EU) No 139/2014, as well as the introduction of new ones, which are based on ICAO provisions and recommendations contained in the European Action Plans for the Prevention of Runway Incursions and Excursions (EAPPRI, EAPPRE) as well as safety recommendations addressed to EASA by the Accident Investigation Boards of Norway and Sweden. It also provides for alignment with the International Civil Aviation Organization (ICAO) State Letters AN 4/1.2.26-16/19, AN 4/27-16/28 and AN 13/2.1 – 16/54, as regards runway surface condition assessment and reporting which will be applicable worldwide by November 2020.

In particular, the proposed changes concern the framework for the operation of vehicles at an aerodrome, including the authorisation of drivers and the conformance of vehicles operating on the manoeuvring area with certain safety prerequisites to ensure runway safety. Linked to this is also the proposal for a new requirement on communications, but also a different proposal for the control of pedestrians at the aerodrome. In addition, the NPA proposes the introduction of new requirements for runway surface condition assessment and reporting, aerodrome snow plan, aerodrome maintenance, aircraft towing and FOD control programme as well as performance standards for runway surface friction measurement devices.

Finally, certain changes to existing requirements related to surface movement guidance and control systems (SMGCS) and other operational activities are also proposed.

The proposed changes are expected to improve safety by reducing the number of runway-safety-related occurrences from an aerodrome perspective. In addition, it is expected that some of the changes will improve harmonisation as a result of the introduction of new common requirements which do not exist currently. The proposed changes will ensure alignment of the current EU aerodrome regulatory framework with the relevant aerodrome-related ICAO provisions of Annex 14, PANS – ATM and PANS – Aerodromes. Finally, the new requirements for runway surface condition assessment and reporting are aligned with the outcome of RMT.0296 'Review of aeroplane performance requirements for commercial air transport operations'.

Action area:	Runway safety		
Affected rules:	Annexes I (Definitions), II (Part-ADR.AR), III (Part-ADR.OR), and IV (Part-ADR.OPS) to Regulation (EU) No 139/2014, AMC & GM to Regulation (EU) No 139/2014, CS-ADR-DSN, AMC & GM to SERA		
Affected stakeholders:	Aerodrome operators, aircraft operators, general aviation (GA), air navigation service providers (ANSPs), national aviation authorities (NAAs)		
Driver:	Safety	**Rulemaking group:**	No[RMT.0703] / Yes[RMT.0704]
Impact assessment:	Light	**Rulemaking Procedure:**	Standard



14.9.2017[RMT.0703]	**17.12.2018**	**2019/Q2**	**2020/Q2**	**2020/Q2**

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1. About this NPA

1.1. How this NPA was developed

The European Union Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EU) 2018/1139[1] (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure[2]. The NPA is the outcome of RMT.0703 and includes as well the outcome of the work conducted under RMT.0704, and is included in the European Plan for Aviation Safety (EPAS)[3]. The text of this NPA related to RMT.0703 has been developed by EASA while the text related to RMT.0704 has been developed by EASA based on the input of the Rulemaking Group (RMG) RMT.0704. It is hereby submitted to all interested parties[4] for consultation.

1.2. 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/**[5].

The deadline for submission of comments is **18 March 2019**.

1.3. The next steps

Following the closing of the public commenting period, EASA will review all comments and may perform a focused consultation which will consist of a review group and focused consultation meetings with the affected stakeholders.

Based on the comments received, EASA will develop an opinion that contains the proposed amendments to Regulation (EU) No 139/2014[6]. The opinion will be submitted to the European Commission, which will use it as a technical basis in order to prepare an EU regulation.

Following the adoption of the regulation, EASA will issue a decision that contains the related acceptable means of compliance (AMC)/guidance material (GM)/certification specifications (CS).

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1 Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139).

2 EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure).

3 https://www.easa.europa.eu/document-library/general-publications?publication_type%5B%5D=2467

4 In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7) of the Rulemaking Procedure.

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

6 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 (OJ L 44, 14.2.2014, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536677868450&uri=CELEX:32014R0139).

The comments received and the EASA responses to them will be reflected in a comment-response document (CRD). The CRD will be annexed to the opinion.

2. In summary — why and what

2.1. Why we need to change the rules — issue/rationale

Runway safety[7] is one of the high-risk accident occurrence categories (global priorities) identified by ICAO. The reason is that although they continue to result in a relatively low number of fatalities, runway safety related accidents account for the majority of all accidents at a global level.

At European level, this prioritisation is reflected in the 2018-2022 EPAS[8] where this issue is considered a strategic priority for EASA.

Due to the complexity of the issue of runway safety, the adoption of a multidisciplinary approach has been identified as the best way to address it. It has also been found that the occurrence categories relating to the issue of runway safety have a strong interface with the aerodrome domain, in terms of aerodrome design and operational practices.

At ICAO level, material pertaining to certain aspects of runway safety exists. At European level, the EAPPRI and EAPPRE contain several recommendations with a view to mitigating the relevant risks. However, certain part of the ICAO material as well as relevant recommendations have not been yet transposed into the EU aerodrome regulatory framework. Said ICAO material and recommendations mainly refer to the areas of vehicle operations, communications and other operational procedures, maintenance-related activities, as well as runway surface condition assessment and reporting.

This regulatory proposal aims at mitigating safety risks associated with runway safety, from an aerodromes' perspective, focusing mainly on the prevention of runway incursions and excursions, but also addressing issues such as ground collisions, runway confusion[9], runway surface condition assessment and reporting, etc. This is done by addressing the various areas mentioned above, with a view to contributing to the development of additional safety defences.

Related safety issues

This regulatory proposal is aligned with the content of the safety risk portfolio for the domain of aerodromes[10,11].

Safety recommendations (SRs)

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Various occurrences involving runway safety have taken place. Although there is no outstanding SR addressed to EASA in this very area, brief summaries of some selected investigated occurrences are presented below, as they are directly linked with some of the issues addressed by this proposal[12].

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7 See ICAO Doc 10004, Global Aviation Safety Plan, 2017-2019. Events related to runway safety include the following ICAO accident occurrence categories: abnormal runway contact, bird strikes, ground collision, runway excursion, runway incursion, loss of control on the ground, collision with obstacle(s) and undershoot/overshoot.

8 https://www.easa.europa.eu/document-library/general-publications/european-plan-aviation-safety-2018-2022

9 Runway confusion is defined as the unintentional use of the wrong runway, or a taxiway, for landing or take-off.

10 https://www.easa.europa.eu/sites/default/files/dfu/209735_EASA_ASR_MAIN_REPORT_3.0.pdf

11 https://www.easa.europa.eu/sites/default/files/dfu/218639_EASA_ASR_MAIN_REPORT_2018.pdf

12 Example safety recommendations which were addressed to other organisations and which are found to be relevant to this regulatory proposal, as they underline the safety risks that this proposal intends to address, include the following:

— The investigation of a runway incursion where a vehicle was operating on a runway in the opposite direction from which an Airbus A330 was taking off, found that the causal factor of the event was the loss of situational awareness of the driver of the vehicle. As contributory factors were, amongst others, identified:

- the distraction of the driver during his job;
- the lack of supervision through the correct frequency; and
- the lack of appropriate training of the driver.

The safety investigation authority (SIA) found also that:

- the vehicle:
  - was not equipped with either a radio or anti-collision lights; and
  - did not carry a transponder;
- the maps that the driver carried on the vehicle did not clearly indicate the points where contact with the air traffic services should be made; and
- vehicle activities on the manoeuvring area of the aerodrome were not kept to the minimum, as recommended by EAPPRI.

— In another occurrence, a maintenance vehicle was situated on the runway due to works taking place during low-visibility conditions, when a landing Boeing 747 impacted with its landing gear the roof of the vehicle. The investigation identified, amongst others, as factors that led to the event:

— ANSV-4/SA/4/14: 'ANSV reiterates the safety recommendation ANSV-5/2150-11/2/1/12. In particular, strongly recommends that, particularly on airports open to commercial air traffic, all vehicles intended to operate for any reason on a runway, regardless of whether they belong to public or private entities, are provided with radio equipment that can operate also on VHF channels used by TWR/AFI units, to allow personnel on board to listen to air-ground communications between the competent ATC unit and aircraft taking-off and landing.'

— ANSV-5/SA/5/14: 'ANSV recommends that all natural persons who, in their various capacities, need to operate on a runway, to perform specific activities, regardless of whether they are staff belonging to a public or private entity, achieve a specific qualification, which objectively demonstrates their ability to operate within a highly critical operational environment (i.e. the runway), where safety must be assured in an unconditional and disciplined manner. For the purposes of obtaining the aforementioned specific qualification, the aforementioned natural persons should: follow the same training courses and be subject to an examination carried out by ENAC; have a proven knowledge of the English language; have a knowledge of the standard phraseology used in air-ground communications, with particular reference to that of direct interest to aerodrome operations; be appropriately sensitised to the context of operational protection characterising a runway.'

— ANSV-7/SA/7/14: 'ANSV recommends to evaluate the need to equip all of vehicles intended to operate on a runway with Mode S transponder, with the purpose to allow their complete integration with the A-SMGCS, at those aerodromes where the latter is already operational or where its implementation is foreseen.' (unofficial translation from the Italian language)

— LU-AC-2012/004: 'All communications associated with the operation of the runway should be conducted on the same frequency as utilized for the take-off and landing of aircraft and all communications associated with the operation of the taxiways should be conducted on a different designated frequency.'

— LU-AC-2012/005: 'All communications associated with the operation of the runway and the taxiways should be conducted in standard aviation English and in accordance with ICAO language requirements for air-ground radiotelephony communications.'

- the lack of coordination between the air traffic services provider and the aerodrome operator which contributed to the reduction of the situational awareness of the air traffic services personnel; and
- the use of different frequencies for air traffic and vehicle traffic on the manoeuvring area, which led to reduction of the situational awareness of the maintenance personnel working on the runway.

— In another case, a towed aircraft entered an active runway, during the night, with the intention of crossing it. An aircraft that was taking off from that runway collided with the towed aircraft. The SIA found that the towed aircraft had been lit with insufficient, portable lighting, as the normal aircraft's lighting was disconnected. Moreover, as a contributory factor to the occurrence was identified the fact that the communications between the air traffic services, the aircraft taking off and the driver of the towed aircraft were conducted in separate frequencies, which resulted in the lack of awareness of the involved controllers, the pilots and the driver of the towing vehicle.

— The investigation of an occurrence where the pilot landed on a taxiway close to the runway, while another aircraft was taxiing on the opposite direction of the taxiway, identified as a contributory factor the condition of the markings at the aerodrome. The old markings had been painted over with black paint. In the same report, the SIA identified that two similar events had taken place at the same aerodrome in the past, while another pilot had mentioned that the 'closed runway' markings were visible due to sun reflection, thereby causing confusion.

— The investigation of an accident that took place at an aerodrome identified, amongst others, that the view from the control tower of the part of the runway, at which the accident aircraft came to a rest, was restricted. This, according to the SIA, constituted a risk, as it was therefore not always possible to identify any unexpected emergencies on that runway, if they were to occur. The obstacles that were limiting the view from the control tower were removed after the event.

— In another investigation, involving an aircraft overrun, the SIA established that amongst other factors that created a difficulty for the flight crew, was the fact that the runway markings were not in good condition.

Material for the prevention of occurrences as the ones described above may be found in various ICAO documents (e.g. ICAO Doc 9870 'Manual on the Prevention of Runway Incursions'), while the latest version of the EAPPRI contains relevant recommendations, such as:

— Promote the adoption of 'sterile cab' procedures to improve communications when on the manoeuvring area.

— To avoid the possibility of call sign confusion, implement the use of full aircraft or vehicle call signs for all communications concerning runway operations.

— To avoid call sign confusion at aerodromes, implement the introduction of discrete radio telephony (RTF) call signs to manoeuvring area vehicles.

— Assess the numbering policy for aerodrome vehicles and consider assignment of unique numbers or airside identification call signs for each airside vehicle (to reduce the risk of vehicle related call sign confusion).

— Enable the tracking of vehicle movements on the manoeuvring area when possible.

— Ensure all vehicles on the manoeuvring area are in radio contact with the appropriate air traffic control service, i.e. ground and/or the tower either directly or through an escort.

— Carry out runway inspections in the opposite direction to runway movements.

— Working with ANSPs, avoid infringing lines of sight from the air traffic control tower: assess visibility restrictions from the tower, which have a potential impact on the ability to see the manoeuvring area — especially critical areas such as runway entry points.

— Aerodrome operators, in cooperation with ANSPs, should implement procedures in line with standardised European rules of the air (SERA) in case of stop bar unserviceability.

— Ensure that a protected area map is used in manoeuvring area driver training and is present in all vehicles that are driving on the manoeuvring area.

— ANSPs and aerodrome operators should implement procedures that ensure significant aerodrome information which may affect operations on or near the runway, in addition to that found in notices to airmen (NOTAMs) and on the automatic terminal information service (ATIS) should be provided to manoeuvring area drivers and pilots in real time using radio communication.

— Implement, monitor and ensure the use of the read-back procedure (also applicable to manoeuvring area drivers and other personnel who operate on the manoeuvring area).

On the other hand, material for the prevention of runway excursions exists at ICAO level, while EAPPRE contains also similar recommendations, such as:

— If provided, ensure that appropriate navigation aids (e.g. ILS, AGL, PAPIs), and surface markings are maintained in accordance with ICAO Standards and Recommended Practices (SARPs), to promote the accurate landing/touchdown point.

— Ensure robust procedures are in place for calculating temporary reduced declared distances e.g. due to work in progress on the runway. When reduced declared distances are in operation, ensure that the temporary markings, lighting and signs accurately portray the reduced distances and that they are well communicated, and transferred to States aeronautical information services for publication.

However, in one of the investigation reports it is stated that one of the reasons that there is no sufficient guarantee for the implementation of all these recommendations is the lack of regulatory value. The present regulatory proposal intends to address this gap.

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In May 2011, the Accident Investigation Board of Norway (AIBN) issued a report on 'Winter operations, friction measurements and conditions for friction predictions'[13]. The report is the outcome of the investigation of 30 occurrences and focuses on the general framework for operations on contaminated and slippery runways and looked for potential for safety improvements. As an outcome, the AIBN issued seven (7) recommendations. The ones relevant to the present task are the following:

Safety recommendation 2011/08T

'In the investigated occurrences, the AIBN found that the aircraft braking coefficients were not in accordance with the measured and reported values, because validity ranges for friction measuring devices lack the necessary scientific basis. The various types of friction measuring devices measure different friction values when used on the same surface. None of the internationally approved friction measurements devices are reliable on all types of contaminations. In particular, moisture and less than 3 K dew point spread and loose/layered contaminations increase the friction measurement uncertainty. **The AIBN recommends that ICAO, FAA, EASA and CAA Norway review and validate the permitted measuring (validity) ranges for approved friction measuring devices.**'

Safety recommendation 2011/09T

'The figures in the ICAO SNOWTAM table showing measured friction values are in hundredths (1/100) and independent of the type of friction measuring device that is used. AIP Norway describes the use of friction measuring devices in general and warns that the measurements are associated with such a high degree of uncertainty that the figures should not be reported to more than one decimal place (one tenth, 1/10). The figures from the SNOWTAM table are used in flight operations through the airlines "individual correlation curves/tables which further increases the uncertainty. **Based on the above, the AIBN recommends that ICAO, FAA, EASA and CAA Norway consider revising the SNOWTAM table to reduce the degree of friction uncertainty.**'

Safety recommendation 2011/13T

'The ICAO Airport Services Manual is generally outdated and not very appropriate as support for todays winter operations. The manual should describe in more detail the newer types of friction measuring devices, the limitations that apply to measurement on moist contamination, requirements for sand, sand application, requirements for de-ice and anti-ice chemicals and the use of chemicals, and updated information on expected friction on different types and depths of contamination. **The AIBN recommends that ICAO initiate an updating and revision of the Airport Services Manual on the basis of the results of investigations of runway excursions and recent research findings.**'

Moreover, following an incident that took place on 6 April 2016 at an aerodrome in Sweden, the Accident Investigation Board of Sweden issued the following draft safety recommendation to EASA:

[13] https://www.aibn.no/Aviation/Reports/2011-10

SWED-2017-005 (SHK)

'The EASA is recommended to review the feasibility of changing the method of reporting from airports in terms of friction coefficients, so that measured values are reported as unreliable under certain conditions.'

Furthermore, the Takeoff and Landing Performance Assessment Advisory and Rulemaking Committee (TALPA ARC) was tasked by the Federal Aviation Administration (FAA) to review safety issues related to the operation on contaminated runways, and produced proposals along the three main areas of:

— standards for runway surface condition assessment and reporting;

— definition of operational landing performance computations; and

— operational rules.

As a result of the TALPA ARC work, the FAA implemented in October 2016 the new Global Reporting Format (GRF) and relevant instructions were provided to air operators and aerodrome operators through the FAA's regulatory tools.

Finally yet importantly, EAPPRE contains the following recommendation to EASA, which is relevant to this task:

'3.7.1. Establish and implement one consistent method of contaminated runway surface condition assessment and reporting by the aerodrome operator for use by aircraft operators. Ensure the relation of this report to aircraft performance as published by aircraft manufacturers.'

Exemptions[14] **in accordance with Article 70 'Safeguard provisions'/Article 71 'Flexibility provisions' and/or Article 76 'Agency measures' of Regulation (EU) 2018/1139** pertinent to the scope of these RMTs:

Not applicable

Alternative means of compliance (AltMoC) relevant to the content of this RMT

AltMoC having an impact on the development of RMT.0703 content are 2017-00038, 2017-00039, 2018-00022, 2018-00023 and 2018-00024. All AltMoC concern the case of exceptional use of vehicles on the manoeuvring area without being marked/lighted in accordance with the specifications contained in the AMC1 ADR.OPS.B080, but being subject to certain mitigating measures. These AltMoC had been assessed by EASA as being of a general nature and are therefore considered in the context of this rulemaking task.

[14] Exemptions having an impact on the development of this RMT content and referring to:
- Article 70(1): Measures taken as an immediate reaction to a safety problem
- Article 71(1): Limited in scope and duration exemptions from substantive requirements laid down in the Basic Regulation and its implementing rules in the event of urgent unforeseeable affecting persons or urgent operational needs of those persons
- Article 71(3): Derogation from the rule(s) implementing the Basic Regulation where an equivalent level of protection to that attained by the application of the said rules can be achieved by other means
- Article 76(7): Individual flight time specifications schemes deviating from the applicable certification specifications which ensure compliance with essential requirements and, as appropriate, the related implementing rules

ICAO and third countries references relevant to the content of this RMT

References considered for alignment of the content of this RMT with ICAO SARPs, Federal Aviation Regulations (FARs), etc.

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— ICAO Annex 14 contains provisions regarding the operation of vehicles on the movement area of an aerodrome, which in certain cases imply their provision with communication equipment. In particular, Standard 9.7.1 requires that 'A vehicle shall be operated: a) on a manoeuvring area only as authorized by the aerodrome control tower; and b) on an apron only as authorized by the appropriate designated authority'.

Moreover, Standard 9.7.2 foresees that 'The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by markings and signs unless otherwise authorized by: a) the aerodrome control tower when on the manoeuvring area; or b) the appropriate designated authority when on the apron.'.

In addition, Standard 9.7.3 states that 'The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by lights', while Standard 9.7.4 requires that 'The driver of a vehicle on the movement area shall be appropriately trained for the tasks to be performed and shall comply with the instructions issued by: a) the aerodrome control tower, when on the manoeuvring area; and b) the appropriate designated authority, when on the apron.'.

Furthermore, Standard 9.7.5 foresees that 'The driver of a radio-equipped vehicle shall establish satisfactory two-way radio communication with the aerodrome control tower before entering the manoeuvring area and with the appropriate designated authority before entering the apron. The driver shall maintain a continuous listening watch on the assigned frequency when on the movement area.'.

Related to the above is also the provision of PANS-ATM[15] 7.6.3.2.3.1 which foresees that 'At controlled aerodromes all vehicles employed on the manoeuvring area shall be capable of maintaining two-way radio communication with the aerodrome control tower, except when the vehicle is only occasionally used on the manoeuvring area and is: a) accompanied by a vehicle with the required communications capability; or b) employed in accordance with a pre-arranged plan established with the aerodrome control tower.'.

In addition, Annex 14 Standard 9.5.5 foresees that 'An emergency vehicle responding to an emergency shall be given priority over all other surface movement traffic.', and Standard 9.5.6 requires that 'A vehicle operating on an apron shall: a) give way to an emergency vehicle; an aircraft taxiing, about to taxi, or being pushed or towed; and b) give way to other vehicles in accordance with local regulations.'. These two provisions are associated with the relevant provisions of Annex 2 regarding the right of way.

[15] ICAO Doc 4444, Procedures for Air Navigation Services, 'Air Traffic Management'

Moreover, paragraph 7.4.1.5.3 of PANS-ATM foresees that 'A vehicle driver in doubt as to the position of the vehicle with respect to the manoeuvring area shall immediately: a) notify the appropriate ATS unit of the circumstances (including the last known position); b) simultaneously, unless otherwise instructed by the ATS unit, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible; and then, c) stop the vehicle.'.

Finally, 7.6.3.2.2.2 of PANS-ATM, states that 'When an aircraft is landing or taking off, vehicles shall not be permitted to hold closer to the runway-in-use than: a) at a taxiway/runway intersection — at a runway-holding position; and b) at a location other than a taxiway/runway intersection — at a distance equal to the separation distance of the runway-holding position.'.

All the above provisions are taken into consideration for the development of relevant requirements regarding the operation of vehicles at an aerodrome[16].

— With regard to pedestrians' access and safe movement at the aerodrome, PANS-ATM paragraph 7.6.3.2, contains provisions for the operation of pedestrians on the manoeuvring area. The relevant provisions, along with other material, are taken into account.

— With regard to vehicle maintenance, Annex 14 Recommendation 9.2.33 states that 'A system of preventive maintenance of rescue and firefighting vehicles should be employed to ensure effectiveness of the equipment and compliance with the specified response time throughout the life of the vehicle.'. This provision, along with supporting ICAO material, are taken into account.

— Regarding runway overlaying activities, Annex 14 contains the following specifications which need to be addressed:

- Recommendation 10.4.2 states that 'Overlaying should proceed from one end of the runway toward the other end so that based on runway utilization most aircraft operations will experience a down ramp.'; and
- Recommendation 10.4.3 states that 'The entire width of the runway should be overlaid during each work session.'.

— Regarding the maintenance of visual aids, ICAO Annex 14 contains certain recommended practices. In particular:

- 10.5.3 states that 'The system of preventive maintenance employed for a precision approach runway category II or III should include at least the following checks: a) visual inspection and in-field measurement of the intensity, beam spread and orientation of lights included in the approach and runway lighting systems; b) control and measurement of the electrical characteristics of each circuitry included in the approach

[16] The following supporting material is also taken into account: ICAO Doc 9870 'Manual on the Prevention of Runway Incursions'; ICAO Doc 9137 'Airport Services Manual' Part 8; and ICAO Doc 9476 'Manual of Airport Surface Guidance and Control Systems'.

and runway lighting systems; and c) control of the correct functioning of light intensity settings used by air traffic control.';

- 10.5.4 states that 'In-field measurement of intensity, beam spread and orientation of lights Included in approach and runway lighting systems for a precision approach runway category II or III should be undertaken by measuring all lights, as far as practicable, to ensure conformance with the applicable specification of Appendix 2.';
- 10.5.5 states that 'Measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems for a precision approach runway category II or III should be undertaken using a mobile measuring unit of sufficient accuracy to analyse the characteristics of the individual lights.'; and
- 10.5.6 states that 'The frequency of measurement of lights for a precision approach runway category II or III should be based on traffic density, the local pollution level, the reliability of the installed lighting equipment and the continuous assessment of the results of the in-field measurements but, in any event, should not be less than twice a year for in-pavement lights and not less than once a year for other lights.';
- 10.5.13 of Annex 14 foresees that 'During low visibility procedures the appropriate authority should restrict construction or maintenance activities in the proximity of aerodrome electrical systems.'.

The above ICAO maintenance-related provisions will be taken into account, in conjunction with relevant ICAO material.

— With regard to the movement of aircraft on the movement area, Annex 11 contains recommended practices regarding the establishment of standard taxi routes at the aerodrome. In particular, paragraph 2.16.1 foresees that 'Where necessary, standard routes for taxiing aircraft should be established on an aerodrome between runways, aprons and maintenance areas. Such routes should be direct, simple and where practicable, designed to avoid traffic conflicts.', while paragraph 2.16.2 recommends that 'Standard routes for taxiing aircraft should be identified by designators distinctively different from those of the runways and ATS routes.'. Given that the standard taxi routes are part of the SMGCS of an aerodrome, these provisions are taken into account.

— Annex 14 foresees that in certain cases information should be disseminated through the issuance of a NOTAM, referring to paragraph 5.1 of Annex 15 which prescribes when a NOTAM should be originated. This necessitates the reflection of the relevant Annex 15 provisions in the regulatory framework for aerodromes, as aerodrome operators are acting as NOTAM originators[17].

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— ICAO Annex 14 to the Convention on International Civil Aviation, Aerodromes, Volume I – Aerodrome Design and Operations, Seventh Edition, July 2016

[17] Due to its size, the relevant text of Annex 15 is not reproduced. For further details, please refer to Annex 15, Aeronautical Information Services, Fifteenth edition, July 2016.

— ICAO Doc 9981 'Procedures for Air Navigation Services, PANS-Aerodromes', Second Edition, 2016

— ICAO Annex 6 to the Convention on International Civil Aviation, Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes, Tenth Edition, July 2016

— ICAO State Letter AN 2/2.1.1-17/22 of 21 April 2017 'Proposed amendment to Annex 15, new PANS-AIM and consequential amendments to Annexes 3, 4, 6, 9, 10, 11 and 14, PANS-ATM, PANS-OPS, PANS-ABC and PANS-Aerodromes'

— ICAO Circular 329 'Runway Surface Condition Assessment, Measurement and Reporting'

References to differences between the content of this RMT and ICAO SARPs, FARs, etc.

Relevant reference such as ICAO Annex, ICAO Document, ICAO State Letter, FAR, etc.:

Not applicable

EU requirement not having yet relevant reference — stemming from a comparison between the intended content of this RMT with ICAO SARPs, FARs, etc.

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Aircraft towing, as an operational activity that requires the establishment and implementation of aerodrome operational procedures to ensure the safety of the towed aircraft, but also in relation to other aircraft, is not yet addressed in Annex 14. Although ICAO material may cover this area in the future, the only relevant provision that currently exists in Annex 14 addresses this activity in terms of the 'right of way', which is considered inadequate.

Communication is an essential element to ensure safe operations at an aerodrome. Even though Annex 14 contains certain provisions on this issue, there are no specific provisions corresponding to the proposed rule.

Despite the relevant work already done in the context of the review of ICAO Doc 9981, currently the issue of FOD is addressed in Annex 14 from a maintenance point of view, and not through the adoption of relevant FOD control programme, as the present proposal suggests.

The relevant Annex 14 provisions foresee the installation of stopway lights only in the case the runway is used at nights, and they do not contain specifications for the provision of secondary power supply to such lights.

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Not applicable

Safety risk assessment

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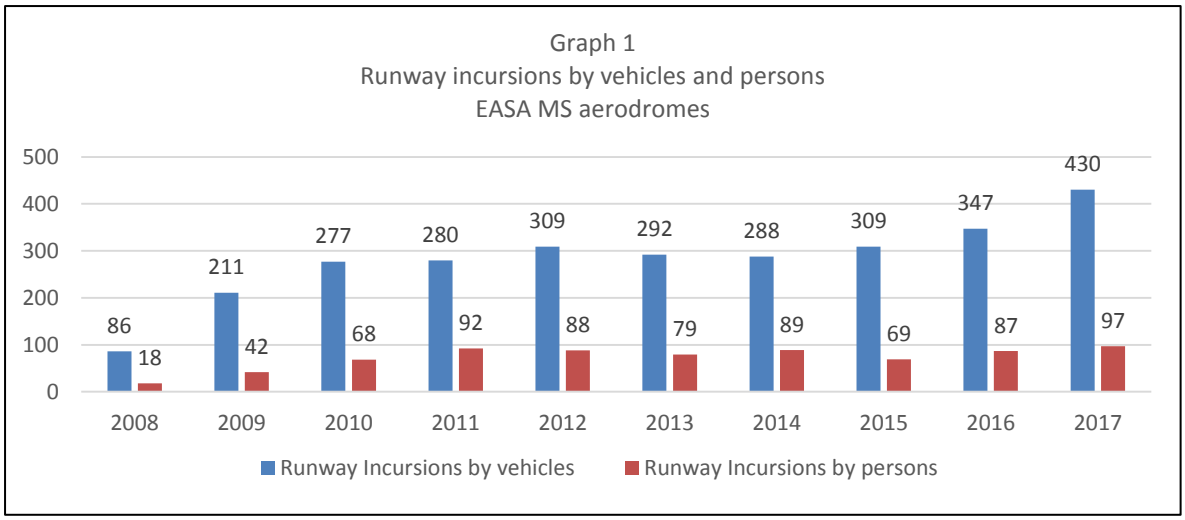
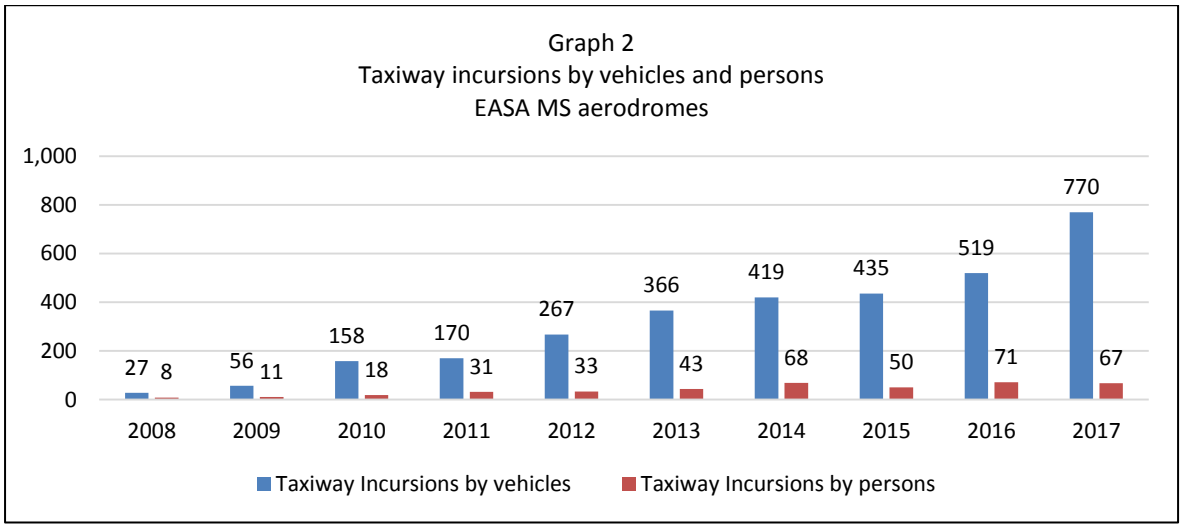
An analysis of related occurrences recorded in the European Central Repository[18] database covering the period 2008-2017 has been performed.

[18] Data provided by Member States and EASA. The analysis covered all aeroplanes except gliders and microlights.

With regard to incursions, the analysis was limited to the occurrences involving vehicles or persons, while the occurrences were further analysed to identify trends both in runway and taxiway incursions[19]. Graphs 1 and 2 below are showing an upward trend in the number of occurrences concerning incursions involving vehicles and persons, on runways and taxiways, which by itself is considered an important issue that needs to be addressed.



With regard to runway incursions involving vehicles, there were 3 non-fatal accidents and 55 serious incidents. In the same period, 11 runway incursions caused by persons were classified as serious incidents.



With regard to taxiway incursions involving vehicles, in the reference period, 7 serious incidents took place. In the same period, there was 1 non-fatal accident and 1 serious incident caused by taxiway incursion involving persons.

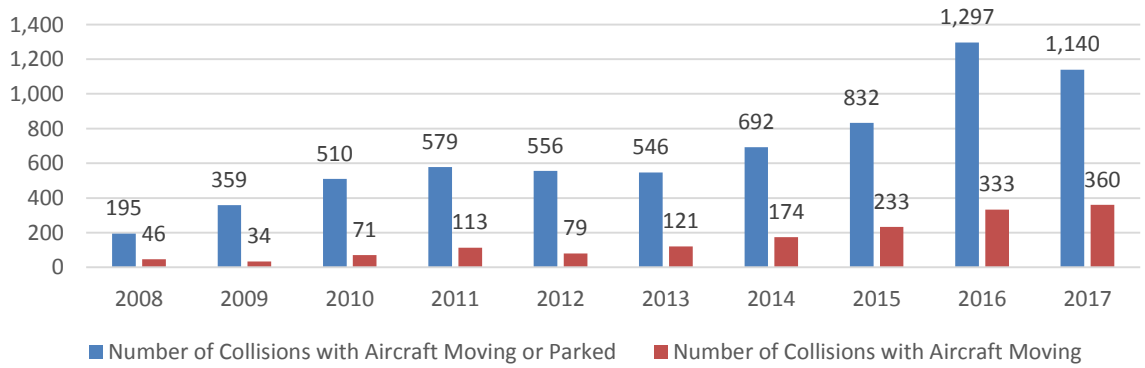
A further analysis of the events identified that the most common human performance factors for runway incursion events were: 'task monitoring', 'incorrectly performed action', 'lack of communication', 'incorrect action selection', and 'lack of individual risk perception'.

[19] The analysis did not take into account the otherwise possible scenario of an aircraft incursion caused due to other aerodrome-related factors, e.g. inadequacy of visual aids.

Similarly, for taxiway incursions, the most common factors were found to be: 'task monitoring', 'incorrectly performed action', 'distraction job-related', 'identification-recognition', 'knowledge of regulations'[20]. These findings need to be taken into account when addressing the issue of incursion prevention.

With regard to the occurrences involving aircraft collisions with vehicles (Graph 3), the analysis confirmed an overall upward trend in such occurrences, associated mainly with vehicle collisions with aircraft parked on the apron, a finding that is consistent with previous studies and analyses in this area.

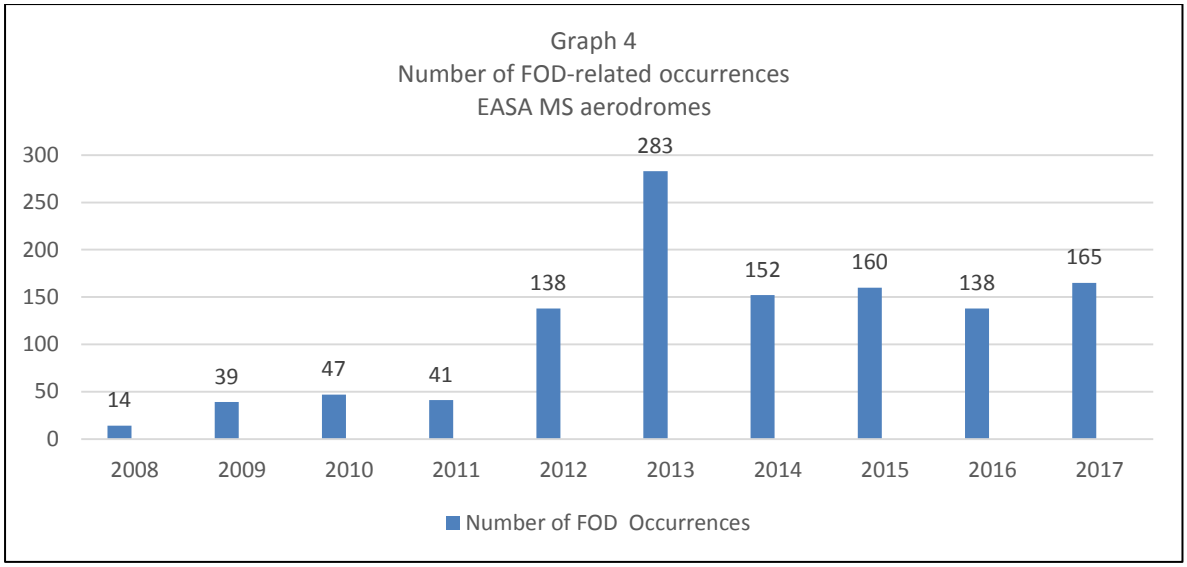
Graph 3
Number of collisions between aircraft and vehicles
EASA MS aerodromes



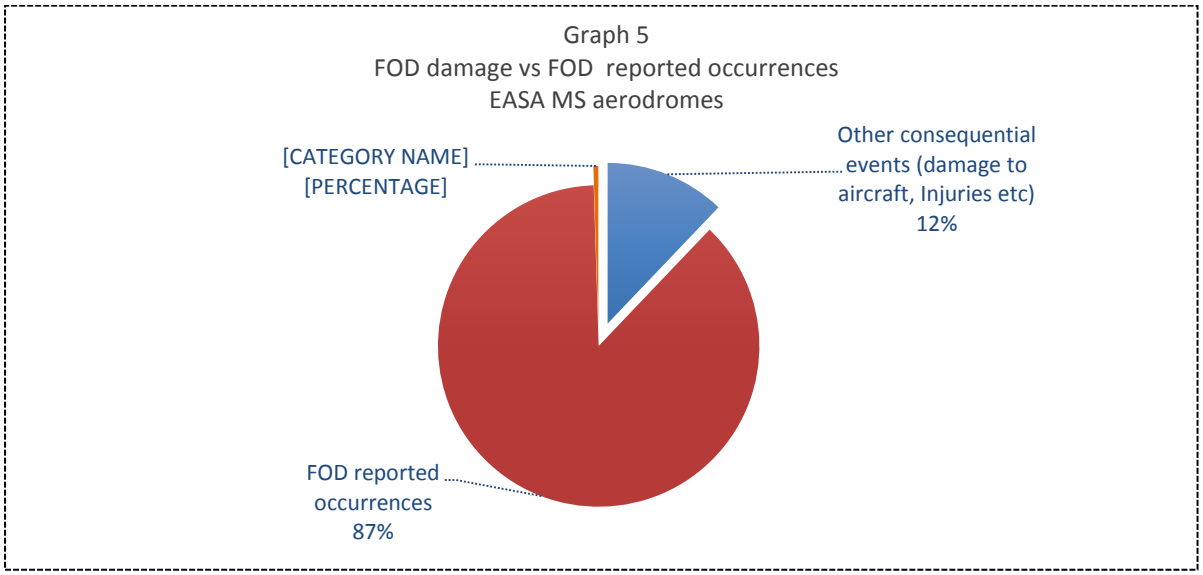
Nevertheless, the number of collisions between aircraft and vehicles, when the aircraft is actually moving, appears to be equally significant and to have an upward trend as well, as shown in Graph 3. Overall, in the reference period, there were 84 non-fatal accidents and 19 serious incidents involving collisions between a moving aircraft and a vehicle. This is considered another important issue which needs to be addressed. This is particularly true if the additional cases of aircraft collision with objects other than vehicles (parked aircraft, other moving aircraft, aerodrome infrastructure and buildings, etc.) during the aircraft manoeuvring on the movement area[21], are taken into account.

On the other hand, an analysis of FOD-related occurrences illustrated in Graph 4, reveals that the number of such occurrences followed an increasing pattern during the first reference years, and afterwards their number was stabilised, however at a higher level.

[20] Information about human-performance-related factors was only available in a very limited number of occurrences.
[21] An analysis of the relevant events had shown a number of 190 such collisions.



Further analysis, based on the outcome of the reported occurrences shows that in 1 % of these occurrences there was an engine damage, while in 12 % of the FOD-related occurrences there was either direct damage to the aircraft itself, or other consequential events (e.g. injuries), as shown in Graph 5. This explains the need for the FOD control issue to be addressed in a more comprehensive manner.



With regard to runway confusion, the analysis identified only a limited number of such events, which are however assessed to be significant. In particular, the identified events involved 1 case of landing on a runway under construction, 3 cases involving an aircraft take-off from a taxiway, 1 case of landing on a closed runway, 1 case of landing on a disused runway, and 2 cases involving landing of an aircraft on a taxiway, all of which were serious incidents.

Therefore, stemming both from safety and harmonisation needs, overall three main issues are addressed by this proposal in the context of the activities of RMT.0703:

— runway incursions which may be the result of various reasons, which are considered a major safety issue;

— other runway-safety-related events, such as ground collisions, runway confusion, runway excursions, which are also considered to constitute major safety issues; and

— alignment with ICAO provisions, to ensure the implementation of the minimum safety standards and help the Member States fulfil their Chicago Convention obligations.

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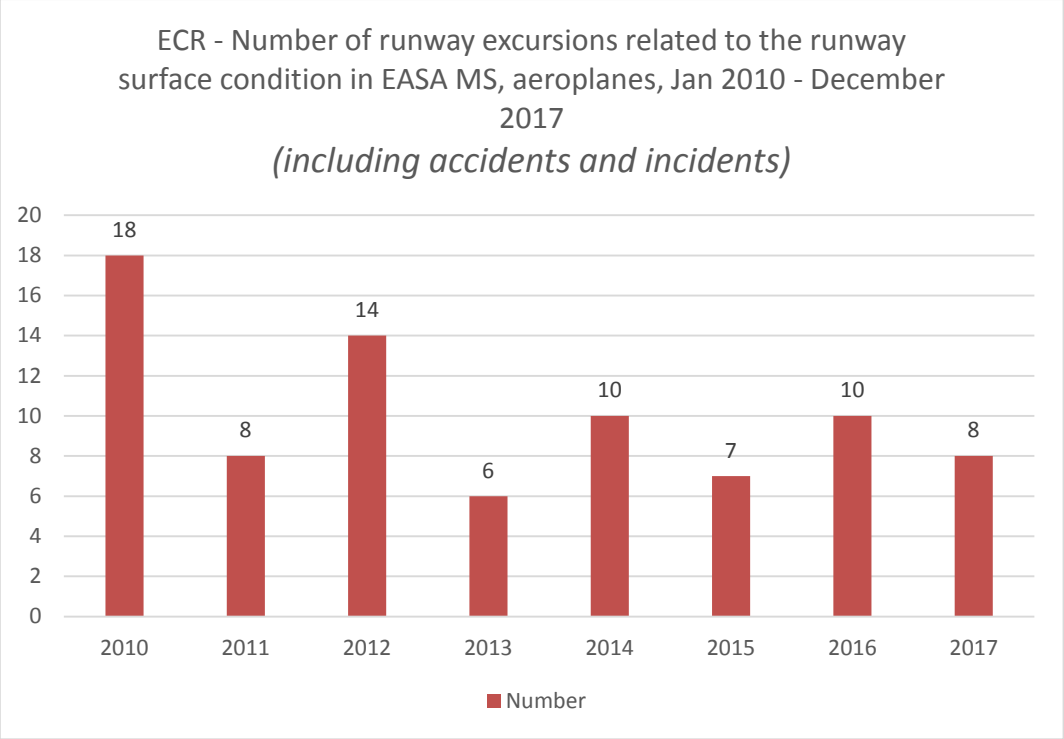
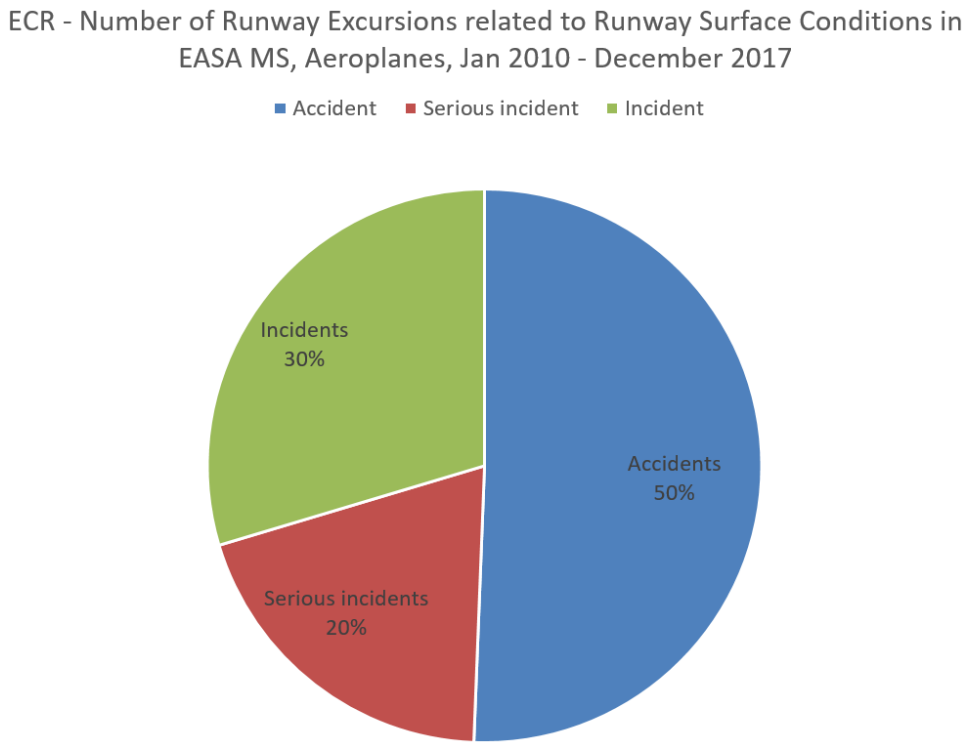
An analysis was performed on the number of runway excursions related to the runway surface condition. The following graph presents the number of accidents and incidents as recorded in the European Central Repository[22] database covering the period 2010-2017, and refers to all aeroplanes excluding gliders and microlights.



Graph 6

Furthermore, the following graph shows the categorisation of runway excursions related to the runway surface condition according to the severity (incidents, serious incidents and accidents).

[22] Data provided by Member States and EASA.



Graph 7

Note: None of the accidents was fatal.

Both graphs demonstrate that about half of the runway excursions related to the runway surface condition have led to accidents, therefore it is considered a safety issue, as already highlighted at the beginning of this chapter.

Overall, two main issues are tackled by this proposal in the context of the activities of RMT.0704:

— Runway excursions due to improper runway surface condition assessment and reporting, which is considered a major safety issue; and

— Harmonisation issue, because the new GRF will be applicable worldwide in November 2020 and any delay to the implementation at European level may put at stake the safety of operations in Europe.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

The specific objectives of this proposal are to:

— reduce the number of runway-safety-related accidents and serious incidents involving runway incursions, but also other runway-safety-related events, such as runway confusion, ground collisions, runway excursions, from an aerodrome's point of view;

— ensure an adequate framework for the safe use of vehicles within an aerodrome environment;

— ensure the implementation of a holistic approach for the control of FOD at aerodromes;

— ensure adequate maintenance for certain types of visual aids and, in some cases, provide visual aids as an additional mitigation measure;

— ensure that certain runway safety defences are embedded in the corresponding aerodrome operational procedures and activities;

— reduce the number of accidents and serious incidents where inappropriate runway surface condition assessment and reporting is a contributing factor;

— ensure a standardised method of reporting the runway surface condition;

— ensure that persons reporting the runway surface condition meet minimum training and competency requirements;

— ensure a harmonised methodology for specifying and setting the minimum friction level of the runways' surface; and

— develop harmonised criteria for the different devices which are used for measuring the runway surface friction characteristics, including correlation criteria where suitable for the particular purpose.

2.3. How we want to achieve it — overview of the proposals

The following is a list of additional/revised implementing rules to Regulation (EU) No 139/2014.

Aeronautical Information Circular (AIC) (definition)	new
Aeronautical Information Publication (AIP) (definition)	new
aeronautical information product (definition)	new
contaminated runway (definition)	new
data set (definition)	new
dry runway (definition)	new
foreign object debris (FOD) (definition)	new
Location Indicators (definition)	new
NOTAM (definition)	new
NOTAM code (definition)	new
reliability of the lighting system (definition)	new
runway condition assessment matrix (RCAM) (definition)	new
runway condition code (RWYCC) (definition)	new
runway condition report (RCR) (definition)	new
runway strip (definition)	new
runway surface condition(s) (definition)	new
runway surface condition descriptors (definition)	new
slippery wet runway (definition)	new
SNOWTAM (definition)	new
specially prepared winter runway (definition)	new
terms of the certificate (definition)	amended
wet runway (definition)	new
ADR.OPS.A.057	new
ADR.OPS.A.060	new
ADR.OPS.A.065	new
ADR.OPS.B.003	new
ADR.OPS.B.016	new
ADR.OPS.B.025	amended
ADR.OPS.B.026	new
ADR.OPS.B.027	new
ADR.OPS.B.028	new
ADR.OPS.B.030	amended
ADR.OPS.B.031	new
ADR.OPS.B.033	new
ADR.OPS.B.035	amended
ADR.OPS.B.036	new
ADR.OPS.B.037	new
ADR.OPS.B.080	amended
ADR.OPS.C.005	amended
ADR.OPS.C.007	new
ADR.OPS.C.010	amended
ADR.OPS.C.015	amended

2.3.1. Annex I (Definitions) to Regulation (EU) No 139/2014

ICAO Annex 14 Amendment 13-A introduced the definition of FOD, which needs to be incorporated in Regulation (EU) No 139/2014, given the introduction of a dedicated requirement on FOD control programme.

Moreover, the term 'NOTAM' is used in the proposed amendment of Regulation (EU) No 139/2014, and therefore the relevant definition is introduced. Following the introduction of the term 'NOTAM', the definitions of Aeronautical Information Circular (AIC), Aeronautical Information Publication (AIP), aeronautical information product, data set, Location Indicators, NOTAM code and SNOWTAM have been added.

In addition, the definitions 'reliability of the lighting system' and 'runway strip' are added, since the terms are used in the amended requirements.

Finally, ICAO Annex 14 Amendment 13-B introduced a number of new definitions to support the implementation of the GRF. EASA has adopted the proposed definitions; however, there are some differences compared with ICAO in order to provide more clarity. For more details, refer to the rationale behind the respective definitions. Additionally, the definition of the 'terms of the certificate' is revised in order to include the 'operations on specially prepared runways'.

2.3.2. Annex IV (Part-ADR.OPS) to Regulation (EU) No 139/2014

Subpart A

This subpart contains the applicable aerodrome data provisions. A new provision (ADR.OPS.A.057) is introduced in this subpart, addressing the case where the aerodrome operator needs to originate a NOTAM as specified in paragraph 5.1 of Annex 15.

Furthermore, the reporting requirements on the runway surface condition are introduced in this subpart. The proposals are based on the provisions of ICAO Annex 14 and ICAO Doc 9981 'PANS–Aerodromes' and aim to ensure that the runway surface condition is reported in a consistent manner in order to meet the requirements of aeroplane operators.

For more details, refer to the rationale behind the respective implementing rules, AMC and GM.

Subpart B

This subpart covers the aerodrome operational services and activities. The changes introduced in this subpart relate to the following areas:

— The training syllabus of staff conducting movement area inspections has been updated in order to include the necessary elements to support the implementation of the GRF.

— A dedicated requirement (ADR.OPS.B.016) for FOD control is proposed, in order to address the issue of FOD in an all-encompassing, systematic, manner.

— The implementing rule on vehicle operations (ADR.OPS.B.025) is revised, as a result of the need to introduce requirements for vehicle operations, but also other interfacing requirements, which were not covered by the current regulatory framework. For further details, refer to the rationale behind the proposed rule.

— A new implementing rule (ADR.OPS.B.026) is introduced in order to address the need to monitor the suitability of vehicles allowed to operate at an aerodrome, either on a regular or on a temporary basis, but also to incorporate certain provisions regarding vehicle communication equipment.

— A new implementing rule (ADR.OPS.B.027) is also introduced that pertains to requirements for the way in which vehicles should be operated within an aerodrome area, based mainly on ICAO provisions.

— A new implementing rule (ADR.OPS.B.028) regarding the development of procedures for the towing of aircraft is introduced, due to the significance of this operation in an aerodrome environment.

— The existing provision on the SMGCS (ADR.OPS.B.030) is amended by introducing new provisions related to the development of standard taxi routes as part of the SMGCS and the publication of relevant information in the Aeronautical Information Publication (AIP) if the SMGCS requires the use of aircraft transponders on the movement area.

— A new implementing rule (ADR.OPS.B.031) is introduced for the coordination of the communication procedures, including language and frequencies to be used in communications between drivers and the air traffic services provider on the manoeuvring area.

— A new implementing rule (ADR.OPS.B.033) is introduced for the control of pedestrians on the aerodrome.

— The implementing rule on operations in winter conditions (ADR.OPS.B.035) is revised. The new rule introduces the establishment of snow plan, the removal of contaminants from the surface of the movement area or the treatment of the surface with appropriate de/anti-icing materials.

— A new implementing rule (ADR.OPS.B.036) is introduced for operations on specially prepared winter runways. This rule is applicable **only** to aerodromes which are exposed to prolonged winter periods and runway surfaces covered with compacted snow or ice. As this is a very demanding operation, EASA considered appropriate to draft this proposal. For further details, refer to the rationale behind the proposed rule.

— A new implementing rule (ADR.OPS.B.037) is introduced for the assessment of the runway surface condition and the assignment of runway condition code (RWYCC). The proposed rule and the related AMC & GM largely transpose the ICAO Annex 14 and ICAO Doc 9981 provisions. For further details, refer to the rationale behind the proposed rule.

— The existing ADR.OPS.B.080 is amended in order to fully align with the Annex 14 Standard 6.1.1.1.and to address the case where vehicles need to be operated on the manoeuvring area while not complying with the relevant lighting/marking specifications.

Subpart C

— ADR.OPS.C.005 (General) is amended in order to align with the content of the Annex 14 Standard 10.1.1 regarding the purpose of the maintenance programme of an aerodrome.

— A new implementing rule is proposed (ADR.OPS.C.007) that addresses specifically the issue of the maintenance of vehicles used at aerodromes, because currently there is no relevant requirement specifically addressing the issue of vehicle maintenance, including those used for rescue and firefighting (RFFS) purposes.

— ADR.OPS.C.010 (Pavements, other ground surfaces, and drainage) is revised in order to align with the requirements of ICAO Annex 14. Furthermore, a number of AMC and GM is proposed

to support the assessment of runway surface for maintenance purposes as well as a new table is introduced concerning the maintenance planning and minimum friction level. For further details, refer to the rationale behind the revised rule and the related AMC and GM.

— Finally, a revision of ADR.OPS.C.015 (Visual aids and electrical systems) is proposed, to address the case of maintenance of power supply systems, as well as the case of signs, and the need to restrict activities around electrical systems during the effect of low-visibility procedures.

2.3.3. AMC & GM

The following is a list of changes to existing AMC and GM, as well as of newly developed AMC and GM that are associated with the above-mentioned proposed changes to the implementing rules of Regulation (EU) No 139/2014.

GM1 38b	new
GM1 38e	new
GM1 38f	new
GM1 38f (c)	new
GM1 38f (f)	new
GM1 38f (g)	new
GM1 41a	new
GM2 41a	new
GM1 41b	new
AMC1 ADR.AR.C.010	amended
GM1 ADR.AR.C.035(e)	amended
GM1 ADR.OR.B.040(a);(b)	amended
AMC3 ADR.OR.E.005	amended
GM1 ADR.OPS.A.005	amended
AMC1 ADR.OPS.A.057(a)	new
GM1 ADR.OPS.A.057(c)	new
GM1 ADR.OPS.A.057(d)(1)	new
GM1 ADR.OPS.A.057(d)(4)	new
GM2 ADR.OPS.A.057(d)(4)	new
AMC1 ADR.OPS.A.057(f)	new
AMC1 ADR.OPS.A.065(a)	new
AMC2 ADR.OPS.A.065(a)	new
GM1 ADR.OPS.A.065(a)	new
GM2 ADR.OPS.A.065(a)	new
GM3 ADR.OPS.A.065(a)	new
GM1 ADR.OPS.A.065(a)(18);(a)(19)	new
AMC1 ADR.OPS.A.065(b);(c)	new

GM1 ADR.OPS.A.065(b);(c)	new
AMC1 ADR.OPS.B.003	new
AMC2 ADR.OPS.B.015	amended
GM2 ADR.OPS.B.015	deleted
AMC1 ADR.OPS.B.016(a)(1)	new
AMC1 ADR.OPS.B.016(b)(2)	new
GM1 ADR.OPS.B.016(b)(2)	new
AMC1 ADR.OPS.B.016(b)(3)	new
GM1 ADR.OPS.B.016(b)(3)	new
AMC1 ADR.OPS.B.016(b)(4)	new
GM1 ADR.OPS.B.016(b)(4)	new
AMC1 ADR.OPS.B.016(b)(5)	new
GM1 ADR.OPS.B.016(b)(5)	new
AMC1 ADR.OPS.B.025	deleted
AMC2 ADR.OPS.B.025	deleted
GM1 ADR.OPS.B.025	deleted
GM2 ADR.OPS.B.025	deleted
GM1 ADR.OPS.B.025(a)(1)	new
AMC1 ADR.OPS.B.025(b)	new
GM1 ADR.OPS.B.025(b)	new
AMC2 ADR.OPS.B.025(b)	new
AMC3 ADR.OPS.B.025(b)	new
AMC4 ADR.OPS.B.025(b)	new
AMC5 ADR.OPS.B.025(b)	new
GM2 ADR.OPS.B.025(b)	new
AMC1 ADR.OPS.B.025(e)(3)	new
GM1 ADR.OPS.B.025(g)	new
AMC1 ADR.OPS.B.025(h)	new
GM1 ADR.OPS.B.025(h)	new
AMC1 ADR.OPS.B.025(e)	new
AMC1 ADR.OPS.B.026(a)(1);(3)	new
GM1 ADR.OPS.B.026(b)	new
AMC1 ADR.OPS.B.026(c)(1)	new
GM1 ADR.OPS.B.026(c)(1)	new
GM1 ADR.OPS.B.026(d)	new
GM1 ADR.OPS.B.026(e)	new
AMC1 ADR.OPS.B.026(f)	new

GM1 ADR.OPS.B.027(e)(1)	new
AMC1 ADR.OPS.B.027(h)(2)	new
AMC1 ADR.OPS.B.028	new
GM1 ADR.OPS.B.028	new
AMC1 ADR.OPS.B.030(b)	new
GM1 ADR.OPS.B.030(b)	new
AMC1 ADR.OPS.B.030(c)	new
GM1 ADR.OPS.B.031(b)	new
GM1 ADR.OPS.B.031(b)(4)	new
AMC1 ADR.OPS.B.033(a)	new
AMC1 ADR.OPS.B.033(b)	new
AMC1 ADR.OPS.B.035	deleted
GM1 ADR.OPS.B.035	deleted
AMC1 ADR.OPS.B.035(a)(1)	new
AMC1 ADR.OPS.B.035(a)(2)	new
AMC1 ADR.OPS.B.035(a)(3)	new
AMC2 ADR.OPS.B.035(a)(3)	new
GM1 ADR.OPS.B.035(b)(3)	new
AMC1 ADR.OPS.B.036(b)(1)(i)	new
GM1 ADR.OPS.B.036(b)(1)(i)	new
AMC1 ADR.OPS.B.036(b)(1)(ii)	new
GM1 ADR.OPS.B.036(b)(1)(iii)	new
AMC1 ADR.OPS.B.036(b)(1)(iv)	new
GM1 ADR.OPS.B.036(b)(1)(iv)	new
AMC1 ADR.OPS.B.036(b)(2)	new
GM1 ADR.OPS.B.036(b)(2)	new
AMC1 ADR.OPS.B.036(b)(3)	new
GM1 ADR.OPS.B.036(b)(3)	new
GM1 ADR.OPS.B.036(b)(4)	new
AMC1 ADR.OPS.B.036(c)	new
GM1 ADR.OPS.B.036(c)	new
AMC1 ADR.OPS.B.037(a)	new
GM1 ADR.OPS.B.037(a)	new
GM2 ADR.OPS.B.037(a)	new
AMC1 ADR.OPS.B.037(b)	new
GM1 ADR.OPS.B.037(b)	new
GM2 ADR.OPS.B.037(b)	new

AMC1 ADR.OPS.B.037(c)	new
GM1 ADR.OPS.B.037(c)	new
AMC1 ADR.OPS.B.065	amended
GM1 ADR.OPS.B.065	new
AMC1 ADR.OPS.B.070	amended
AMC2 ADR.OPS.B.070	amended
AMC4 ADR.OPS.B.070	amended
GM6 ADR.OPS.B.070	new
AMC1 ADR.OPS.B.075	amended
AMC1 ADR.OPS.B.080	deleted
GM1 ADR.OPS.B.080	deleted
AMC1 ADR.OPS.B.080(a)	new
AMC2 ADR.OPS.B.080(a)	new
AMC1 ADR.OPS.C.005	amended
GM1 ADR.OPS.C.005	amended
AMC1 ADR.OPS.C.007(a)	new
AMC1 ADR.OPS.C.007(b)(1)	new
AMC1 ADR.OPS.C.007(b)(2)	new
AMC1 ADR.OPS.C.007(b)(3)	new
AMC1 ADR.OPS.C.007(c)	new
AMC1 ADR.OPS.C.007(a);(c)	new
GM1 ADR.OPS.C.007(e)	new
AMC1 ADR.OPS.C.010	amended
AMC2 ADR.OPS.C.010	new
GM4 ADR.OPS.C.010(b)(2)	new
GM1 ADR.OPS.C.010(b)(3)	amended
AMC1 ADR.OPS.C.010(b)(4)	new
AMC2 ADR.OPS.C.010(b)(4)	new
AMC3 ADR.OPS.C.010(b)(4)	new
GM1 ADR.OPS.C.010(b)(4)	new
GM2 ADR.OPS.C.010(b)(4)	new
AMC1 ADR.OPS.C.015	deleted
AMC1 ADR.OPS.C.015(a);(f)	new
GM1 ADR.OPS.C.015(a);(f)	new
GM1 ADR.OPS.C.015(b)	new
GM2 ADR.OPS.C.015(b)	new
GM3 ADR.OPS.C.015(b)	new

GM1 ADR.OPS.C.015(b);(c)	new
AMC1 ADR.OPS.C.015(b)(f)	new
GM1 ADR.OPS.C.015(b);(f)	new
AMC1 ADR.OPS.C.015(d)	new
GM1 ADR.OPS.C.015(d)	new
AMC1 ADR.OPS.C.015(d);(f)	new
GM1 ADR.OPS.C.015(d);(f)	new
GM1 SERA.2005	new
AMC1 SERA.14001	amended

2.3.4. CS ADR.DSN

The following is a list of changes to CS-ADR-DSN.

CS ADR-DSN.A.002	amended
CS ADR-DSN.B.165	amended
CS ADR-DSN.M.630	amended
CS ADR-DSN.M.635	amended
CS ADR-DSN.M.690	amended
CS ADR-DSN.M.705	amended
CS ADR-DSN.Q.850	deleted
GM1 ADR-DSN.Q.850	deleted
CS ADR-DSN.R.855	amended
GM1 ADR-DSN.R.855	amended
CS ADR-DSN.S.890	amended
CS ADR-DSN.S.895	deleted
GM1 ADR-DSN.S.895	deleted
CS ADR.EQU.CFME.XXX	new
GM1 CS ADR.EQU.CFME.XXX(f)	new
GM1 CS ADR.EQU.CFME.XXX(j)	new

2.3.5. Performance standards for continuous friction measuring devices

In Amendment 13-B to ICAO Annex 14 it is stated that ‘when runway surface friction measurements are made for maintenance purposes using a self-wetting continuous friction measuring device, the performance of the device shall meet the standards set of agreed by the State.’. While the framework to certify and/or accept declarations for such equipment will only be established at a later stage, the availability of experts in this field in the rulemaking group for RMT.0704 gave EASA the opportunity to already prepare the performance standards for continuous friction measurement devices, which will be used in the future.

2.4. What are the expected benefits and drawbacks of the proposals

The expected benefits and drawbacks of the proposal are summarised below. For the full impact assessment of alternative options, please refer to Chapter 4.

For RMT.0703, the conclusion, following the EASA assessment of the three different options, is to adopt all relevant ICAO SARPs[23] and selected recommendations from the EAPPRI and EAPPRE. In this way, EASA will achieve compliance with the relevant ICAO provisions and address many of the safety issues that these recommendations aim at, without creating an impact on the current operations. Rulemaking is the selected method to address this, as there is a need to complement/amend the existing regulatory framework, and this can only be accomplished through rulemaking action.

For RMT.0704, following the EASA assessment of the three different options, the conclusion drawn was to adopt the content of Amendment 13-B to ICAO Annex 14, but to extend it to operations on specially prepared winter runways. This will not only ensure the compliance with the relevant ICAO provisions and satisfactorily address the safety recommendations made to EASA, but it will also facilitate the operations at aerodromes which are exposed to prolonged winter periods where the runway is covered by compacted snow or ice and special treatment is applied. Rulemaking is the selected approach to the safety issue in question because the overall success factor of the new assessment and reporting method is to perform standardisation activities, which could only be achieved through rulemaking. Furthermore, the success will also depend on workshops conducted by EASA in order to explain the new requirements.

[23] Including the relevant PANS provisions.

3. Proposed amendments and rationale in detail

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

— deleted text is ~~struck through~~;

— new or amended text is highlighted in blue;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

At the title of each IR/AMC/GM/CS there is an indication from which RMT the change is originating.

3.1. Draft regulation (Draft EASA opinion)

Draft resulting text

Annex I (Definitions) to Regulation (EU) No 139/2014

[…]

(6a) 'Aeronautical Information Circular (AIC)' means a notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

(6b) 'Aeronautical Information Publication (AIP)' means a publication issued by or with the authority of a Member State and containing aeronautical information of a lasting character essential to air navigation.

(6c) aeronautical information product' means aeronautical data and aeronautical information provided either as digital data sets or as a standardised presentation in paper or electronic media. Aeronautical information products include:

— AIP, including amendments and supplements;

— AIC;

— aeronautical charts;

— NOTAM; and

— digital data sets.

[…]

(15a) 'contaminated runway' means a runway of which a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed under the runway surface condition descriptors;

[…]

(17a) 'data set' means an identifiable collection of data.

[…]

(18a) 'dry runway' means a runway whose surface is free of visible moisture and not contaminated within the area intended to be used.

[…]

(19a) 'foreign object debris (FOD)' means an inanimate object within the movement area which has no operational or aeronautical function and which has the potential to be a hazard to aircraft operation;

[…]

(24a) 'Location Indicators' means the latest effective edition of the 'Location Indicators' (Doc 7910/169), approved and published by the International Civil Aviation Organization;

[…]

(34a) 'NOTAM' means a notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations;

(34b) 'NOTAM code' means the NOTAM code contained in the latest effective edition of the 'Procedures for Air Navigation Services - ICAO Abbreviations and Codes' (PANS ABC - Doc 8400), approved and published by the International Civil Aviation Organization;

[…]

(37a) 'reliability of the lighting system' means the probability that the complete installation operates within the specified tolerances and the system is operationally usable;

[…]

(38a) 'runway condition assessment matrix (RCAM)' means a matrix allowing the assessment of the runway condition code (RWYCC), using associated procedures, from a set of observed runway surface conditions and pilot report of braking action;

(38b) 'runway condition code (RWYCC)' means a number, to be used in the runway condition report (RCR), that describes the effect of the runway surface condition(s) on aeroplane deceleration performance and lateral control;

(38c) 'runway condition report (RCR)' means a comprehensive standardised report relating to runway surface condition and its effect on the aeroplane landing and take-off performance;

(38d) 'runway strip' means a defined area including the runway and stopway, if provided, intended to:

(a) reduce the risk of damage to aircraft running off a runway; and

(b) protect aircraft flying over it during take-off or landing operations;

(38e) 'runway surface condition(s)' means a description of the condition(s) of the runway surface used in the RCR which establishes the basis for the determination of the RWYCC for aeroplane performance purposes;

(38f) 'runway surface condition descriptors' means one of the following elements on the surface of the runway:

(a) compacted snow: snow that has been compacted into solid mass such that aeroplane tyres, at operating pressures and loadings, will run on the surface without significant further compaction or rutting of the surface;

(b) dry snow: snow from which a snowball cannot readily be made;

(c) frost: ice crystals formed from airborne moisture on a surface whose temperature is at or below freezing; frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture;

(d) ice: water that has frozen or compacted snow that has transitioned into ice in cold and dry conditions;

(e) slush: snow that is so water saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully;

(f) standing water: water of depth greater than 3 mm;

(g) wet ice: ice with water on top of it or ice that is melting;

(h) wet snow: snow that contains enough water to be able to make a well-compacted, solid snowball, but water will not squeeze out;

[…]

(41a) 'slippery wet runway' means a wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded;

(41b) 'SNOWTAM' means a special series NOTAM given in a standard format, which provides a surface condition report notifying the presence or cessation of hazardous conditions due to snow, ice, slush, frost or water associated with snow, slush, ice, or frost on the movement area;

(41c) 'specially prepared winter runway' means a runway with a dry frozen surface of compacted snow and/or ice which has been treated with sand or grit or has been mechanically treated to improve runway friction;

[…]

(47) 'terms of the certificate' means the following:

— ICAO location indicator,

— conditions to operate (VFR/ IFR, day/ night),

— aeroplane operations on specially prepared winter runway(s),

— runway — declared distances,

— runway type(s) and approaches provided,

— aerodrome reference code,

— scope of aircraft operations with higher aerodrome reference code letter,

— provision of apron management services (yes/no),

— rescue and firefighting level of protection;

(49) 'wet runway' means a runway whose surface is covered by any visible dampness or water up to and including 3 mm deep within the area intended to be used.

Rationale

Definitions (6a), (6b), (6c), (17a), (19a), (24a), (34a), (34b), (37a) (38d) and (41b) are added because they are contained in the text of the proposed amendments to the Annexes to Regulation (EU) No 139/2014 and are identical to the corresponding definitions in ICAO Annex 14 and Annex 15, except for the definition of the 'NOTAM code' which is based on the title of ICAO Doc 8400, to allow the use of the term in the proposed text.

Definitions (15a), (18a), (38a), (38b), (38c), (38e), (38f), (41a), and (49) are added to support the new GRF for the runway surface condition. They are in accordance with ICAO Annex 14, except the following:

— The definition of the RWYCC (38b) is different from ICAO, because it does not describe the runway surface condition but quantifies the effect of the runway surface condition on available braking action and lateral control. The new definition does not have any effect on the implementation of the GRF.

— The definition of the 'specially prepared winter runway' (41b) has been added. There is no such definition in Annex 14; however, this definition is already included in CS-25. If the aerodrome is approved to upgrade the RWYCC beyond 3, the air operators may benefit from it. Operations on specially prepared winter runways are being considered under RMT.0296.

Moreover, the definition of the 'terms of the certificate' (47) is revised to include the approval for aeroplane operations on specially prepared winter runways.

Annex IV (Part-ADR.OPS) to Regulation (EU) No 139/2014

ADR.OPS.A.057 Origination of NOTAM (RMT.0703)

(a) The aerodrome operator shall:

(1) establish and implement procedures to originate a NOTAM to be issued by the relevant aeronautical information services provider:

(i) containing information on the establishment, condition, or change of any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel involved with flight operations;

(ii) whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

(2) designate aerodrome personnel, who have received training and demonstrated their competence in accordance with (f), to originate a NOTAM and provide relevant information to the aeronautical information service providers with which it has arrangements.

(b) The aerodrome operator shall ensure that:

(1) NOTAM is originated with sufficient lead time for the affected parties to take any required action, except in the case of unserviceability, release of radioactive material, toxic chemicals and other events that cannot be foreseen;

(2) a NOTAM notifying unserviceability of aids to air navigation, facilities or communication services provides an estimate of the unserviceability period or of the time at which restoration of service is expected;

(3) within three months from the issuance of a permanent NOTAM, the information contained in the NOTAM is included in the aeronautical information products affected;

(4) within three months from the issuance of a temporary NOTAM of long duration, the information contained in the NOTAM is included in an AIP supplement; and

(5) when a NOTAM with an estimated end of validity unexpectedly exceeds the three-month period, a replacement NOTAM is originated unless the condition is expected to last for a further period of more than three months; in that case, the aerodrome operator shall ensure that the information is published in an AIP supplement.

(c) The aerodrome operator shall originate a NOTAM when it is necessary to provide the following information:

(1) establishment of, closure of, or significant changes in the operation of aerodromes or heliports or runways;

(2) establishment of, withdrawal of, and significant changes in the operation of the aerodrome services;

(3) establishment of, withdrawal of, and significant changes in, the operational capability of radio navigation and air-ground communication services;

(4) unavailability of backup and secondary systems, having a direct operational impact;

(5) establishment of, withdrawal of, or significant changes to visual aids;

(6) interruption of, or return to operation of, major components of aerodrome lighting systems;

(7) establishment of, withdrawal of, or significant changes to procedures for air navigation services;

(8) occurrence or correction of major defects or impediments in the manoeuvring area;

(9) changes to, and limitations on, the availability of fuel, oil and oxygen;

(10) establishment of, withdrawal of, or return to, operation of hazard beacons marking obstacles to air navigation;

(11) planned laser emissions, laser displays and search lights in the aerodrome surroundings, if pilots' night vision is likely to be impaired;

(12) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas as well as on the runway strip;

(13) changes in aerodrome/heliport rescue and firefighting category;

(14) presence of, removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;

(15) presence of hazards that affect air navigation, including obstacles, displays and major events; and

(16) any other circumstance which may affect the operation of aircraft.

(d) The aerodrome operator shall ensure that:

(1) except as provided for in (4), each NOTAM contains the applicable information in the order shown in the NOTAM Format of Appendix 1 to this Annex;

(2) NOTAM text is composed of the significations/uniform abbreviated phraseology assigned to the NOTAM Code, complemented by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language;

(3) a NOTAM is originated in the English language;

(4) Information concerning snow, slush, ice, frost, standing water or water associated with snow, slush, ice or frost on the movement area is disseminated by means of SNOWTAM and contains the information in the order shown in the SNOWTAM Format of Appendix 2 to this Annex;

(5) when an error has occurred in a NOTAM, a NOTAM is originated to replace or cancel the erroneous NOTAM;

(6) when a NOTAM is originated to cancel or replace a previous NOTAM:

(i) the series and number/year of the previous NOTAM are indicated; and

(ii) the series, location indicator and subject of both NOTAM are the same;

(7) a NOTAM is originated to cancel or replace only one NOTAM;

(8) each originated NOTAM deals with only one subject and one condition of the subject.

(9) each originated NOTAM is as brief as possible and compiled so that its meaning is clear without the need to refer to another document;

(10) an originated NOTAM containing permanent or temporary information of long duration includes appropriate references to the AIP or AIP supplement; and

(11) the location indicator included in the text of a NOTAM for the aerodrome is contained in the Location Indicators. A curtailed form of such indicators shall not be used.

(e) The aerodrome operator shall, following the publication of a NOTAM that it has originated, review its content to ensure its accuracy, and ensure the dissemination of the information to all relevant aerodrome personnel and organisations at the aerodrome.

(f) The aerodrome operator shall ensure that the training programme for aerodrome personnel to be designated as NOTAM originators, and for other personnel whose duties involve the use of a NOTAM:

(1) includes:

(i) theoretical and on-the-job training of adequate duration, including performance assessment, at least in the following areas:

(A) regulatory framework;

(B) aerodrome operational procedures;

(ii) competency assessment of the personnel; and

(2) is supported by adequate and suitable training facilities and means.

(g) The aerodrome operator shall ensure that aerodrome personnel mentioned in (f):

(1) undergo proficiency checks at intervals not exceeding 24 months, since the completion of their initial training;

(2) receive recurrent training at intervals not exceeding 12 months since the completion of their initial training; and

(3) receive refresher training when absent from their duties for a period not less than 3 and not more than 12 consecutive months. In case of absence beyond 12 consecutive months aerodrome personnel shall undergo initial training.

(h) The training foreseen in (f)(1) shall be provided by instructors, and the assessments and proficiency checks foreseen in (f)(1) and (g)(1) shall be conducted by assessors.

(i) The aerodrome operator shall maintain records:

(1) of the NOTAM it originated and those that were issued; and

(2) regarding the implementation of (f) and (g).

Rationale

The current provisions of Regulation (EU) No 139/2014 address certain coordination matters between an aerodrome operator and an aeronautical information service (AIS) provider, but they do not address the case where an aerodrome operator needs to initiate the issuance of a NOTAM. For this particular case, the relevant Annex 14 SARPs refer to Annex 15 (paragraph 5.1), which contains provisions related to NOTAM origination.

Given that in many cases an aerodrome operator needs to act as an originator of a NOTAM, there is a need to complete the regulatory framework in order to ensure legal and operational certainty. It is therefore proposed to address this issue in a concise manner, through the addition of a new provision (ADR.OPS.A.057).

The suggested provisions of points (a) to (d) are stemming from the provisions of Annex 15 paragraph 5.1 but also the general provisions of paragraph 5.2, reproducing draft provisions regarding NOTAM which are already included in the draft Annex V to Regulation (EU) 2017/373 as proposed through EASA Opinion No 02/2018. The solution of the adjusted reproduction of certain provisions, rather than making a simple reference to said Annex V was found to be more appropriate, for reasons related to readability, but also because not all provisions of Annex V contain requirements which are applicable to aerodrome operators acting as NOTAM originators, and finally because Annex V covers the issuance of a NOTAM and not its origination.

Point (e) intends to make sure that a NOTAM is reviewed after its publication, to ensure the correctness of its content and that the relevant information is disseminated to the persons and organisations concerned.

Points (f), (g) and (h) concern the training of aerodrome personnel, and primarily those entrusted with the task to originate a NOTAM. These points define:

— the areas that the training should cover;

— the relevant framework;

— how often the training needs to be delivered to the personnel concerned; and

— who may provide training, assessment and proficiency checks of personnel, in a manner that addresses the need for legal certainty.

These specific provisions will co-exist with the provisions of ADR.OR.D.017 (and its AMC & GM), which is the overarching provision regarding the training and proficiency check programmes.

Thus, to a certain extent, this means that there may be a certain level of repetition between the proposed points of this provision and the content of ADR.OR.D.017, while some of the proposed provisions will prevail over the AMC & GM that support the implementation of ADR.OR.D.017 (e.g. frequency of training).

To avoid this, the solution would be to amend ADR.OR.D.017 and incorporate in there all 'horizontal training provisions', that is training requirements that are common to all functions (operations, maintenance, drivers, etc.) such as the frequency of training, etc. If this is done, then the specific provisions (such as ADR.OPS.A.057, or the proposed ADR.OPS.B.026 which concerns the training of drivers) would then define only the areas that need to be covered for a given training area, while the relevant AMC & GM would provide more detail.

EASA would like to know the opinion of the stakeholders regarding this issue, and for this reason, the following question is asked:

'Do you consider that ADR.OR.D.017 needs to be amended to incorporate all general training provisions, in order to avoid repetition of requirements and ensure legal certainty?'

Finally, point (i) concerns the maintenance of relevant training and NOTAM records.

ADR.OPS.A.060 Reporting of surface contaminants (RMT.0704)

The aerodrome operator shall report to the aeronautical information services and air traffic services units on matters of operational significance affecting aircraft and aerodrome operations on the movement area, particularly in respect of the presence of the following:

(a) water;

(b) snow;

(c) slush;

(d) ice;

(e) frost;

(f) anti-icing or de-icing liquid chemicals or other contaminants; and

(g) snow banks or drifts.

Rationale

The current rule, ADR.OPS.A.005, requires the aerodrome operator to determine, document and maintain data relevant to the aerodrome and available services and make this information available to the aerodrome users and the ATS and AIS providers. The reporting of the condition of the movement area and related facilities is included in AMC1 ADR.OPS.A.005 and the terms used to report them are included in GM1 ADR.OPS.A.005. The structure of the current provisions does not ensure a standardised way of reporting; therefore, the new rule is proposed. The proposed rule is in line with the amended Standard 2.9.2 points (c), (d) and (e) of ICAO Annex 14 Amendment 13-B.

ADR.OPS.A.065 Reporting of the runway surface condition (RMT.0704)

(a) The aerodrome operator shall report the runway surface condition over each third of the runway using a runway condition report (RCR). The report shall include a runway condition code (RWYCC) using numbers 0 to 6, the contaminant depth and coverage, and a description using the following terms:

(1) COMPACTED SNOW

(2) DRY

(3) DRY SNOW

(4) DRY SNOW ON TOP OF COMPACTED SNOW

(5) DRY SNOW ON TOP OF ICE

(6) FROST

(7) ICE

(8) SLIPPERY WET

(9) SLUSH

(10) SPECIALLY PREPARED WINTER RUNWAY

(11) STANDING WATER

(12) WATER ON TOP OF COMPACTED SNOW

(13) WET

(14) WET ICE

(15) WET SNOW

(16) WET SNOW ON TOP OF COMPACTED SNOW

(17) WET SNOW ON TOP OF ICE

(18) CHEMICALLY TREATED

(19) LOOSE SAND

(b) Reporting shall commence when a significant change in runway surface condition occurs due to water, snow, slush, ice or frost.

(c) Reporting of the runway surface condition shall continue to reflect significant changes until the runway is no longer contaminated. When this situation occurs, the aerodrome operator shall issue an RCR that states that the runway is wet or dry as appropriate.

(d) Friction measurements shall not be reported.

(e) When a paved runway or portion thereof is slippery wet, the aerodrome operator shall make such information available to the relevant aerodrome users. This shall be done by issuing a NOTAM and shall describe the location of the affected portion.

Rationale

The proposed rule introduces the term 'runway condition code' and the terms used to describe the runway surface condition. More specifically:

— Point (a) together with points (a)(1) to (a)(19) transpose Standard 2.9.5 of ICAO Annex 14 Amendment 13-B to ensure a harmonised use of the descriptors. Two additional terms have been introduced: the term 'SLIPPERY WET', although not included in ICAO Annex 14, is included in the runway condition assessment matrix (RCAM) and is related to WET and RWYCC 3; the term 'SPECIALLY PREPARED WINTER RUNWAY' has been added to address cases where the runway is covered by compacted snow or ice but has been specially treated to provide improved friction characteristics.

— Point (b) transposes provision 1.1.3.1 of ICAO Doc 9981 'PANS-Aerodromes', Second Edition, 2016, and specifies when the reporting of the runway surface condition shall commence.

— Point (c) transposes provision 1.1.3.2 of ICAO Doc 9981, and specifies when reporting should be terminated.

— Point (d) transposes Recommendation 2.9.8 of ICAO Annex 14 Amendment 13-B. This recommendation is transposed to implementing rule level to prohibit the dissemination of the friction values because these values cannot be used by flight crews to determine landing performance requirements. Nevertheless, the provision does not prohibit the use of friction measurement devices in the overall assessment process.

— Point (e) transposes the Standards 2.9.9 and 2.9.10 of ICAO Annex 14 Amendment 13-B. The two ICAO Standards are considered complementary to each other. The objective is to make aerodrome users aware that the condition of the runway surface is sub-standard.

Appendix 1

NOTAM FORMAT

Priority Indicator															→
Address															
															≪≡
Date and time of filing															→
Originator's Indicator															≪≡(
Message Series, Number and Identifier															
NOTAM containing new information	..... (series and number/year) NOTAMN														
NOTAM replacing a previous NOTAM	..... (series and number/year) NOTAMR..... (series and number/year of NOTAM to be replaced)														
NOTAM cancelling a previous NOTAM	..... (series and number/year) NOTAMC..... (series and number/year of NOTAM to be cancelled)														≪≡
Qualifiers															
	FIR			NOTAM Code		Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius				
Q)	/			Q /		/	/	/	/	/	/				≪≡
Identification of ICAO location indicator in which the facility, airspace or condition reported on is located											A)				→
Period of Validity															
From *(date-time group)*	B)														→
To *(PERM or date-time group)*	C)													EST* PERM*	≪≡
Time Schedule *(if applicable)*	D)														→
															≪≡
Text of NOTAM; Plain-language Entry (using ICAO Abbreviations)															
E)															≪≡
Lower Limit	F)														→
Upper Limit	G)														) ≪≡
Signature															

*Delete as appropriate

Rationale

The proposed NOTAM format contains the necessary information, which needs to be filled in during the origination of the NOTAM.

Appendix 2

SNOWTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)		<=
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)		<=
(Abbreviated heading)	(SWAA* SERIAL NUMBER) S W * *	(LOCATION INDICATOR)	DATE-TIME OF ASSESSMENT	(OPTIONAL GROUP) <=(
SNOWTAM →	(Serial number) <=			

Aeroplane performance calculation section			
(AERODROME LOCATION INDICATOR)	M	A)	<=
(DATE/TIME OF ASSESSMENT *(Time of completion of assessment in UTC)*)	M	B)	→
(LOWER RUNWAY DESIGNATION NUMBER)	M	C)	→
(RUNWAY CONDITION CODE (RWYCC) ON EACH RUNWAY THIRD) (From Runway Condition Assessment Matrix (RCAM) 0, 1, 2, 3, 4, 5 or 6)	M	D)	/ / →
(PER CENT COVERAGE CONTAMINANT FOR EACH RUNWAY THIRD)	C	E)	/ / →
DEPTH (mm) OF LOOSE CONTAMINANT FOR EACH RUNWAY THIRD)	C	F)	/ / →
(CONDITION DESCRIPTION OVER TOTAL RUNWAY LENGTH (Observed on each runway third, starting from threshold having the lower runway designation number) COMPACTED SNOW DRY DRY SNOW DRY SNOW ON TOP OF COMPACTED SNOW DRY SNOW ON TOP OF ICE FROST ICE SLUSH STANDING WATER WATER ON TOP OF COMPACTED SNOW WET WET ICE WET SNOW WET SNOW ON TOP OF COMPACTED SNOW WET SNOW ON TOP OF ICE	M	G)	/ / →
(WIDTH OF RUNWAY TO WHICH THE RUNWAY CONDITIONS CODES APPLY, IF LESS THAN PUBLISHED WIDTH)	O	H)	<=
Situational awareness section			
(REDUCED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH (m))	O	I)	→
(DRIFTING SNOW ON THE RUNWAY)	O	J)	→
(LOOSE SAND ON THE RUNWAY)	O	K)	→
(CHEMICAL TREATMENT ON RUNWAY)	O	L)	→
(SNOWBANKS ON THE RUNWAY (If present, distance from runway centreline (m) followed by 'L', 'R' or 'LR' as applicable))	O	M)	→
(SNOWBANKS ON A TAXIWAY (If present, distance from the centreline (m) followed by 'L', 'R' or 'LR' as applicable))	O	N)	→
(SNOWBANKS ADJACENT TO THE RUNWAY)	O	O)	→
(TAXIWAY CONDITIONS)	O	P)	→
(APRON CONDITIONS)	O	R)	→
(MEASURED FRICTION COEFFICIENT)	O	S)	→
(PLAIN-LANGUAGE REMARKS)	O	T)	) <=
NOTES:			

Rationale

The proposed SNOWTAM format, which will be applicable as of 5 November 2020, contains the necessary information that needs to be filled in during a SNOWTAM origination.

ADR.OPS.B.003 Handover of activities (RMT.0703)

The aerodrome operator shall establish and implement procedures for the handover of aerodrome operational activities between aerodrome operational personnel, to ensure that incoming aerodrome operational personnel are provided with operational information related to their tasks.

Rationale

The proposed provision intends to address the need to provide operational personnel with updated information regarding the operational situation they may encounter at the handover of operational activities (e.g. during the start of their shift), so that they acquire a complete picture of their operational environment, thereby reducing the risk of an occurrence resulting from expectation bias.

The briefing of the personnel is a widespread practice amongst all aviation domains, but also other professional domains, and is directly related to human factors, and in particular to the need to communicate in a reliable manner task-relevant information. In addition, this provision addresses a relevant recommendation contained in EAPPRI.

ADR.OPS.B.016 Foreign object debris control programme (RMT.0703)

(a) The aerodrome operator shall establish and implement a foreign object debris (FOD) control programme and shall require organisations operating or providing services at the aerodrome to participate in this programme.

(b) As part of the FOD control programme, the aerodrome operator shall:

(1) ensure personnel awareness and participation, as well as the provision of adequate relevant training;

(2) establish and implement measures to prevent FOD, including the identification of its sources;

(3) establish and implement procedures to detect FOD, including the monitoring and inspection of the movement area or adjacent areas in accordance with an inspection schedule and whenever such an inspection is required due to activities or events that may have led to the creation of FOD;

(4) establish and implement procedures for the prompt removal, containment and disposal of FOD, and provide all relevant means necessary; and

(5) collect and analyse data and information to identify FOD sources and trends, and implement corrective and/or preventive measures to improve the effectiveness of the programme.

Rationale

The current provisions of Annex 14 approach the issue of FOD control without applying a holistic approach. In fact, it seems that the FOD issue is only approached from a preventive maintenance point of view of the movement area, while certain provisions exist regarding the conduct of inspections, which amongst others would lead to the detection of FOD.

To address the serious issue of the FOD control, a new requirement, which addresses the FOD in an all-encompassing manner, is introduced. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

~~**ADR.OPS.B.025 Operation of vehicles**~~ **(RMT.0703)**

~~The aerodrome operator shall establish and implement procedures for the training, assessment and authorisation of all drivers operating on the movement area.~~

Rationale

The current provision ADR.OPS.B.025 is proposed to be deleted and replaced by the new provision ADR.OPS.B.025 (Authorisation of vehicle drivers) that follows, whose rationale explains also the proposed deletion.

ADR.OPS.B.025 Authorisation of vehicle drivers (RMT.0703)

(a) Except as provided for in (d), the driving of a vehicle on any part of the movement area or other operational areas of an aerodrome shall require an authorisation issued to the driver by the operator of that aerodrome. The driving authorisation shall be issued to a person if:

(1) the tasks allocated to the driver involve driving in such areas;

(2) the driver holds a valid driving licence, and any other licence required for the operation of specialised vehicles; and

(3) the driver has successfully completed a relevant driving training programme and demonstrated their competence in accordance with (b) and, if required, with (c).

(b) The aerodrome operator shall establish and ensure the implementation of a driving training programme for drivers operating on the apron or other operational areas, except the manoeuvring area, and for drivers operating on the manoeuvring area. The training programme shall:

(1) be appropriate to the characteristics and operation of the aerodrome, the driver's functions and tasks to be performed, and the areas of the aerodrome that drivers may be authorised to operate;

(2) be supported by adequate and suitable training facilities and means;

(3) include:

(i) theoretical and on-the-job training of adequate duration, including performance assessment, at least in the following areas:

(A) regulatory framework and personal responsibilities;

(B) vehicle standards, aerodrome operational requirements and procedures;

(C) communications;

(D) radiotelephony, for drivers operating in the manoeuvring area;

(E) human performance; and

(F) familiarisation with the operating environment; and

(ii) competency assessment of the drivers.

(c) The aerodrome operator shall ensure that drivers operating on the manoeuvring area demonstrate their competence in the language(s) used at the aerodrome for radio

communication purposes with the air traffic services unit, both in the use of phraseologies and in plain language, at a level that allows the execution of their operational duties.

(d) The aerodrome operator may permit organisations operating or providing services at the aerodrome to provide the training required in (b) to their employees operating on the apron or other operational areas, except the manoeuvring area, subject to:

(1) the prior approval of the Competent Authority; and

(2) continuous compliance of the organisation concerned with the applicable requirements, and the training being delivered in accordance with the driving training programme and procedures established by the aerodrome operator.

(e) The aerodrome operator shall ensure that drivers issued with an authorisation in accordance with (a):

(1) undergo proficiency checks at intervals not exceeding 24 months since the completion of their initial training;

(2) receive recurrent training at intervals not exceeding 24 months since the completion of their initial training; and

(3) receive refresher training when they are absent from their duties for a period not less than 3 and not more than 12 consecutive months. In case of absence beyond 12 consecutive months, the driver shall undergo initial training.

(f) The raining foreseen in (b)(3) and (d)(2);(3) shall be provided by instructors, and the assessments and proficiency checks foreseen in (b)(3), (c) and (e)(1) shall be conducted by assessors.

(g) A driving authorisation issued in accordance with (a) shall specify the parts of the movement area or other operational areas on which the driver is allowed to drive and shall remain valid as long as:

(1) the requirements of (a)(1) and (a)(2) are met; and

(2) the holder of the driving authorisation undergoes training and proficiency checks in accordance with (e).

(h) Notwithstanding (a), the aerodrome operator may permit a person to temporarily drive a vehicle on the movement area or other operational areas if:

(1) that person holds a valid driving licence, and any other licence required for the operation of specialised vehicles; and

(2) that vehicle is escorted by vehicle(s) driven by driver(s) authorised in accordance with (a).

(i) The aerodrome operator shall:

(1) establish a system and implement procedures for:

(i) assessing the language competence of the drivers operating on the manoeuvring area, issuing driving authorisations and temporarily permitting the driving of vehicles;

(ii) ensuring that drivers to whom a driving authorisation has been issued, continue to comply with (g)(1) and (g)(2); and

(iii) monitoring the compliance of drivers with any driving requirements applicable at the aerodrome and for taking appropriate action, including the suspension and revocation of driving authorisations or permissions to temporarily drive a vehicle.

(2) maintain relevant records.

Rationale

The current provision, ADR.OPS.B.025, on vehicle operations is focusing only on the training/assessment of drivers operating on the movement area, and does not contain requirements for vehicle operations. Therefore, there is a need to address this gap and develop a framework that covers the need to effectively control the driving activities at an aerodrome in a manner that ensures legal certainty and level playing field, while catering for the training needs of the drivers that normally operate in an aerodrome area, taking into account interfacing issues (such as communication), but also the need to allow drivers that need to temporarily enter an aerodrome to operate in a safe manner. More specifically:

— Point (a) introduces a requirement not to allow the driving on the movement area or other operational areas of an aerodrome, unless a person is duly authorised to do so. This addresses the obvious need to control the movement of vehicles and their drivers on the aerodrome. At the same time, it introduces conditions that need to be met by a person in order to be allowed to drive on the movement area, i.e. to hold a driving licence, to be involved in tasks that necessitate driving, and of course to complete the necessary training. This provision builds mainly upon the current provisions of ADR.OPS.B.025 of Regulation (EU) No 139/2014 and the associated AMC & GM, and Standard 9.7.4 of Annex 14.

— Point (b) introduces a requirement that aims to distinguish between the training needs of the drivers operating on the apron (and other operational areas, except the manoeuvring area), and those operating on the manoeuvring area. Moreover, it intends to set the framework for the definition of the training areas to be covered, while it is linked to Annex 14 provisions (9.7.1 and 9.7.5) which require the use of a radio for communication purposes and imply the capability of the driver to do so.

— Point (c) addresses the issue of language competence, something which is implied by the need for drivers in the manoeuvring area to be able to communicate verbally through the radio, with the air traffic services unit, in the relevant language(s) used for such purposes, something which has also been recently proposed by ICAO[24].

The importance of the language as a means to ensure proper communication amongst the personnel, and therefore as a safety defence mechanism, is already recognised in Regulation (EU) No 139/2014 which requires, through ADR.OR.E.005, that ‘all personnel are able to read and understand the language in which those parts of the aerodrome manual and other

[24] See the ICAO proposal contained in State Letter AN 4/27-18/25 of 16 July 2018.

operational documents pertaining to their duties and responsibilities are written'. However, this requirement does not address verbal communication.

Moreover, although the existing AMC1 ADR.OPS.B.025 refers to the training on the use of radiotelephony and phraseology, it does not contain any provision for the assessment of the language competence in this area, despite the obvious importance that this has for achieving effective communication over the radio and therefore for runway safety through improvement of situational awareness. This is particularly true for the cases where the language used for communication on the manoeuvring area is not the mother tongue of the driver(s), or where more than one languages are used for such purposes (e.g. one language for runway operations and a different one for operations on the taxiways).

It is for these reasons that this requirement is proposed.

— Point (d) proposes the possibility for an aerodrome operator to permit a third party to provide relevant driving training to its personnel that do not operate on the manoeuvring area. The proposal aims at providing this option, which is subject to the necessary conditions, to aerodrome operators in order to ensure the consistent delivery of the training and that the Competent Authority maintains control of such activities.

— Point (e) defines the maximum period required for recurrent training, as well as proficiency checks, while it introduces the concept of refresher training. Currently, the recurrent training and proficiency check intervals are part of GM1 ADR.OR.D.017(a);(b) (Training and proficiency check programmes) and GM1 ADR.OR.D.017(c) (Training and proficiency check programmes) respectively. However, this does not ensure a consistent and harmonised implementation of the recurrent training and proficiency checks, and subsequently a level playing field amongst different aerodrome operators and States. For this reason, the relevant parts of GM1 ADR.OR.D.017(a);(b) and GM1 ADR.OR.D.017(c) have been used to expand on this requirement, which is specific to the training of drivers.

— Point (f) introduces the requirement for the use of instructors and assessors in the context of the implementation of this requirement, building on the existing provisions of ADR.OR.D.017.

— Point (g) introduces an unlimited period of validity for a driving authorisation, but also the need for drivers to undergo recurrent training, and to demonstrate their continued competence on a periodic basis, something that is already generally addressed in ADR.OR.D.017.

— Point (h) introduces the conditions that need to be met in case there is a need to allow a person that has not received a relevant training to operate on the aerodrome, thus reflecting a widespread practice.

— Point (i) requires the development of a relevant system and procedures to implement the above-mentioned provisions, including the maintenance of relevant records.

As it is noted, points (b to (f) concern the training of aerodrome personnel, either by defining the areas that the training should cover, or the frequency of the relevant training that personnel need to receive, or issues related to the assessment and proficiency checks, in a manner similar to the one proposed in ADR.OPS.A.057 (Origination of NOTAM). Due to the similarities of this provision with the

one proposed in ADR.OPS.A.057, EASA asks its stakeholders to also take into account this provision when answering to the question posed on page 35.

ADR.OPS.B.026 Authorisation of vehicles (RMT.0703)

(a) Except as provided for in (d), the operation of a vehicle on the movement area or other operational areas shall require an authorisation issued by the aerodrome operator. The authorisation may be issued if the vehicle is used in activities related to the operation of the aerodrome and:

(1) is serviceable and fit for the indented operation;

(2) complies with the marking and lighting requirements of ADR.OPS.B.080 (a) or (b)(1);

(3) is equipped with a radio allowing two-way communication, if it is intended to be operated on:

(i) the manoeuvring area; or

(ii) other operational areas where communication with the air traffic services unit or other operational units of the aerodrome is necessary,

except that, a radio may not be installed, if the vehicle is occasionally used in these areas and is escorted by (an)other vehicle(s) equipped with such a radio, when operating in these areas; and

(4) is equipped with a transponder, if it is intended to be operated:

(i) on the manoeuvring area; and

(ii) the aerodrome is equipped with a surface movement guidance and control system whose operation requires the use of a transponder.

(b) The aerodrome operator shall limit the number of vehicles authorised to operate on the movement area and other operational areas to the minimum number required for the safe and efficient operation of the aerodrome.

(c) An authorisation issued in accordance with (a) shall:

(1) specify the parts of movement area or other operational areas where the vehicle may be operated; and

(2) remain valid as long as the requirements of (a) are met.

(d) Notwithstanding (a), the aerodrome operator may permit the temporary operation of a vehicle on the movement area or other operational areas, if:

(1) a visual inspection of the vehicle determines that its condition does not endanger safety:

(2) is escorted by (an)other vehicle(s) equipped with a radio allowing two-way communication, if necessary in accordance with (a)(3) and (a)(4); and

(3) if the vehicle is to be operated in the manoeuvring area, subject to compliance with ADR.OPS.B.080 (b)(2).

(e) The aerodrome operator shall assign a call sign to a vehicle authorised to operate at the aerodrome, if that vehicle is required to be radio-equipped. The call sign assigned to a vehicle shall:

(1) not cause confusion regarding its identity;

(2) be appropriate to its function; and

(3) be disseminated to the relevant organisations at the aerodrome.

(f) The aerodrome operator shall:

(1) establish and implement procedures for:

(i) issuing vehicle authorisations and temporarily permitting the operation of vehicles;

(ii) assigning call signs to vehicles; and

(iii) monitoring the compliance of vehicles with these provisions and for taking appropriate action, including the suspension and revocation of vehicle authorisations or permissions to temporarily operate a vehicle;

(2) maintain relevant records.

Rationale

This requirement intends to provide a framework to control the vehicles intended to be operated at an aerodrome, in a manner that ensures the safety of operations.

Point (a) introduces the requirement that a vehicle needs to be relevant to the operation of the aerodrome in order to be authorised to operate at an aerodrome. Moreover, it has to be fit for the purpose that is going to be used, whilst it builds upon Annex 14 Standard 9.7.5 and PANS-ATM paragraph 7.6.3.2.3.1 regarding the equipage of a vehicle with a radio. Additionally, it is linked with the existing requirement regarding the marking and lighting of vehicles (ADR.OPS.B.080), thereby providing a complete framework for the end user. Furthermore, the text accommodates the case where a vehicle needs to be operated at the aerodrome without a radio. Finally, it covers the case of the installation of a transponder, thus addressing a relevant recommendation contained in EAPPRI, and taking into account the safety recommendation ANSV-7/SA/7/14 regarding the use of transponders.

Point (b) requires the assessment of the number of vehicles to be used on the movement area and other operational areas of the aerodrome, given that the number of vehicles needs to be controlled to what is really relevant and needed, in order to avoid additional, unnecessary traffic and minimise the risk of collisions. This practice is acceptable worldwide.

Point (c) mainly deals with the validity period of a vehicle authorisation, which has been kept open-ended in terms of validity, but subject to compliance with certain conditions, in order to avoid unnecessary burden, while point (d) covers the cases of vehicles that are temporarily used at an aerodrome, in accordance with a widespread practice.

Point (e) intends to address the problem of call-sign confusion, which may be the outcome of the use of similar call signs at an aerodrome area, and may lead to communication breakdown. The

content of the proposal is based on relevant recommendations contained in ICAO Doc 9870 and the content of EAPPRI, and addresses the issue from the perspective of the aerodrome operator.

Finally, point (f) requires the development of a relevant system and procedures to implement the above-mentioned provisions, including the maintenance of relevant records.

ADR.OPS.B.027 Operation of vehicles (RMT.0703)

(a) The driver of a vehicle on the manoeuvring area shall operate the vehicle:

(1) only as authorised by the air traffic services unit, and in accordance with the instructions issued by that unit;

(2) in compliance with all mandatory instructions conveyed by markings and signs unless otherwise authorised by the air traffic services unit; and

(3) in compliance with all mandatory instructions conveyed by lights.

(b) The driver of a vehicle on the manoeuvring area shall operate the vehicle in accordance with the following:

(1) vehicles and vehicles towing aircraft shall give way to aircraft which are landing, taking off, taxiing, or being towed;

(2) vehicles shall give way to other vehicles towing aircraft;

(3) vehicles shall give way to other vehicles in accordance with the air traffic services unit instructions;

(4) notwithstanding the provisions of (1), (2) and (3), vehicles and vehicles towing aircraft shall comply with the instructions issued by the air traffic services unit; and

(5) notwithstanding the provisions of (1), (2), (3) and (4), emergency vehicles responding to an emergency shall be given priority over all other surface movement traffic.

(c) The driver of a radio-equipped vehicle, intending to operate or operating on the manoeuvring area, shall:

(1) establish satisfactory two-way radio communication with the air traffic services unit before entering the manoeuvring area, and maintain a continuous listening watch on the assigned frequency;

(2) before entering the manoeuvring area, obtain authorisation from the air traffic services unit and shall operate only as authorised by the air traffic services unit. Notwithstanding such an authorisation, entry to a runway or runway strip or change in the operation authorised, shall be subject to a further specific authorisation by the air traffic services unit;

(3) read back to the air traffic services personnel safety-related parts of the instructions which are transmitted by voice. Instructions to enter, hold short of, cross and operate on any runway, taxiway or runway strip shall always be read back; and

(4) read back to the air traffic services personnel or acknowledge instructions other than in (3) in a manner to clearly indicate that they have been understood and shall be complied with.

(d) The driver of a vehicle operating in the manoeuvring area, when in doubt as to the position of the vehicle with respect to the manoeuvring area, shall:

(1) notify the air traffic services unit of the circumstances, including the last known position;

(2) simultaneously, unless otherwise instructed by the air traffic services unit, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible; and then

(3) stop the vehicle.

(e) The driver of a vehicle on the manoeuvring area:

(1) when operating a vehicle on the strip of a runway shall not, during the use of that runway for landing or take-off, approach the runway closer than the distance at which the runway-holding position or any road-holding positions have been established for that runway; and

(2) shall not, during the use of a runway for landing or take-off, operate a vehicle on:

(i) the part of the runway strip extending beyond the runway ends of that runway;

(ii) the runway end safety areas of that runway; and

(iii) a clearway, if available, at a distance that would endanger an aircraft on the air.

(f) The driver of a radio-equipped vehicle on the apron shall:

(1) establish satisfactory two-way radio communication with the responsible unit designated by the aerodrome operator before entering the apron; and

(2) maintain a continuous listening watch on the assigned frequency.

(g) The driver of a vehicle on the apron shall operate the vehicle in accordance with the following:

(1) only as authorised by the responsible unit designated by the aerodrome operator, and in accordance with the instructions issued by that unit;

(2) in compliance with all mandatory instructions conveyed by markings and signs unless otherwise authorized by the responsible unit designated by the aerodrome operator;

(3) in compliance with all mandatory instructions conveyed by lights;

(4) vehicles shall give way to an emergency vehicle, an aircraft taxiing, about to taxi, or being pushed or towed;

(5) vehicles shall give way to other vehicles in accordance with local regulations; and

(6) emergency vehicles responding to an emergency shall be given priority over all other surface movement.

(h) The driver of a vehicle on the movement area and other operational areas shall:

(1) operate the vehicle in accordance with the established speed limits and driving routes;

(2) not be engaged in disturbing or distracting activities while driving; and

(3) comply with the communication requirements and the operational procedures contained in the aerodrome manual.

(i) The driver of a vehicle escorting another vehicle shall ensure that the driver of the escorted vehicle operates the vehicle in accordance with the instructions given.

(j) The driver of a vehicle shall park the vehicle only in areas designated by the aerodrome operator.

(k) The aerodrome operator shall establish and implement procedures to ensure that drivers operating on the movement area and other operational areas comply with the above provisions.

Rationale

The existing rule introduces the requirement according to which the operation of vehicles should take place at an aerodrome. The provisions are based on various ICAO provisions, EAPPRI recommendations and formalisation of current practices. In particular:

The proposed points (a)(1), (a)(2) and (a)(3) transpose Annex 14 Standards 9.7.1(a), 9.7.2(a), 9.7.3 and 9.7.4 (a).

Point (b) reproduces the relevant SERA requirements regarding the right-of-way on the manoeuvring area, as prescribed in SERA.3210.

Point (c)(1) transposes Annex 14 Standard 9.7.5 regarding the use of radio by radio-equipped vehicles when entering on the manoeuvring area.

Moreover, points (c)(2); (3) and (4) cover the need for vehicle drivers intending to operate or operating on the manoeuvring area to read back to the air traffic services personnel the instructions they receive, a widespread and recommended practice (see ICAO Doc 9870 and EAPPRI), which is also proposed by ICAO in a similar amendment to Annex 11[25]. The proposed text follows the structure and logic of the existing provision contained in point (e)(1)(2) SERA.8015 which concerns the read-back of clearances and safety-related information by the flight crew. In addition, in order to enhance safety, but also to maintain consistency with the existing provisions contained in Regulation (EU) No 139/2014, the obligation to read back addresses the air traffic services in general.

Point (d) transposes paragraph 7.4.1.5.3 of ICAO PANS–ATM, which addresses the case of uncertainty of a vehicle driver with regard to the position of the vehicle on the manoeuvring area and the required action.

Point (e)(1) intends to transpose Annex 14 Standard 3.4.7 regarding the presence of mobile object on the strip during landing and take-off operations which had been transposed in CS ADR-DSN.B.165 (objects on runway strips). However, preventing the presence of a mobile object (e.g. vehicles) on the strip is not related to the aerodrome design, but an operational issue, which requires the adoption of similar requirements. The content of point (e)(1) is based on:

— the content of paragraph 7.6.3.2.2.2 of PANS-ATM (ICAO Doc 4444), where it is stated that ‘When an aircraft is landing or taking off, vehicles shall not be permitted to hold closer to the

[25] See ICAO proposal contained in State Letter AN 4/27-18/25 of 16 July 2018.

runway-in-use than: a) at a taxiway/runway intersection — at a runway-holding position; and b) at a location other than a taxiway/runway intersection — at a distance equal to the separation distance of the runway-holding position'; and

— CS ADR-DSN.D.340 (Location of holding bays, runway-holding positions, intermediate holding positions, and road-holding positions), which defines the minimum distances for runway-holding positions and road-holding positions.

In this way, it is ensured that there is consistency in the implementation of the relevant provisions of Annex 14 and PANS-ATM, and that a consistent approach is applied for determining the distance that vehicles may approach an active runway.

Moreover, given the limitations applicable to the presence of objects on the areas beyond the runway ends (see e.g. Chapter 9 of Annex 14), point (e)(2) proposes that during take-off or landing operations a vehicle cannot be present on the runway strip in the direction of the runway ends, the runway end safety area, and a clearway at a distance that would affect an aircraft on the air.

Point (f) transposes Annex 14 Standard 9.7.5 regarding the use of radio by radio-equipped vehicles when entering on the apron, while point (g) transposes Annex 14 Standards 9.5.5, 9.5.6, 9.7.1(b) 9.7.2(b) and 9.7.3.

Point (h)(1) requires the compliance with the established speed limits and any driving routes for vehicles available at an aerodrome, in order to reduce the likelihood of collisions, mainly at aprons.

Point (h)(2) addresses a recommendation contained in EAPPRI for the prevention of distracting activities while driving, and the proposed point (h)(3) addresses the need to comply with the communication requirements and all other operational procedures established at an aerodrome.

Point (i) deals with the specific case of escorted vehicles, and the need to comply with the instructions provided.

Point (j) deals with the parking of vehicles in designated areas.

Finally, point (k) requires the establishment of relevant procedures in order to implement the abovementioned provisions.

ADR.OPS.B.028 Aircraft towing (RMT.0703)

The aerodrome operator shall:

(a) establish aircraft manoeuvring procedures and routes to be followed during towing operations on the movement area, to ensure safety;

(b) ensure the provision of adequate and appropriate guidance during towing operations;

(c) ensure that towed aircraft display appropriate lights during towing operations;

(d) establish and implement procedures to ensure adequate communication and coordination between the organisation executing the towing operation, the apron management services unit, and the air traffic services unit, as appropriate to the towing operation; and

(e) establish and implement procedures to ensure safety of towing operations in adverse weather or meteorological conditions, including by limiting or not permitting such operations.

Rationale

Annex 14 does not contain any specific requirements for aircraft towing, while Annex 2 deals with it from a different perspective. However, a review of the occurrences indicated that there have been events which have resulted in accidents or serious incidents during towing operations, mainly related to lack of situational awareness, or awareness of aircraft clearances by the personnel involved, or insufficient/improper lighting of the towed-aircraft during night operations.

Due to the impact that this type of occurrences may have on safety and regularity of aerodrome operations, the intention is to cover this regulatory gap by developing relevant material, to address this issue from an aerodrome perspective.

ADR.OPS.B.030 Surface movement guidance and control system (RMT.0703)

(a) The aerodrome operator shall ensure that a surface movement guidance and control system is provided at the aerodrome.

(b) As part of the surface movement guidance and control system, the aerodrome operator shall, in coordination with the air traffic services provider, assess the need to establish standard routes for taxiing aircraft on the aerodrome. Where standard routes are provided, the aerodrome operator shall ensure that they are adequate and suitable for the aerodrome traffic, design and intended operations, properly identified, and that relevant information is provided to the aeronautical information services provider.

(c) Where the operation of the surface movement guidance and control system requires the use of a transponder by aircraft on the movement area, the aerodrome operator shall, in coordination with the air traffic services provider, determine relevant transponder operating procedures to be complied with by aircraft operators and provide relevant information to the aeronautical information services provider.

Rationale

An SMGCS needs to be established at all aerodromes, irrespective of their size, traffic volume and operating conditions. It is also considered one of the main 'operational tools' available to ensure runway safety.

Under certain operating conditions, there may be a need for the aerodrome operator to introduce standard routes, as part of its SMGCS, for the taxiing of aircraft, aiming at enhancing safety (e.g. by reducing the likelihood of flight crew confusion), regularity and efficiency of operations. However, the existing provision ADR.OPS.B.030 does not address this case, while the proposed material of EASA Opinion No 03-2018 (Requirements for air traffic services) already proposes the transposition of certain interfacing Annex 11 provisions on the same subject, addressing though only air traffic services providers. This issue is therefore addressed from an aerodrome perspective, by introducing point (b).

Moreover, there have been events at aerodromes which are equipped with advanced surface movement guidance and control systems (A-SMGCS), where the usability of the A-SMGCS and its capability to monitor the movement of aircraft on the aerodrome and to provide relevant information to the relevant unit(s) is affected by the way the aircraft's transponder is used while on the ground. This issue is addressed by introducing point (c), which is in line with the description provided in Annex 15 Appendix 1 for the content of AD.2.20 (local aerodrome regulations).

ADR.OPS.B.031 Communications (RMT.0703)

(a) Communication between vehicles and the air traffic services unit shall be in accordance with the applicable requirements of Section 14 of the Annex to the Regulation (EU) No 923/2012.

(b) The aerodrome operator shall, in coordination with the air traffic services provider, establish communication procedures, including:

(1) the frequencies and the language(s) to be used for communication between the air traffic services unit and vehicles intending to operate or operating on the manoeuvring area;

(2) communication between the air traffic services unit and pedestrians intending to operate or operating on the manoeuvring area;

(3) dissemination of significant aerodrome-related information that may affect the safety of operations on the manoeuvring area, using radio communications; and

(4) signals to be used, in all visibility conditions, in the case of radio communication failure between the air traffic services unit and vehicles or pedestrians on the manoeuvring area.

Rationale

This rule aims at addressing various recommendations contained in EAPPRI and ICAO Doc 9870 regarding the need to enhance situational awareness of the various actors, taking also into account existing provisions contained in Regulation (EU) No 923/2012 (SERA), the content of ATS.OR.445 (b) as proposed in EASA Opinion No 03-2018, and the need to avoid disruption of operations as much as possible.

In particular, point (a) takes into account the content of Section 14 of the SERA Regulation, while point (b) aims at the establishment of coordinated procedures for communication purposes, between the aerodrome operator and the air traffic services unit, covering, amongst others, specific issues such as:

— the language(s) to be used for communication between drivers operating or intending to operate on the manoeuvring area and the air traffic services unit, considering the importance it plays for situational awareness purposes. This is also linked with the need to ensure that drivers operating on the manoeuvring area are able to communicate in that (those) language(s).

— the frequencies to be used, when more than one is used, depending on the specificities of each aerodrome;

— the case of pedestrians operating or intending to operate on the manoeuvring area;

— the signals to be used in case of radio communication failure between the air traffic services unit and vehicles or pedestrians on the manoeuvring area; and

— the dissemination of significant aerodrome-related information through radio communication.

ADR.OPS.B.033 Control of pedestrians (RMT.0703)

(a) The aerodrome operator shall establish and implement procedures to:

(1) limit the access to the movement area and other operational areas only to persons whose duties require them to have access to such areas;

(2) ensure that such persons are allowed unescorted access to such areas only if they have received relevant training and demonstrated their competence; and

(3) control the movement of persons on the apron, and ensure that passengers embarking/disembarking an aircraft or need to walk across the apron are escorted by trained and competent personnel.

(b) The aerodrome operator shall establish and implement procedures to ensure:

(1) the orderly and safe entry and operation in the manoeuvring area of personnel whose tasks involve access to this area without a vehicle; and

(2) that such personnel:

(i) are properly equipped, including with high-visibility clothing, orientation means, and means allowing two-way communication with the air traffic services unit and the respective unit of the aerodrome operator during such operations;

(ii) obtain authorisation from the air traffic services unit before entering the manoeuvring area. Notwithstanding such an authorisation, entry to a runway or runway strip or change in the operation authorised, shall be subject to a further specific authorisation by the air traffic services unit; and

(iii) do not enter the manoeuvring area when low-visibility procedures are in place.

Rationale

A new implementing rule (ADR.OPS.B.033) is introduced to prevent the entry of unauthorised personnel in the movement area and other operational areas of the aerodrome and to control the movement of pedestrians on the apron. In addition, the rule intends to cover the cases where personnel need, for operational reasons, to enter, or are moving on the manoeuvring area. This rule intends to help prevent further the runway/taxiway incursions and other occurrences that may be caused by the presence of persons.

In particular, point (a)(1) addresses the general need to limit access to the movement area and other operational areas only for relevant personnel. This is a generally required practice, aligned with the content of relevant design certification specifications and related guidance (e.g. GM1 ADR-DSN.T.900, CS ADR-DSN.T.920), as well as the content of the AMC3 ADR.OR.E.005 (Part E, point 8), intending to cover the operational part of this preventive measure, while it is in line with the ICAO aerodrome certification manual (Doc 9774). On the other hand, there is an obvious need to ensure that personnel that have not demonstrated yet their competence are escorted when accessing such areas and this is achieved through point (a)(2), while control of the movement of persons on the apron, including of the passengers, is addressed in point (a)(3).

Point (b) addresses the need of pedestrian personnel to access the manoeuvring area for operational reasons. Although Annex 14 does not contain a specific provision about this, PANS-ATM

paragraph 7.6.3.2 (control of other than aircraft) contains provisions addressing this very issue. Moreover, point (b)(3) addresses the case of low-visibility conditions, proposing the prohibition of entry of pedestrians on the manoeuvring area, during such conditions. In any case, it is only logical that aerodrome operators need to have a system in place to ensure that persons on the manoeuvring area operate in accordance with these PANS-ATM provisions (transposed by EASA Opinion No 03-2018), as it its own personnel (maintenance personnel, wildlife management personnel, etc.), that will be operating in this area.

In this way, the essential requirement (Annex VII - Essential requirements for aerodromes, Chapter 2 'Operations and Management') point 2.1.(d) of the Basic Regulation that requires the aerodrome operator to '… ensure, directly or through arrangements with third parties, that movements of vehicles and persons in the movement area and other operational areas are coordinated with movements of aircraft in order to avoid collisions and damage to aircraft;' is addressed.

ADR.OPS.B.035 Operations in winter conditions (RMT.0704)

~~The aerodrome operator shall ensure that means and procedures are established and implemented for providing safe conditions for aerodrome operations during winter conditions.~~

(a) The aerodrome operator shall, when the aerodrome is expected to operate in conditions when snow, slush or ice may accumulate on the movement area, develop and implement a snow plan. As part of the snow plan, the aerodrome operator shall:

(1) have provisions for the use of materials to remove or to prevent the formation of ice and frost or to improve runway surface friction characteristics; and

(2) ensure, as far as reasonably practical, the removal of snow, slush or ice for the parts of the movement area intended to be used for the operation of aircraft.

(b) The aerodrome operator shall provide for publication in the Aeronautical Information Publication (AIP) information regarding:

(1) the availability of equipment for snow removal and snow and ice control operations;

(2) approval status, if applicable, regarding the use of specially prepared winter runways; and

(3) the type of materials in use for movement area surface treatment.

Rationale

The existing rule is re-drafted to formalise existing practices and to comply with ICAO Annex 14 requirements.

Point (a) introduces the obligation of the aerodrome operator to establish and implement a snow plan. The existing rule does not have a clear requirement for the establishment and implementation of such a plan.

Point (a)(1) is related to Recommendation 10.3.5, and point (a)(2) transposes partially Standard 10.3.1 and Recommendations 10.3.2 and 10.3.3, all stemming from ICAO Annex 14.

Point (b) satisfies Annex 15 Appendix 1 AD 2.7 requirement to publish information concerning the snow plan in the AIP. Furthermore, since operations on specially prepared winter runways require

the approval of the Competent Authority, the information has to be made available to aeroplane operators in order to decide whether to conduct a flight when such conditions occur.

ADR.OPS.B.036 Operations on specially prepared winter runways (RMT.0704)

(a) An aerodrome operator may, subject to the prior approval of the Competent Authority, use procedures for the operation of aeroplanes on specially prepared winter runways, when the contaminant type is compacted snow or ice. Specially prepared winter runways shall be associated with primary RWYCC 4; however, if treatment does not justify a RWYCC 4, the normal downgrade procedure shall apply.

(b) The aerodrome operator in order to obtain prior approval by the Competent Authority shall:

(1) have procedures which include the following:

(i) the type of material, the quality and the quantity which shall be used to improve runway surface condition and method of application;

(ii) the meteorological parameters affecting the method;

(iii) management of loose contaminants; and

(iv) assessment of the achieved results;

(2) obtain aeroplane data that relates to stopping performance on the runway with the special treatment from at least one aeroplane operator;

(3) analyse and process available braking action data recorded during landing of the aeroplane, in order to demonstrate the capability to establish runway conditions in accordance with a given RWYCC; and

(4) have a maintenance programme covering both preventive and corrective maintenance for equipment in use in order to achieve consistent performance.

(c) The aerodrome operator shall establish and implement a programme to monitor the continuous effectiveness of the method. The programme shall use braking action reports from aeroplane data that shall be compared with the reported runway conditions.

(d) The aerodrome operator shall review the performance of winter operations after the end of the winter period in order to identify necessity for:

(1) additional training requirements;

(2) update of the procedures;

(3) additional or different equipment and materials.

Rationale

According to the method proposed by ICAO, any upgrade of RWYCC from 0 and 1 is not allowed beyond 3. This has an effect on aerodromes that are subject to prolonged winter periods and their runways are covered with compacted snow or ice. For such aerodromes, the current method will impose operating limitations. For many years, these aerodromes have developed procedures and methods to improve the friction characteristics of the runway surface even if it is covered by compacted snow or ice. This is substantiated by aeroplane data that proves a very good braking

performance. Nevertheless, this is not a practice that can be applied by any aerodrome operator. It requires very specific procedures for the treatment of the runway surface, which must be supported by appropriate materials and equipment and can only be performed by trained personnel. Additionally, a close monitoring of the performance is necessary, in order to ensure the effectiveness of the procedures.

The proposed implementing rule has been drafted in cooperation with the rulemaking group of RMT.0296 'Review of aeroplane performance requirements for commercial air transport operations'. A very important element is the verification of the reported RWYCC with aeroplane data; therefore, the aerodrome operator is required to establish a programme to compare braking action reports derived from aeroplane data with the reported runway conditions. Only this can provide the necessary assurance to the Competent Authority that the information provided by the aerodrome operator is credible and that it can be used by the aeroplane operators.

ADR.OPS.B.037 Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

(a) The aerodrome operator shall assign a RWYCC based on the type and depth of the contaminant.

(b) The aerodrome operator shall inspect the runway whenever the runway surface condition may have changed due to meteorological conditions, assess the runway surface condition and assign a RWYCC.

(c) The aerodrome operator shall use pilot reports to trigger re-assessment of RWYCC.

Rationale

The proposed rule refers to the obligation of the aerodrome operator to assess the runway surface condition and assign a RWYCC.

— Point (a) specifies the parameters that should be taken into account for the assignment of the RWYCC. The parameters are directly related to the RCAM. EASA has decided, in order to allow some flexibility, to put the RCAM at AMC level.

— Point (b) transposes Standard 2.9.3 (b) of ICAO Annex 14 Amendment 13-B.

— According to provisions 1.1.3.19, 1.1.3.20 and 1.1.3.20 of ICAO Doc 9981, pilot reports should be taken into consideration; therefore, point (c) introduces this requirement.

ADR.OPS.B.080 Marking and lighting of vehicles and other mobile objects (RMT.0703)

(a) The aerodrome operator shall ensure that vehicles and other mobile objects, excluding aircraft, on the movement area of the aerodrome are:

(1) marked by use of conspicuous colours, or display, at suitable locations, flags of appropriate size, chequered pattern and contrasting colours; and

(2) lighted with low-intensity obstacle lights whose type and characteristics are appropriate to their function, if the vehicles and the aerodrome are used at night or in conditions of low visibility~~, lighted~~. The colour of the lights to be displayed shall be as follows:

(i) flashing blue for vehicles associated with emergency or security, and flashing yellow for other vehicles, including follow me vehicles; and

(ii) fixed-red for objects with limited mobility.

(b) The aerodrome operator may exempt from (a):

(1) ~~A~~aircraft servicing equipment and vehicles used only on aprons ~~may be exempted.~~; and

(2) vehicles occasionally used on the manoeuvring area for a limited period of time, in accordance with established procedures, and provided that:

(i) they are escorted by vehicle(s) which are marked and lighted in accordance with (a); and

(ii) low-visibility procedures are not in place.

Rationale

The current ADR.OPS.B.080 requires the marking and lighting of all vehicles on the movement area, with the only possibility for exemption being the case of certain equipment and vehicles used on the apron. On the other hand, the way in which the relevant ICAO standard 6.1.1.1 had been transposed creates uncertainty as to the need to light a mobile object (other than a vehicle) at an aerodrome.

Therefore, to improve its readability in relation to the relevant AMC which refers to the manoeuvring area, taking into account the need to remove the uncertainty of the existing text, but also building upon the content of AltMoC that have been positively assessed by EASA, the text is amended as follows:

— In the new point (a), the text is amended to align with the relevant ICAO Annex 14 text, and to remove the uncertainty regarding the applicability of the requirement.

— In the new point (b), the change provides clarity to the requirement and the necessary flexibility to temporarily use vehicles, which otherwise would not meet the marking and lighting requirements, under conditions that mitigate the relevant safety risks.

ADR.OPS.C.005 General (RMT.0703)

(a) The aerodrome operator shall establish and implement a maintenance programme, including preventive maintenance where appropriate, to maintain aerodrome facilities, systems and equipment necessary for the operation of the aerodrome ~~so that they comply with the essential requirements set in Annex Va to Regulation (EC) No 216/2008~~ in a condition which does not impair the safety, regularity or efficiency of air navigation. The design and implementation of the maintenance programme shall observe human factor principles.

(b) The aerodrome operator shall ensure that appropriate and adequate means are provided for the effective implementation of the maintenance programme.

Rationale

The existing ADR.OPS.C.005 makes a general reference to the essential requirements of Annex Va to Regulation (EC) No 216/2008, which however does not ensure the alignment with the objectives of Standard 10.1.1 of Annex 14, and furthermore does not include aerodrome systems and equipment in the maintenance programme of the aerodrome. The requirement is therefore proposed to be

amended, considering also the content of the essential requirements of Annex VII to Regulation (EU) 2018/1139. The proposed text ensures also that the maintenance programme follows human factor principles, in accordance with Annex 14 Standard 10.1.2, and that all necessary means are provided for its implementation.

ADR.OPS.C.007 Maintenance of vehicles (RMT.0703)

(a) The aerodrome operator shall establish and implement a maintenance programme, including preventive maintenance, which observes human factor principles and covers:

(1) rescue and firefighting vehicles, to ensure effectiveness of the vehicles and their equipment and compliance with the specified response time throughout the life of the vehicle; and

(2) other vehicles operating on the movement area or other operational areas.

(b) The aerodrome operator shall:

(1) establish procedures to support the implementation of the maintenance programme;

(2) ensure that appropriate and adequate means and facilities are provided for its effective implementation; and

(3) keep maintenance records for each vehicle.

(c) The aerodrome operator shall ensure that organisations operating or providing services at the aerodrome maintain their vehicles operating on the movement area or other operational areas, in accordance with an established maintenance programme, including preventive maintenance.

(d) The aerodrome operator shall ensure that unserviceable vehicles are not used for operations.

Rationale

The existing ADR.OPS.C.005 does not require the maintenance of vehicles used at an aerodrome, although a part of the related AMC1 ADR.OPS.C.005 is referring to the maintenance of vehicles, but in a rather general manner, and without taking into account the relevant Recommendation (9.2.33) of Annex 14 related to the maintenance of RFFS vehicles.

Given the obvious need to ensure that only properly maintained vehicles are allowed to operate within an aerodrome, in order to avoid occurrences that may be the result of inadequately maintained vehicles, the proposed new requirement addresses specifically the case of maintenance of vehicles, as follows:

— point (a)(1) requires a maintenance programme to be implemented for the RFFS vehicles as per Annex 14 Recommendation 9.2.33, and point (a)(2) requires a maintenance programme to be implemented for the other vehicles used for aerodrome operations purposes;

— point (b) requires the establishment of relevant procedures, the provision of adequate means for the implementation of the maintenance programme by the aerodrome operator as well as storage of relevant records, in order to ensure the safety and regularity of operations;

— point (c) requires that the aerodrome operator ensures that other organisations operating or providing services at the aerodrome maintain their own vehicles in accordance with a

maintenance programme. This is also linked with the need to ensure that such vehicles remain serviceable, and therefore may continue to be authorised to operate at the aerodrome, as per the draft ADR.OPS.B.026 (Authorisation of vehicles); and

— point (d) requires that unserviceable vehicles are removed from operations.

ADR.OPS.C.010 Pavements, other ground surfaces and drainage (RMT.0704)

(a) The aerodrome operator shall inspect the surfaces of all movement areas including pavements (runways, taxiways and aprons), adjacent areas and drainage to regularly assess their condition as part of an aerodrome preventive and corrective maintenance programme.

(b) The aerodrome operator shall:

(1) maintain the surfaces of all movement areas with the objective of avoiding and eliminating any ~~loose object/debris~~ FOD that might cause damage to aircraft or impair the operation of aircraft systems;

(2) maintain the surface of runways, taxiways and aprons in order to prevent the formation of harmful irregularities;

(3) maintain the runway in a condition so as to provide surface friction characteristics at or above the minimum friction level;

(4) periodically measure and document the runway surface friction characteristics for maintenance purposes. The frequency of these measurements shall be sufficient to determine the trend of the surface friction characteristics of the runway;

(5) remove from the surface of runways in use as rapidly and completely as possible mud, dust, sand, oil, rubber deposits and other contaminants, to minimise accumulation; and

(~~5~~6) take corrective maintenance action to prevent ~~when~~ the runway surface friction characteristics for either the entire runway or a portion thereof~~, when uncontaminated,~~ from falling ~~are~~ below ~~a~~ the minimum friction level. ~~The frequency of these measurements shall be sufficient to determine the trend of the surface friction characteristics of the runway.~~

Rationale

The rule has been updated in order to reflect better ICAO Annex 14 provisions. More specifically:

— Point (b)(1) is revised to align with Standard 10.2.1 of ICAO Annex 14, with respect to FOD;

— Point (b)(3) transposes Standard 10.2.3 of ICAO Annex 14;

— Point (b)(4) transposes Standard 10.2.4 of ICAO Annex 14;

— Point (b)(5) transposes Standard 10.3.1 of ICAO Annex 14; and

— Point (b)(6) has been re-drafted to better reflect Standard 10.2.5 of ICAO Annex 14.

ADR.OPS.C.015 Visual aids and electrical systems (RMT.0703)

~~The aerodrome operator shall establish and ensure the implementation of a system of corrective and preventive maintenance of visual aids and electrical systems to ensure lighting and marking system availability, reliability and compliance.~~

(a) The aerodrome operator shall establish and implement a preventive and corrective maintenance programme to ensure the serviceability of the electrical systems and the availability of power supply to all necessary facilities of the aerodrome, in a manner that ensures the safety, regularity and efficiency of operations.

(b) The aerodrome operator shall establish and implement a preventive and corrective maintenance programme to ensure the serviceability of the individual lights and the reliability of the lighting systems of the aerodrome, in a manner that ensures continuity of guidance to, and control of aircraft and vehicles, as follows:

(1) For a precision approach runway Category II or III, the system of preventive maintenance shall have as its objective that, during any period of Category II or III operations, all approach and runway lights are serviceable and that, in any event:

(i) at least:

(A) 95 % of the lights are serviceable in each of the following elements:

(a) precision approach Category II and III lighting system, the inner 450 m;

(b) runway centre line lights;

(c) runway threshold lights; and

(d) runway edge lights.

(B) 90 % of the lights are serviceable in the touchdown zone lights;

(C) 85 % of the lights are serviceable in the approach lighting system beyond 450 m; and

(D) 75 % of the lights are serviceable in the runway end lights;

(ii) the allowable percentage of unserviceable lights shall not be permitted in such a way as to alter the basic pattern of the lighting system; and

(iii) an unserviceable light shall not be permitted adjacent to another unserviceable light, except in a barrette or a crossbar where two adjacent unserviceable lights may be permitted.

(2) For a stop bar provided at a runway-holding position used in conjunction with a runway intended for operations in runway visual range conditions less than a value of 550 m, the system of preventive maintenance shall have the following objectives:

(i) no more than two lights shall remain unserviceable; and

(ii) two adjacent lights shall not remain unserviceable unless the light spacing is significantly less than that required.

(3) For a taxiway intended for use in runway visual range conditions less than a value of 550 m, the system of preventive maintenance shall have as its objective that no two adjacent taxiway centre line lights be unserviceable.

(4) For a precision approach runway Category I, the system of preventive maintenance employed shall have as its objective that, during any period of Category I operations, all approach and runway lights are serviceable and that, in any event:

(i) at least 85 % of the lights are serviceable in each of the following:

(A) precision approach Category I lighting system;

(B) runway threshold lights;

(C) runway edge lights; and

(D) runway end lights; and

(ii) an unserviceable light shall not be permitted adjacent to another unserviceable light unless the light spacing is significantly less than that required.

(5) For a runway meant for take-off in runway visual range conditions less than a value of 550 m, the system of preventive maintenance shall have as its objective that, during any period of operations, all runway lights are serviceable, and that, in any event:

(i) at least

(A) 95 % of the lights are serviceable in the runway centre line lights (where provided) and in the runway edge lights; and

(B) 75 % of the lights are serviceable in the runway end lights; and

(ii) an unserviceable light shall not be permitted adjacent to another unserviceable light.

(6) For a runway meant for take-off in runway visual range conditions of a value of 550 m or greater, the system of preventive maintenance shall have as its objective that, during any period of operations, all runway lights are serviceable, and that, in any event:

(i) at least 85 % of the lights are serviceable in the runway edge lights and runway end lights; and

(ii) an unserviceable light shall not be permitted adjacent to another unserviceable light.

(7) For a runway equipped with visual approach slope indicator systems, the system of preventive maintenance shall have as its objective that, during any period of operations, all units are serviceable. A unit shall be considered unserviceable:

(i) if more than one light is unserviceable and the unit consists of three or more lights; or

(ii) at least one light is unserviceable and the unit consists of less than three lights.

(c) For the purposes of (b), a light shall be deemed to be unserviceable if:

(1) the main beam average intensity is less than 50 % of the value specified in the certification specifications issued by the Agency. For light units where the designed main beam average intensity is above the value specified in the certification

specifications issued by the Agency, the 50 % value shall be related to that design value; and

(2) for a visual approach slope indicator system, a light of any unit shall additionally be deemed to be unserviceable if the red filter associated with the light(s) is missing, damaged, or does not produce the correct colour light beam.

(d) The aerodrome operator shall establish and implement a preventive and corrective maintenance programme to ensure the serviceability and reliability of the system of markings and signs of the aerodrome, in a manner that ensures continuity of guidance to, and control of aircraft and vehicles.

(e) The aerodrome operator shall ensure that when low-visibility procedures are in effect at the aerodrome, construction or maintenance activities do not take place in the proximity of aerodrome electrical systems.

(f) The aerodrome operator shall ensure that:

(1) the preventive maintenance programmes of (a), (b) and (d) include appropriate inspections and checks of the individual elements of each system, and of the system itself, which are conducted in accordance with established procedures, and at defined intervals, appropriate to the intended operation and system; and

(2) appropriate corrective actions are taken to rectify any identified defects.

(g) The aerodrome operator shall maintain records of the relevant maintenance activities.

Rationale

The current content of ADR.OPS.C.015 is replaced for reasons mainly related to completeness and readability as follows:

The proposed point (a), which is dedicated to the maintenance of the electrical systems, now specifically addresses the need to maintain the power supply systems (especially the secondary power) of the aerodrome.

The proposed point (b) consists of the content of CS ADR-DSN.S.895, while point (b)(7) covers the significant case of the serviceability of the visual approach indictor systems, which is not addressed in Annex 14 itself, as it is only covered in ICAO Doc 9137 (Part 8). The transfer of the content of CS ADR-DSN.S.895 is justified by their operational (and not design) nature, and the need to have all maintenance provisions in a single place, to ensure completeness and serve the end users. Because of this transfer, CS ADR-DSN.S.895 is proposed to be deleted (see next Section on draft certification specifications).

The proposed point (c)(1) is based on point (a) of the existing AMC1 ADR.OPS.C.015, which had transposed Annex 14 Standard 10.4.1, while the content of point (c)(2) is based on the need to also address the particular case of unserviceable visual approach indicator systems.

The proposed point (d) addresses the case of the maintenance of the aerodrome markings and signs. The latter are not covered currently by ADR.OPS.C.015.

The proposed point (e) transposes Annex 14 Recommendation 10.4.13 addressing the need to restrict activities around electrical systems when low-visibility procedures are in effect.

The proposed point (f) introduces a general requirement for the conduct of checks and inspections in the context of the preventive maintenance for the lighting, sign and marking systems. It also includes a requirement for the aerodrome operator to take corrective action whenever needed, as part of the relevant maintenance programme.

Finally, the proposed point (g) introduces a requirement for the keeping of relevant maintenance records.

3.2. Draft certification specifications (Draft EASA decision)

CS ADR-DSN.A.002 Definitions (RMT.0704)

[...]

'Frangible object' means an object of low mass designed to break, distort or yield on impact so as to present the minimum hazard to aircraft.

'Frost' means ice crystals formed from airborne moisture on a surface whose temperature is below freezing; frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.

Note 1: 'below freezing' refers to air temperature equal or less than the freezing point of water (0 degree Celsius).

Note 2: under certain conditions, frost can cause the surface to become very slippery and it is then reported appropriately as reduced 'braking action'.

[...]

'Hot spot' means a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

'Ice' means water that has frozen or compacted snow that has transitioned into ice in cold and dry conditions.

[...]

'Slush' means snow that is so water-saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully ~~snow which with a heel-and-toe slap-down motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8~~.

'Snow' (on the ground):

— 'Dry snow' means snow from which a snowball cannot readily be made ~~can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.~~

— 'Wet snow' means snow that contains enough water to be able to make a well-compacted, solid snowball, but water will not squeeze out ~~which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.~~

— 'Compacted snow' means snow ~~which~~ that has been ~~compressed~~ compacted into a solid mass such that aeroplane tyres, at operating pressures and loadings, will run on the surface without

significant further compaction or rutting of the surface ~~resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over~~.

'Standing water' means water of depth greater than 3 mm.

Note: running water of depth greater than 3 mm is reported as 'standing water' by convention.

[...]

'Visual approach slope indicator system' means a system of lights arranged to provide visual descent guidance information during the approach to a runway.

'Wet ice' means ice with water on top of it or ice that is melting.

Note: freezing precipitation can lead to runway conditions associated with wet ice from an aeroplane performance point of view. Wet ice can cause the surface to become very slippery. It is then reported appropriately as 'reduced braking action'.

Rationale

Definitions have been revised for consistency purposes in accordance with ICAO Annex 14 Amendment 13-B.

CS ADR-DSN.B.165 Objects on runway strips (RMT.0703)

[...]

(b) No fixed object, other than visual aids required for air navigation or those required for aircraft safety purposes and which must be sited on the runway strip, and satisfying the relevant frangibility requirement in Chapter T, should be permitted on a runway strip:

(1) within 77.5 m of the runway centre line of a precision approach runway Category I, II or III where the code number is 4 and the code letter is F; or

(2) within 60 m of the runway centre line of a precision approach runway Category I, II or III where the code number is 3 or 4; or

(3) within 45 m of the runway centre line of a precision approach runway Category I where the code number is 1 or 2.

~~No mobile object should be permitted on this part of the runway strip during the use of the runway for landing or take-off.~~

Rationale

The last sentence of CS ADR-DSN.B.165 (Objects on runway strips) is deleted because the presence of a mobile object (e.g. a vehicle) is not a matter of aerodrome design. Therefore, its content is reworded and transferred to the proposed ADR.OPS.B.027 which deals with the operation of vehicles. A new AMC1 ADR.OPS.B.027(b)(8) (Operation of vehicles) is developed to support the implementation of the new implementing rule. The new AMC takes into account the content of paragraph 7.6.3.2.2.2 of PANS-ATM.

CS ADR-DSN.M.630 Precision approach Category I lighting system (RMT.0703)

[…]

(2) Where the serviceability level of the approach lights specified as a maintenance objective in ~~CS ADR-DSN.S.895~~ ADR.OPS.C.015 can be demonstrated, each centre line light position should consist of either:

(i) a single light source; or

(ii) a barrette.

When barrettes are composed of lights approximating to point sources, the lights should be uniformly spaced at intervals of not more than 1.5 m. The barrettes should be at least 4 m in length.

[…]

CS ADR-DSN.M.635 Precision approach Category II and III lighting system (RMT.0703)

(a) Location and composition:

(1) The approach lighting system should consist of a row of lights on the extended centre line of the runway, extending wherever possible, over a distance of 900 m from the runway threshold. In addition, the system should have two side rows of lights, extending 270 m from the threshold, and two crossbars, one at 150 m and one at 300 m from the threshold, all as shown in Figure M-3A. Where the serviceability level of the approach lights specified as maintenance objectives in ~~CS ADR-DSN.S.895~~ ADR.OPS.C.015 can be demonstrated, the system may have two side rows of lights extending 240 m from the threshold, and two crossbars, one at 150 m, and one at 300 m from the threshold, all as shown in Figure M-3B.

[…]

(b) Characteristics

(1) The centre line of a precision approach Category II and III lighting system for the first 300 m from the threshold should consist of barrettes showing variable white, except that where the threshold is displaced 300 m or more, the centre line may consist of single light sources showing variable white. Where the serviceability level of the approach lights specified in ~~CS ADR-DSN.S.895~~ ADR.OPS.C.015 can be demonstrated, the centre line of a precision approach Category II and III lighting system for the first 300 m from the threshold may consist of:

[…]

(3) Where the serviceability level of the approach lights in ~~CS ADR-DSN.S.895~~ ADR.OPS.C.015 as maintenance objectives can be demonstrated beyond 300 m from the threshold, each centre line light position may consist of either:

[…]

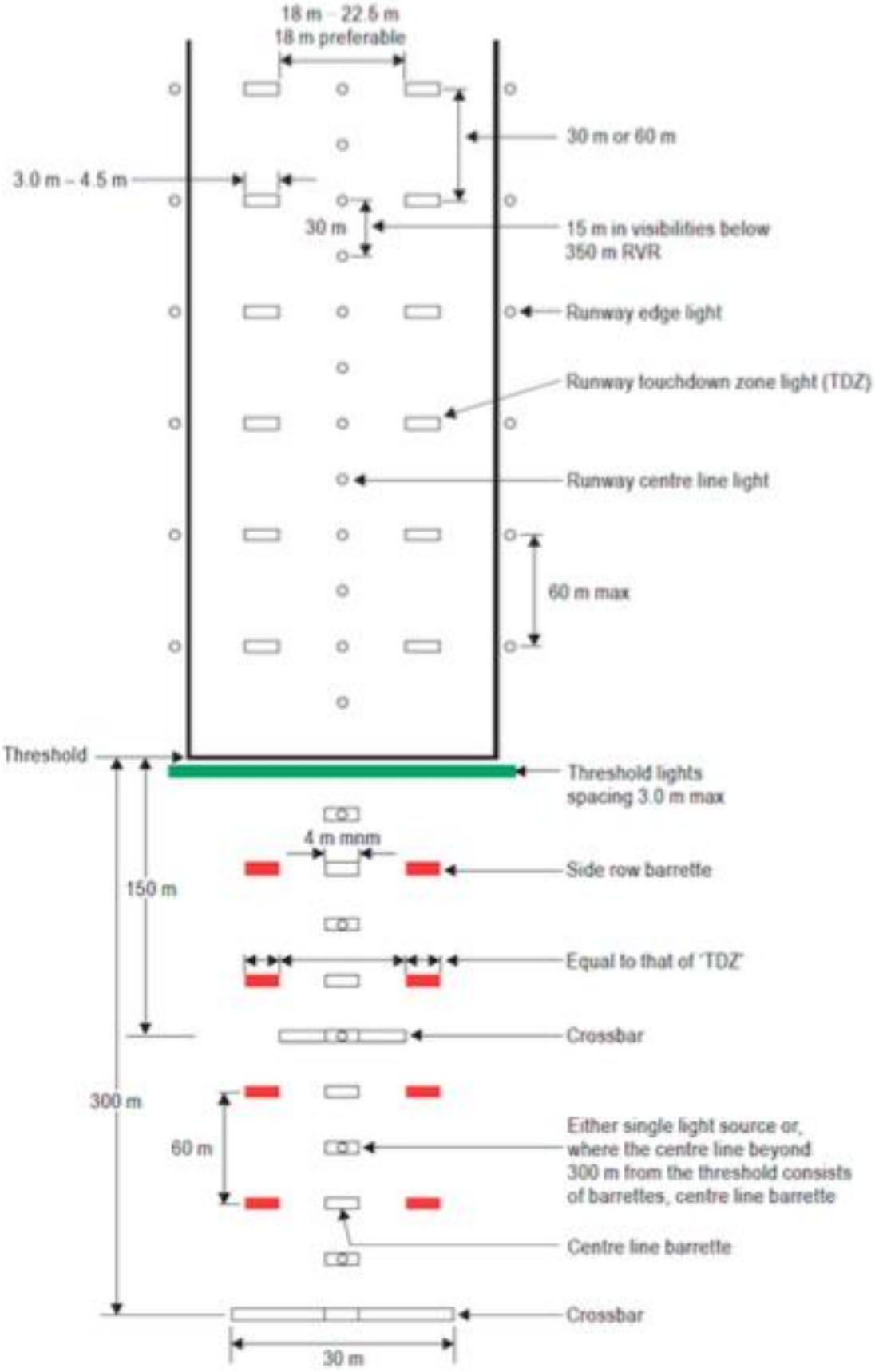


Figure M-3B. Inner 300 m approach and runway lighting for precision approach runways, Categories II and III, where the serviceability levels of the lights specified as maintenance objectives in ~~CS ADR-DSN.S.895~~ ADR.OPS.C.015(b)(1) can be demonstrated.

[…]

CS ADR-DSN.M.690 Runway centre line lights (RMT.0703)

[…]

(a) Location: Runway centre line lights should be located along the centre line of the runway, except that the lights may be uniformly offset to the same side of the runway centre line by not more than 60 cm where it is not practicable to locate them along the centre line. The lights should be located from the threshold to the end at longitudinal spacing of approximately 15 m. Where the serviceability level of the runway centre line lights specified as maintenance objectives in ~~CS ADR.DSN.S.895~~ ADR.OPS.C.015(b)(1) can be demonstrated, and the runway is intended for use in runway visual range conditions of 350 m or greater, the longitudinal spacing may be approximately 30 m.

[…]

CS ADR-DSN.M.705 Stopway lights (RMT.0703)

(a) Applicability: Stopway lights should be provided for a stopway intended for use at night, or in runway visual range conditions less than a value of 800 m.

[…]

Runway	Lighting aids requiring power	Maximum switch-over time
Non-instrument	Visual approach slope indicators[a] Runway edge[b] Runway threshold[b] Runway end[b] Obstacle[a] Stopway end Stopway edge	See CS ADR-DSN.S.875(d) and CS ADR-DSN.S.880(d)
Non-precision approach	Approach lighting system Visual approach slope indicators[a, d] Runway edge[d] Runway threshold[d] Runway end[d] Obstacle[a] Stopway end Stopway edge	15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds
Precision approach Category I	Approach lighting system Runway edge[d] Visual approach slope indicators[a, d] Runway threshold[d] Runway end Essential taxiway[a] Obstacle[a] Stopway end Stopway edge	15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds
Precision approach Category II/III	Inner 300 m of the approach lighting system Other parts of the approach lighting system Obstacle[a] Runway edge Runway threshold Runway end Runway centre line Runway touchdown zone Runway guard lights All stop bars Essential taxiway Stopway end Stopway edge	1 second 15 seconds 15 seconds 15 seconds 1 second 1 second 1 second 1 second 15 seconds 1 second 15 seconds 1 second 15 seconds
Runway meant for take-off in runway visual range conditions less than a value of 800 m	Runway edge Runway end Runway centre line All stop bars Essential taxiway[a] Obstacle[a] Stopway end	15 seconds[c] 1 second 1 second 1 second 15 seconds 15 seconds 1 second

	Stopway edge	15 seconds
a. Supplied with secondary power when their operation is essential to the safety of flight operation. b. The use of emergency lighting should be in accordance with any procedures established. c. One second where no runway centre line lights are provided. d. One second where approaches are over hazardous or precipitous terrain.		

Table S-1. Secondary power supply requirements (see CS ADR-DSN.S.875(d))

Rationale

The existing aerodrome design specifications, which are based on Annex 14 provisions, prescribe the lights that need to be provided where a stopway is present. The installation of such lights is limited to the cases where night operations take place. This creates an inconsistency between the relevant visual cues, as stopway edge lights are in fact a continuation of the runway edge lights, whereas the latter are meant to be provided under different visual conditions. This inconsistency applies also to the stopway end lights.

Apart from this inconsistency, the current situation does not take into account that stopway lights are also necessary for aircraft operations in reduced- and low-visibility conditions. This is because in case of a high-speed rejected take-off, the aircraft may enter the stopway, and thus the stopway lights would improve the flight crews' situational awareness and help them react accordingly.

Moreover, the existing specifications addressing the provision of secondary power supply do not foresee the provision of secondary power supply for stopway edge / end lights, even though they address the case of runway end and runway edge lights.

The intent of the proposed specifications is therefore to remove the existing inconsistencies, and provide an additional safety barrier for such operations.

~~CS ADR-DSN.Q.850 Lighting of other objects~~ (RMT.0703)

~~(a) Low-intensity obstacle lights, Type C, should be displayed on vehicles and other mobile objects excluding aircraft.~~

~~(b) Low-intensity obstacle lights, Type C, displayed on vehicles associated with emergency or security should be flashing-blue and those displayed on other vehicles should be flashing-yellow.~~

~~(c) Low-intensity obstacle lights, Type D, should be displayed on follow-me vehicles.~~

~~(d) Low-intensity obstacle lights on objects with limited mobility such as aerobridges should be fixed-red, and, as a minimum, be in accordance with the specifications for low-intensity obstacle lights, Type A, in Table Q-1 of CS- ADR-DSN.Q.852. The intensity of the lights should be sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general levels of illumination against which they would normally be viewed.~~

CS ADR-DSN.Q.850 (RMT.0703)

Intentionally left blank

~~**GM1 ADR-DSN.Q.850 Lighting of other objects** ~~**(RMT.0703)**

Intentionally left blank

Rationale

CS ADR-DSN.Q.850 (Lighting of other objects) is deleted and its content is transferred to the proposed AMC to ADR.OPS.B.080, to avoid unnecessary cross-references, but also due to the fact that the content of this CS relates to non-aerodrome design items (vehicles and mobile objects). The numbering of the certification specifications remains the same.

CS ADR-DSN.R.855 Closed runways and taxiways, or parts thereof (RMT.0703)

(a) Applicability:

A closed marking should be displayed on a runway, or taxiway, or portion thereof which is permanently closed to the use of all aircraft.

(b) Location of closed markings: On a runway, a closed marking should be placed at each end of the runway, or portion thereof, declared closed, and additional markings should be so placed that the maximum interval between markings does not exceed 300 m. On a taxiway a closed marking should be placed at least at each end of the taxiway or portion thereof closed.

(c) Characteristics of closed markings: The closed marking should be of the form and proportions as detailed in Figure R-1, Illustration (a), when displayed on a runway, and should be of the form and proportions as detailed in Figure R-1, Illustration (b), when displayed on a taxiway. The marking should be white when displayed on a runway and should be yellow when displayed on a taxiway.

(d) When a runway, or taxiway, or portion thereof is permanently closed, all normal runway and taxiway markings should be ~~obliterated~~ physically removed.

[...]

GM1 ADR-DSN.R.855 Closed runway and taxiways, or parts thereof (RMT.0703)

~~Intentionally left blank~~

Information regarding the physical removal of runway and taxiway markings is contained in AMC2 ADR.OPS.C.010 and GM4 ADR.OPS.C.010(b)(2).

Rationale

The above-mentioned change to CS ADR-DSN.R.855 is made to ensure that markings are physically removed to prevent flight crew and ground personnel confusion. The proposed GM now refers to the proposed AMC and GM where the methods for such marking removal are further analysed.

CS ADR-DSN.S.890 Monitoring (RMT.0703)

[…]

(d) For a runway meant for use in runway visual range conditions less than a value of 550 m, the lighting systems detailed in Table S-1 should be monitored automatically so as to provide an indication when the serviceability level of any element falls below a minimum serviceability level specified in ~~CS ADR-DSN.S.895(c) to (g)~~ ADR.OPS.C.015(b)(1) to (b)(5). This information should be automatically relayed to the maintenance crew.

[…]

~~**CS ADR-DSN.S.895 Serviceability levels**~~ **(RMT.0703)**

~~(a) A light should be deemed to be unserviceable when the main beam average intensity is less than 50 % of the value specified in the appropriate Figure in CS ADR-DSN.U.940. For light units where the designed main beam average intensity is above the value shown in CS ADR-DSN.U.940, the 50 % value should be related to that design value.~~

~~(b) A system of preventive maintenance of visual aids should be employed to ensure lighting and marking system reliability.~~

~~(c) The system of preventive maintenance employed for a precision approach runway Category II or III should have as its objective that, during any period of Category II or III operations, all approach and runway lights are serviceable and that, in any event, at least:~~

~~(1) 95 % of the lights are serviceable in each of the following particular significant elements:~~

~~(i) precision approach Category II and III lighting system, the inner 450 m;~~

~~(ii) runway centre line lights;~~

~~(iii) runway threshold lights; and~~

~~(iv) runway edge lights.~~

~~(2) 90 % of the lights are serviceable in the touchdown zone lights;~~

~~(3) 85 % of the lights are serviceable in the approach lighting system beyond 450 m; and~~

~~(4) 75 % of the lights are serviceable in the runway end lights.~~

~~(5) In order to provide continuity of guidance, the allowable percentage of unserviceable lights should not be permitted in such a way as to alter the basic pattern of the lighting system.~~

~~(6) Additionally, an unserviceable light should not be permitted adjacent to another unserviceable light, except in a barrette or a crossbar where two adjacent unserviceable lights may be permitted.~~

~~(d) The system of preventive maintenance employed for a stop bar provided at a runway-holding position used in conjunction with a runway intended for operations in runway visual range conditions less than a value of 550 m should have the following objectives:~~

~~(1) no more than two lights should remain unserviceable; and~~

(2) two adjacent lights should not remain unserviceable unless the light spacing is significantly less than that specified.

(e) The system of preventive maintenance employed for a taxiway intended for use in runway visual range conditions less than a value of 550 m should have as its objective that no two adjacent taxiway centre line lights be unserviceable.

(f) The system of preventive maintenance employed for a precision approach runway Category I should have as its objective that, during any period of Category I operations, all approach and runway lights are serviceable and that, in any event, at least 85 % of the lights are serviceable in each of the following:

(1) precision approach Category I lighting system;

(2) runway threshold lights;

(3) runway edge lights; and

(4) runway end lights.

In order to provide continuity of guidance an unserviceable light should not be permitted adjacent to another unserviceable light unless the light spacing is significantly less than that specified.

(g) The system of preventive maintenance employed for a runway meant for take-off in runway visual range conditions less than a value of 550 m should have as its objective that, during any period of operations, all runway lights are serviceable, and that in any event:

(1) at least 95 % of the lights are serviceable in the runway centre line lights (where provided) and in the runway edge lights; and;

(2) at least 75 % of the lights are serviceable in the runway end lights.

In order to provide continuity of guidance, an unserviceable light should not be permitted adjacent to another unserviceable light.

(h) The system of preventive maintenance employed for a runway meant for take-off in runway visual range conditions of a value of 550 m or greater should have as its objective that, during any period of operations, all runway lights are serviceable, and that, in any event, at least 85 % of the lights are serviceable in the runway edge lights and runway end lights. In order to provide continuity of guidance, an unserviceable light should not be permitted adjacent to another unserviceable light.

Light type	CAT II/III Approach	CAT I Approach	RVR<550m take-off	RVR>550m take-off
Approach inner 450 m	95 %	85 %	-	-
Approach outer 450 m	85 %	85 %	-	-
Runway threshold	95 %	85 %	-	-
Runway centre line	95 %	85 %	95 %	85 %
Runway edge	95 %	85 %	95 %	85 %

~~Runway end~~	~~75 %~~	~~85 %~~	~~75 %~~	~~85 %~~
~~Touchdown zone~~	~~90 %~~	~~(85 %)[a]~~	~~-~~	~~-~~
~~*Note (a): If touchdown zone lights are available.*~~				

~~Table S-2. Allowable percentages of serviceable lights~~

CS ADR-DSN.S.895 (RMT.0703)

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Rationale

CS ADR-DSN.S.895 (Serviceability levels) does not relate to aerodrome design but to operational activities (maintenance), while its point (a) partially overlaps with the content of AMC1 ADR.OPS.C.015, creating a practical issue and impact on readability. Therefore, CS ADR-DSN.S.895 is deleted and its content is transferred to the amended ADR.OPS.C.015 (Visual aids and electrical systems) and in particular point (b), which deals exclusively with the maintenance of the lighting systems. Table S-2 is transferred to the new GM1 ADR.OPS.C.015(b). Subsequently, all references to CS ADR-DSN.S.895 in various CSs mentioned above are updated.

~~**GM1 ADR-DSN.S.895 Serviceability levels**~~ **(RMT.0703)**

~~(a) (Serviceability levels are intended to define the maintenance performance level objectives.~~

~~(b) Guidance on preventive maintenance of visual aids is given in the, ICAO Doc 9137, Airport Services Manual, Part 9, Airport Maintenance Practices.~~

~~(c) With respect to barrettes, crossbars and runway edge lights, lights are considered to be adjacent if located consecutively and:~~

~~(1) laterally: in the same barrette or crossbar; or~~

~~(2) longitudinally: in the same row of edge lights or barrettes.~~

~~(d) In barrettes and crossbars, guidance is not lost by having two adjacent unserviceable lights.~~

GM1 ADR-DSN.S.895 (RMT.0703)

Intentionally left bank

Rationale

Due to the deletion of CS ADR-DSN.S.895 (Serviceability levels), the related GM is also deleted and their content is transferred to the new GM1 ADR.OPS.C.015(b) (Visual aids and electrical systems), which deals with the maintenance of the visual aids.

3.3. Draft acceptable means of compliance and guidance material (Draft EASA decision)

Draft changes to ED Decision 2014/012/R

GM to Annex I (Definitions) to Regulation (EU) No 139/2014

ACCEPTABLE MEANS OF COMPLIANCE AND GUIDANCE MATERIAL TO DEFINITIONS

GM1 38b Runway condition code (RMT.0704)

The purpose of the runway condition code (RWYCC) is to permit an operational aeroplane performance calculation by the flight crew.

GM1 38e Runway surface conditions (RMT.0704)

The runway surface conditions used in the runway condition report (RCR) establish the performance requirements among the aerodrome operator, the aeroplane manufacturer and the aeroplane operator.

Aircraft de-icing chemicals and other contaminants are also reported but are not included in the list of runway surface condition descriptors because their effect on the runway surface friction characteristics and the RWYCC cannot be evaluated in a standardised manner.

GM1 38f Runway surface condition descriptors (RMT.0704)

The descriptors under (a) to (h) are used solely in the context of the RCR and are not intended to supersede or replace any existing World Meteorological Organization (WMO) definitions.

GM1 38f (c) Runway surface condition descriptors (RMT.0704)

Freezing refers to the freezing point of water (0 degree Celsius).

Under certain conditions, frost can cause the surface to become very slippery and it is then reported appropriately as ‘reduced braking action’.

GM1 38f (f) Runway surface condition descriptors (RMT.0704)

Running water of depth greater than 3 mm is reported as ‘standing water’ by convention.

GM1 38f (g) Runway surface condition descriptors (RMT.0704)

Freezing precipitation can lead to runway conditions associated with wet ice from an aeroplane performance point of view. Wet ice can cause the surface to become very slippery. It is then reported appropriately as ‘reduced braking action’.

GM1 41a Slippery wet runway (RMT.0704)

A portion of runway in the order of 100 m long may be considered significant.

GM2 41a Slippery wet runway (RMT.0704)

The surface friction characteristics of the runway are considered degraded when friction values are below the minimum friction level.

GM1 41b Specially prepared winter runway (RMT.0704)

'Frozen sand' is a method to improve the surface friction characteristics of an ice-covered surface by sand or grit fixed to the surface through a melting/freezing process. Frozen sand can be achieved using several techniques. One example is pre-wetting the material with hot water just prior to application in order to have the hot sand melting the top layer of the ice, which then immediately refreezes to fix the material to the surface. Another technique is to pre-wet the material by a suitable chemical in order to achieve a similar effect.

Rationale

The GM to these newly introduced definitions is in line with notes from Annex 14 Amendment 13-B. In Annex 14, these notes provide factual information or references bearing on the SARPs in question, but not constituting part of the SARPs themselves. For this reason, all these notes have been transposed as guidance material.

AMC & GM to Annex II (Part-ADR.AR) to Regulation (EU) No 139/2014

AMC1 ADR.AR.C.010 Oversight programme (RMT.0703)

PROCEDURES FOR OVERSIGHT OF AERODROME OPERATORS AND PROVIDERS OF APRON MANAGEMENT SERVICES

[…]

(b) Inspections, audits, and oversight procedures, on a scale and frequency appropriate to the operation, should include, but not be limited to, items from the following list:

[…]

(16) runway excursion and incursion prevention programmes of the aerodrome operator, as part of the Competent Authority's runway safety programme, including the work programme and effective functioning of the aerodrome's local runway safety team;

(17) FOD control programme of the aerodrome operator;

(~~17~~18) inspections of the movement area;

(~~18~~19) maintenance of the aerodrome systems and the movement area;

(~~19~~20) aerodrome works;

(~~20~~21) protection against hazardous activities in the aerodrome surroundings;

(~~21~~22) personnel training and records, including review of training programme on runway excursion and incursion prevention, as well as the drivers training programmes, and ~~its~~ their implementation;

(~~22~~23) aerodrome manuals and documentation;

(~~23~~24) operator's management system, including its safety management system and its quality, and security management system for aeronautical data; and

(~~24~~25) operator's oversight of the compliance of the organisations operating, or providing services at the aerodrome (third parties).

[…]

Rationale

This change to the AMC is made to address the need for the Competent Authority to also focus on the proper functioning of the local runway safety team of each aerodrome, as well as to specifically cover the FOD control programme of an aerodrome, and the drivers training programmes as part of its oversight activities.

GM1 ADR.AR.C.035(e) Issuance of Certificate (RMT.0704)

MODEL FOR THE TERMS OF THE CERTIFICATE TO BE ATTACHED TO THE CERTIFICATES

TERMS OF THE CERTIFICATE	
Certificate reference: [STATE CODE][1]:	
Aerodrome name — ICAO location indicator [2]:	
Conditions to operate[3]:	
Operations on specially prepared winter runways[4]	
Runway — declared distances[~~4~~5]:	
Types of approaches[~~5~~6]:	
Aerodrome reference code[~~6~~7]:	
Scope of aircraft operations with a higher aerodrome reference code letter[~~7~~8]:	
Provision of apron management services[~~8~~9]:	
Rescue and firefighting level of protection[~~9~~10]:	
Other[~~10~~11]	

1 The certificate must be given the State Code [The two-letter ISO code should be used (ISO 3166 alpha-2), except for Greece and the United Kingdom, for which the abbreviations EL and UK are recommended] and a unique ascending number. Example: EL – 001

2 To be specified: the official name of the aerodrome and the ICAO location indicator for the aerodrome.

3 To be specified: day/ night and IFR/ VFR.

4 To be specified: (yes/no). See ADR.OPS.B.036.

~~4~~5 To be specified: ASDA, LDA, TODA, TORA in metres for each direction of each runway, including intersection take-off if applicable.

~~5~~6 To be specified: approval of the runway for non-instrument, instrument, non-precision approach. In case of precision approach (-es) it is to be indicated, which of the following precision approach (-es) is (are) approved:

Standard Category I;

Lower than Standard Category I;

Precision Approach Category II;

Other than Standard Category II;

Precision Approach Category III-A;

Precision Approach Category III-B;

Precision Approach Category III-C.

~~6~~7 To be specified: Aerodrome Reference Code (Code number/Code letter).

~~7~~8 To be specified: the approved type of aeroplanes with a higher code letter than indicated in point 7 above.

~~8~~9 To be specified: the name of the service provider, both in case such services are t or are not provided by the aerodrome operator.

~~9~~10 To be specified: the rescue and firefighting level of protection as per Annex IV (Part-ADR.OPS) ~~of~~ to this Regulation.

~~10~~11 To be specified: any other information that the Competent Authority finds necessary to include.

Rationale

The model for the terms of the certificate is revised, in order to include the approval for aeroplane operations on specially prepared winter runways.

AMC & GM to Annex III (Part-ADR.OR) to Regulation (EU) No 139/2014

GM1 ADR.OR.B.040(a);(b) Changes (RMT.0703 & RMT.0704)

CHANGES REQUIRING PRIOR APPROVAL

The following is a list of items which should be granted prior approval by the Competent Authority, as specified in the applicable Implementing Rules.

(a) Use of alternative means of compliance as required by ADR.OR.A.015 Means of Compliance.

(b) Changes to the management and notification procedure for changes not requiring a prior approval, as required by ADR.OR.B.015(b)(4) Application for a certificate.

(c) Changes to the certification basis, or the terms of the certificate, as required by ADR.OR.B.040(a)(1) Changes.

(d) Changes to safety-critical aerodrome equipment as required by ADR.OR.B.040(a)(1) Changes.

(e) Changes significantly affecting elements of the aerodrome operator's management system as required by ADR.OR.B.040(a)(2) Changes.

(f) Changes to the level of protection of rescue and firefighting services as required by ADR.OPS.B.010(a)(1)(2) Rescue and firefighting services.

(g) Training of drivers conducted by other organisations as required by ADR.OPS.B.025 (d)(1) Authorisation of vehicle drivers.

(h) Implementation of aeroplane operations on specially prepared winter runways as required by ADR.OPS.B.036 Operations on specially prepared winter runways.

(~~g~~ i) Changes to low-visibility procedures as required by ADR.OPS.B.045(b) Low Visibility Operations.

(~~h~~ j) Operation of aircraft with higher code letter as required by ADR.OPS.B.090(a) Use of the aerodrome by higher code letter aircraft.

Moreover, the Competent Authority may require prior approval for changes to any obstacles, developments and other activities within the areas monitored by the aerodrome operator in accordance with ADR.OPS.B.075, which may endanger safety and adversely affect the operation of an aerodrome, as required by ADR.AR.C.005(e).

Rationale

The GM is revised in order to include the approval of aeroplane operations on specially prepared winter runways, as well as the provision of drivers' training by organisations different from the aerodrome operator.

AMC3 ADR.OR.E.005 Aerodrome manual (RMT.0703)

AERODROME MANUAL

[…]

15. Procedures for apron safety management, including:

15.1 protection from jet blasts; LSEP

15.2 enforcement of safety precautions during aircraft refuelling operations; LSEP

15.3 FOD prevention, including apron cleaning/sweeping; ~~and~~ LSEP

15.4 monitoring compliance of personnel on the apron with safety procedures~~.~~; and

15.5 control and protection of passengers on the apron.

16. Procedures for the control and authorisation of vehicles operating on or in the vicinity, or the movement area, including traffic rules, right of way, speed limits, and ~~method~~ procedures for issuing driving authorisations and permits, and enforcement means. LSEP

[…]

29. Procedures and measures for the prevention of fire at the aerodrome.

30. Communication procedures, including:

30.1 frequencies, language and phraseology to be used when communicating with the air traffic services;

30.2 vehicle call signs;

30.3 communication signals to be used in case of radio communication failure;

30.4 communication via the air traffic services provider; and

30.5 dissemination of significant information.

31. Aircraft towing procedures, including:

31.1 lights to be displayed by aircraft;

31.2 routes to be followed;

31.3 communication procedures;

31.4 guidance to be provided; and

31.5 visibility and weather phenomena in which towing may not be permitted.

[…]

Rationale

As a result of other proposed changes, this AMC needs to be amended in order to ensure that the aerodrome manual contains all necessary information.

AMC & GM to Annex IV (Part-ADR.OPS) to Regulation (EU) No 139/2014

GM1 ADR.OPS.A.005 Aerodrome data (RMT.0704)

[…]

CONDITION OF THE MOVEMENT AREA AND RELATED FACILITIES

The condition of the movement area and the operational status of related facilities should be monitored and reported, on matters of operational significance affecting aircraft and aerodrome operations, particularly in respect of the following:

(a) construction or maintenance work;

(b) rough or broken surfaces on a runway, a taxiway or an apron;

~~(c) snow, slush, ice, or frost on a runway, a taxiway or an apron;~~

~~(d) water on a runway, a taxiway or an apron;~~

~~(e) snow banks or drifts adjacent to a runway, a taxiway or an apron;~~

~~(f) anti-icing or de-icing liquid chemicals or other contaminants on a runway, taxiway or apron;~~

(g) other temporary hazards, including parked aircraft;

(h) failure or irregular operation of part or all of the aerodrome visual aids; and

(i) failure of the normal or secondary power supply.

~~Water on a runway~~

~~Whenever water is present on a runway, a description of the runway surface should be made available using the following terms:~~

~~(a) DAMP — the surface shows a change of colour due to moisture;~~

~~(b) WET — the surface is soaked but there is no standing water;~~

~~(c) STANDING WATER — for aeroplane performance purposes, a runway where more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by water more than 3 mm deep.~~

~~Information that a runway or portion thereof maybe slippery when wet, should be made available to the aerodrome users.~~

~~Snow, slush or ice or frost on a runway~~

~~(a) Whenever an operational runway is contaminated by snow, slush, ice or frost, the runway surface condition should be assessed and reported. Runway condition assessment should be repeated as conditions change.~~

~~(b) The contaminant type, distribution, and for loose contaminants, depth for each third of the runway, should be assessed. An indication of surface friction characteristics is helpful in conducting runway condition assessment however caution should be exercised when correlating the results obtained by friction measuring equipment with aircraft performance. Additionally, for contaminants such as slush, wet snow and wet ice, contaminant drag on the equipment's measuring wheel, amongst other factors, may cause readings obtained in these conditions to be unreliable.~~

~~(c) Assessment of the friction of a runway should be made in descriptive terms of 'estimated surface friction'. The estimated surface friction should be categorised as good, medium to good, medium, medium to poor, and poor, and promulgated in SNOWTAM format as well as using appropriate RTF phraseologies.~~

~~(d) The estimated surface friction, based on the measured coefficient, when the runway is covered by compacted snow or ice only, could be reported according to the following table (indicative), although these values may vary due to the friction measuring device as well as to the surface being measured and the speed employed:~~

~~Measured Coefficient (μ)~~	~~Estimated surface friction~~	~~Code~~
~~0.40 and above~~	~~Good~~	~~5~~
~~0.39 to 0.36~~	~~Medium to good~~	~~4~~
~~0.35 to 0.30~~	~~Medium~~	~~3~~
~~0.29 to 0.26~~	~~Medium to poor~~	~~2~~
~~0.25 and below~~	~~Poor~~	~~1~~

~~Table 2~~

~~(e) Assessed surface condition information, including estimated surface friction, should be reported for each third of a runway. The thirds are called A, B and C;~~

~~(1) For the purpose of reporting information to aeronautical service units, Section A should always be the section associated with the lower runway designation number;~~

~~(2) When giving landing information to a pilot before landing, the sections should be referred to as first, second or third part of the runway. The first part should always mean the first third of the runway as seen in the direction of landing;~~

~~(3) Assessments should be made along two lines parallel to the runway, i.e. along a line on each side of the centreline approximately 3 m, or that distance from the centreline at which most operations take place. The objective of the assessment is to determine the type, depth and coverage of the contaminants and its effect on estimated surface friction given the prevailing weather conditions for sections A, B and C;~~

~~(4) In cases where a continuous friction measuring device is used, the mean values are obtained from the friction values recorded for each section;~~

~~(f) Whenever dry snow, wet snow, slush ice or frost is present and reported, the description of the runway surface condition should use the following terms:~~

~~(1) dry snow;~~

~~(2) wet snow;~~

~~(3) compacted snow;~~

~~(4) wet compacted snow;~~

~~(5) slush;~~

~~(6) ice;~~

~~(7) wet ice;~~

~~(8) frost;~~

~~(9) dry snow on ice;~~

~~(10) wet snow on ice;~~

~~(11) chemically treated;~~

~~(12) sanded; and~~

~~should include, where applicable, the assessment of contaminant depth.~~

Rationale

All the text related to runway contamination has been deleted from GM1 ADR.OPS.A.005 and placed at implementing rule level, to ensure uniform application (see also ADR.OPS.A.060). Furthermore, the text in the GM related to the former text in points 6.1 to 6.7 in Attachment A to Annex 14 had to be deleted.

AMC1 ADR.OPS.A.057(a) Origination of NOTAM (RMT.0703)

GENERAL

The procedures should define the way and means that the aerodrome operator may use to request the issuance of a NOTAM, in accordance with the arrangements that the aerodrome operator has with the aeronautical information service (AIS) provider(s).

Moreover, the procedures should specify the cases in which the Competent Authority has to be consulted prior to the origination of the NOTAM, and the way to inform the Competent Authority about the issuance of a NOTAM.

Rationale

This AMC aims at facilitating the compliance with the proposed requirement through the identification of the means and ways that may be used for the origination of a NOTAM, which should be reflected in the arrangements established with the relevant AIS unit. Moreover, in many cases, the content of a NOTAM may need to be coordinated with the Competent Authority, and thus this needs to be reflected in the relevant procedures of the aerodrome operator.

GM1 ADR.OPS.A.057(c) Origination of NOTAM (RMT.0703)

NON-ORIGINATION OF NOTAM

ADR.OPS.A.057(c) requires the origination of a NOTAM in the case prescribed in it. On the other hand, Regulation XXXX foresees in AIS.TR.330 the cases where the AIS provider shall issue (or shall not) issue a NOTAM.

This means that there are cases where although an aerodrome operator may initiate a NOTAM, this will not be finally issued because such information is not allowed to be promulgated by NOTAM.

The following are cases where the aerodrome operator need not originate a NOTAM:

(a) routine maintenance work on aprons and taxiways that does not affect the safe movement of aircraft;

(b) runway marking work when aircraft operations can safely be conducted on other available runways or when the equipment used can be removed, when necessary;

(c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;

(d) partial failure of aerodrome/heliport lighting facilities where such a failure does not directly affect aircraft operations;

(e) partial temporary failure of air-ground communications when suitable alternative frequencies are available and are operative;

(f) lack of apron marshalling services, road traffic closures, limitations and control;

(g) unserviceability of location, destination or other instruction signs on the aerodrome movement area;

(h) training activities performed by ground units;

(i) unavailability of backup and secondary systems if these systems do not have an operational impact;

(j) limitations to aerodrome facilities or general services with no operational impact;

(k) announcements or warnings about possible/potential limitations with no operational impact;

(l) general reminders on already published information;

(m) availability of equipment for ground units, without information on the operational impact on airspace and facility users;

(n) information about laser emissions with no operational impact and about fireworks below the minimum flying heights;

(o) closure of parts of the movement area in connection with locally coordinated, planned work of duration of less than one hour;

(p) closure, changes, unavailability in the operation of aerodrome(s)/heliport(s) other than in the aerodrome(s)/heliport(s) operation hours; and

(q) other non-operational information of a similar temporary nature.

Rationale

This GM provides guidance with regard to cases where the aerodrome operator does not have to originate a NOTAM because this information is not meant to be published by a NOTAM, thus aligning with the content of the draft AIS.TR.330 which is contained in EASA Opinion No 02/2018 regarding requirements for AIS.

GM1 ADR.OPS.A.057(d)(1) Origination of NOTAM (RMT.0703)

NOTAM FORMAT

Information for the completion of a NOTAM format may be found in Chapter 6 of the ICAO Aeronautical Information Services Manual (Doc 8126).

Information on the ICAO NOTAM code and abbreviations to be used may be found in the ICAO Procedures for Air Navigation Services - ICAO Abbreviations and Codes (PANS ABC - Doc 8400).

Rationale

This GM provides information regarding the completion of a NOTAM format, and the use of the NOTAM code and the relevant abbreviations used with regard to NOTAM.

GM1 ADR.OPS.A.057(d)(4) Origination of NOTAM (RMT.0703)

SNOWTAM FORMAT

The way to complete correctly a SNOWTAM format when initiating a SNOWTAM is indicated below.

1. General

(a) When reporting on more than one runway, repeat Items B to H (aeroplane performance calculation section).

(b) The letters used to indicate items are only used for reference purposes and should not be included in the messages. The letters M (mandatory), C (conditional) and O (optional) mark the usage and information and should be included as explained below.

(c) Metric units should be used and the unit of measurement shall not be reported.

(d) The maximum validity of SNOWTAM is 8 hours. A new SNOWTAM should be issued whenever a new RCR is received.

(e) A SNOWTAM cancels the previous SNOWTAM.

(f) The abbreviated heading 'TTAAiiii CCCC MMYYGGgg (BBB)' is included to facilitate the automatic processing of SNOWTAM messages in computer databanks. The explanation of these symbols is:

TT = data designator for SNOWTAM = SW;

AA = geographical designator for Member States, e.g. LF = FRANCE, EG = United Kingdom;

iiii = SNOWTAM serial number in a four-digit group;

CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers;

MMYYGGgg = date/time of observation/measurement, whereby:

MM = month, e.g. January = 01, December = 12;

YY = day of the month;

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = optional group for:

Correction, in the case of an error, to a SNOWTAM message previously disseminated with the same serial number = COR.

Brackets in (BBB) should be used to indicate that this group is optional.

When reporting on more than one runway and individual dates/times of observation/assessment are indicated by repeated Item B, the latest date/time of observation/assessment should be inserted in the abbreviated heading (MMYYGGgg).

(g) The text 'SNOWTAM' in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group should be separated by a space, e.g. SNOWTAM 0124.

(h) For readability purposes for the SNOWTAM message, a linefeed should be included after the SNOWTAM serial number, after Item A, and after the aeroplane performance calculation section.

(i) When reporting on more than one runway, repeat the information in the aeroplane performance calculation section from the date and time of assessment for each runway before the information in the situational awareness section.

(j) Mandatory information is:

(1) AERODROME LOCATION INDICATOR;

(2) DATE AND TIME OF ASSESSMENT;

(3) LOWER RUNWAY DESIGNATOR NUMBER;

(4) RUNWAY CONDITION CODE FOR EACH RUNWAY THIRD; and

(5) CONDITION DESCRIPTION FOR EACH RUNWAY THIRD (when RWYCC is reported 1-5)

2. Aeroplane performance calculation section

Item A — Aerodrome location indicator (four-letter location indicator).

Item B — Date and time of assessment (eight-figure date/time group giving time of observation as month, day, hour and minute in UTC).

Item C — Lower runway designator number (nn[L] or nn[C] or nn[R]).

Only one runway designator should be inserted for each runway and always the lower number.

Item D — RWYCC for each runway third. Only one digit (0, 1, 2, 3, 4, 5 or 6) is inserted for each runway third, separated by an oblique stroke (n/n/n).

Item E — Per cent coverage for each runway third. When provided, insert 25, 50, 75 or 100 for each runway third, separated by an oblique stroke ([n]nn/[n]nn/[n]nn).

This information should be provided only when the runway condition for each runway third (Item D) has been reported as other than 6 and there is a condition description for each runway third (Item G) that has been reported other than 'DRY'.

When the conditions are not reported, this should be signified by the insertion of 'NR' for the appropriate runway third(s).

Item F — Depth of loose contaminant for each runway third. When provided, insert in millimetres for each runway third, separated by an oblique stroke (nn/nn/nn or nnn/nnn/nnn).

This information should only be provided for the following contamination types:

— *standing water, values to be reported 04, then assessed value. Significant changes 3 mm up to and including 15 mm;*

— *slush, values to be reported 03, then assessed value. Significant changes 3 mm up to and including 15 mm;*

— *wet snow, values to be reported 03, then assessed value. Significant changes 5 mm; and*

— *dry snow, values to be reported 03, then assessed value. Significant changes 20 mm.*

— *When the conditions are not reported, this should be signified by the insertion of 'NR' for the appropriate runway third(s).*

Item G — Condition description for each runway third. Any of the following condition descriptions for each runway third, separated by an oblique stroke, should be inserted.

COMPACTED SNOW

DRY SNOW

DRY SNOW ON TOP OF COMPACTED SNOW

DRY SNOW ON TOP OF ICE

FROST

ICE

SLUSH

STANDING WATER

WATER ON TOP OF COMPACTED SNOW

WET

WET ICE

WET SNOW

WET SNOW ON TOP OF COMPACTED SNOW

WET SNOW ON TOP OF ICE

DRY (only reported when there is no contaminant)

When the conditions are not reported, this should be signified by the insertion of 'NR' for the appropriate runway third(s).

Item H — Width of runway to which the RWYCCs apply. The width in metres if less than the published runway width should be inserted.

3. Situational awareness section

Elements in the situational awareness section should end with a full stop.

Elements in the situational awareness section for which no information exists, or where the conditional circumstances for publication are not fulfilled, should be left out completely.

Item I — Reduced runway length. The applicable runway designator and available length in metres should be inserted (e.g. RWY nn [L] or nn [C] or nn [R] REDUCED TO [n]nnn).

This information is conditional when a NOTAM has been published with a new set of declared distances.

Item J — Drifting snow on the runway. When reported, 'DRIFTING SNOW' should be inserted.

Item K — Loose sand on the runway. When loose sand is reported on the runway, the lower runway designator should be inserted with a space 'LOOSE SAND' (RWY nn or RWY nn[L] or nn[C] or nn[R] LOOSE SAND).

Item L — Chemical treatment on the runway. When chemical treatment has been reported applied, the lower runway designator should be inserted with a space 'CHEMICALLY TREATED' (RWY nn or RWY nn[L] or nn[C] or nn[R] CHEMICALLY TREATED).

Item M — Snow banks on the runway. When snow banks are reported present on the runway, the lower runway designator should be inserted with a space 'SNOWBANK' and with a space left 'L' or right 'R' or both sides 'LR', followed by the distance in metres from centre line separated by a space 'FM CL' (RWY nn or RWY nn[L] or nn[C] or nn[R] SNOWBANK Lnn or Rnn or LRnn FM CL).

Item N — Snow banks on a taxiway. When snow banks are present on a taxiway, the taxiway designator should be inserted with a space 'SNOWBANK' and with a space left 'L' or right 'R' or both sides 'LR', followed by the distance in metres from centre line separated by a space FM CL (TWY [nn]n SNOWBANK Lnn or Rnn or LRnn FM CL).

Item O — Snow banks adjacent to the runway. When snow banks are reported present, penetrating the height profile in the aerodrome snow plan, the lower runway designator and 'ADJ SNOWBANKS' should be inserted (RWY nn or RWY nn[L] or nn[C] or nn[R] ADJ SNOWBANKS).

Item P — Taxiway conditions. When taxiway conditions are reported slippery or poor, the taxiway designator followed by a space 'POOR' should be inserted (TWY [n or nn] POOR or ALL TWYS POOR).

Item R — Apron conditions. When apron conditions are reported slippery or poor, the apron designator followed by a space 'POOR' should be inserted (APRON [nnnn] POOR or ALL APRONS POOR).

Item S — Measured friction coefficient. Where reported, the measured friction coefficient and friction measuring device should be inserted.

This should only be reported for Member States that have an established programme of runway friction measurement using a Member-State-approved friction measuring device.

Item T — Plain language remarks.

Rationale

The GM provides instructions for the completion of a SNOWTAM.

GM2 ADR.OPS.A.057(d)(4) Origination of NOTAM (RMT.0703)

SNOWTAM FORMAT

Below are four examples of completed SNOWTAMs.

Example SNOWTAM 1

GG EADBZQZX EADNZQZX EADSZQZX

170100 EADDYNYX

SWEA0149 EADD 02170055

(SNOWTAM 0149

EADD

02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW)

Example SNOWTAM 2

GG EADBZQZX EADNZQZX EADSZQZX

170140 EADDYNYX

SWEA0150 EADD 02170135

(SNOWTAM 0150

EADD

02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW

02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH)

Example SNOWTAM 3

GG EADBZQZX EADNZQZX EADSZQZX

170229 EADDYNYX

SWEA0151 EADD 02170225

(SNOWTAM 0151

EADD

02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW

02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH

02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW

RWY 09L SNOWBANK R20 FM CL. RWY 09R ADJ SNOWBANKS. TWY B POOR. APRON NORTH POOR)

Example SNOWTAM 4

GG EADBZQZX EADNZQZX EADSZQZX

170350 EADDYNYX

SWEA0152 EADD 02170345

(SNOWTAM 0152

EADD

02170345 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/SLUSH

02170134 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH

02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW 35

DRIFTING SNOW. RWY 09L LOOSE SAND. RWY 09R CHEMICALLY TREATED. RWY 09C CHEMICALLY TREATED.)

Rationale

This GM provides examples regarding completed SNOWTAMs.

AMC1 ADR.OPS.A.057(f) Origination of NOTAM (RMT.0703)

TRAINING FOR NOTAM ORIGINATORS AND OTHER PERSONNEL

(a) The theoretical part of the training of a person to be designated as a NOTAM originator should, as a minimum, cover the following areas:

(1) regulatory framework governing the issuance of a NOTAM, including the cases where the origination of a NOTAM is required;

(2) NOTAM Format completion, including word abbreviations and phrase contractions applicable to NOTAMs;

(3) use of electronic applications for initiating a NOTAM, (if applicable);

(4) aerodrome procedures for origination and internal dissemination of a NOTAM.

(b) Following the successful completion of the theoretical training, the on-the-job part of the training programme should, as a minimum, include familiarisation with the origination of a NOTAM and implementation of the relevant aerodrome operating procedures.

(c) Following the successful completion of the on-the-job-training, the competence of a person designated to originate a NOTAM should be assessed and if found adequate, the person may be designated as a NOTAM originator.

(d) For other personnel whose duties require only the understanding of a NOTAM, the theoretical part of the training should be adjusted and need not include (a)(3) and (a)(4) above.

Rationale

This AMC aims at facilitating the compliance with the proposed requirement by identifying the training that aerodrome personnel that originate a NOTAM, or have to be able to understand a NOTAM, need to undergo.

AMC1 ADR.OPS.A.065(a) Reporting of the runway surface condition (RMT.0704)

REPORTING

The aerodrome operator should disseminate an RCR through the aeronautical information services and air traffic services, when the runway is wholly or partly contaminated by standing water, snow, slush, ice or frost, or is wet associated with the clearing or treatment of snow, slush, ice or frost. When the runway is wet, not associated with the presence of standing water, snow, slush, ice or frost, the assessed information should be disseminated using the RCR through the air traffic services.

Rationale

The AMC specifies how the RCR will be disseminated. The proposed text is based on provision 1.1.1.8 in ICAO Doc 9981. The main methods are through the issuance of SNOWTAM and through air traffic services; however, in order to avoid the issuance of a significant number of SNOWTAMs, the aerodrome operator may issue the RCR through air traffic services only, when the runway is wet not associated with the presence of standing water, snow, slush, ice or frost.

AMC2 ADR.OPS.A.065(a) Reporting of the runway surface condition (RMT.0704)

RUNWAY CONDITION REPORT

(a) The RCR should consist of the:

(1) aeroplane performance calculation section; and

(2) situational awareness section.

(b) The information should be included in an information string in the following order:

(1) aeroplane performance calculation section:

(i) aerodrome location indicator;

(ii) date and time of assessment;

(iii) lower runway designation number;

(iv) RWYCC for each runway third;

(v) per cent coverage contaminant for each runway third;

(vi) depth of loose contaminant for each runway third;

(vii) condition description for each runway third; and

(viii) width of runway to which the RWYCCs apply if less than the published width.

(2) Situational awareness section:

(i) reduced runway length;

(ii) drifting snow on the runway;

(iii) loose sand on the runway;

(iv) chemical treatment on the runway;

(v) snowbanks on the runway;

(vi) snowbanks on the taxiway;

(vii) snowbanks adjacent to the runway;

(viii) taxiway conditions;

(ix) apron conditions; and

(x) plain language remarks.

Rationale

The AMC defines the content of the RCR. The proposed text is based on provisions 1.1.2.3 and 1.1.2.4 of ICAO Doc 9981.

GM1 ADR.OPS.A.065(a) Reporting of the runway surface condition (RMT.0704)

GENERAL

(a) Assessing and reporting the condition of the movement area and related facilities is necessary in order to provide the flight crew with the information needed for safe operation of the aeroplane. The RCR is used for reporting assessed conditions through the issuance of SNOWTAM, when necessary.

(b) On a global level, movement areas are exposed to a multitude of climatic conditions and consequently a significant difference in the condition to be reported. The RCR describes a basic structure applicable for all these climatic variations. Assessing the runway surface condition relies on a great variety of techniques and no single solution can apply to every situation.

(c) The philosophy of the RCR is that the aerodrome operator assesses the runway surface condition whenever water, snow, slush, ice or frost are present on an operational runway.

From this assessment, a RWYCC and a description of the runway surface are reported, which can be used by the flight crew for aeroplane performance calculations. This format, based on the type, depth and coverage of contaminants, is the best assessment of the runway surface condition by the aerodrome operator; however, all other pertinent information is taken into consideration and kept up to date, and changes in conditions are reported without delay.

(d) The RWYCC reflects the runway braking capability as a function of the surface conditions. With this information, the flight crew can derive, from the performance information provided by the aeroplane manufacturer, the necessary stopping distance of an aircraft on the approach under the prevailing conditions.

Rationale

The GM explains the philosophy of the RCR. The text is based on the provisions 1.1.1.1 to 1.1.1.4 of ICAO Doc 9981.

GM2 ADR.OPS.A.065(a) Reporting of the runway surface condition (RMT.0704)

RUNWAY CONDITION REPORT

AEROPLANE PERFORMANCE CALCULATION SECTION

(a) The aeroplane performance calculation section is a string of grouped information, separated by a space ‘ ’ ending with a return and a two-line feed ‘<<≡’, in order to distinguish the aeroplane performance calculation section from the following situational awareness section or the following aeroplane performance calculation section of another runway.

(b) The information to be included in this section consists of the following:

(1) **Aerodrome location indicator:** a four-letter ICAO location indicator in accordance with ICAO Doc 7910, *Location Indicators*.

This information is mandatory.

Format: nnnn

(2) **Date and time of the assessment:** date and time (UTC) when the assessment was performed.

This information is mandatory.

Format: MMDDhhmm

(3) **Lower runway designation number:** a two- or three-character number identifying the runway for which the assessment is carried out and reported.

This information is mandatory.

Format: nn[L] *or* nn[C] *or* nn[R]

(4) **Runway condition code for each runway third:** a one-digit number identifying the RWYCC assessed for each runway third. The codes are reported in a three-character group separated by a ‘/’ for each third. The direction for listing the runway thirds is the direction as seen from the lower designation number.

This information is mandatory.

When transmitting information on the runway surface condition by air traffic services to flight crews, the sections are, however, referred to as the first, second or third part of the runway. The first part always means the first third of the runway as seen in the direction of landing or take-off as illustrated in Figures 1 and 2.

Format: n/n/n

Example: 5/5/2

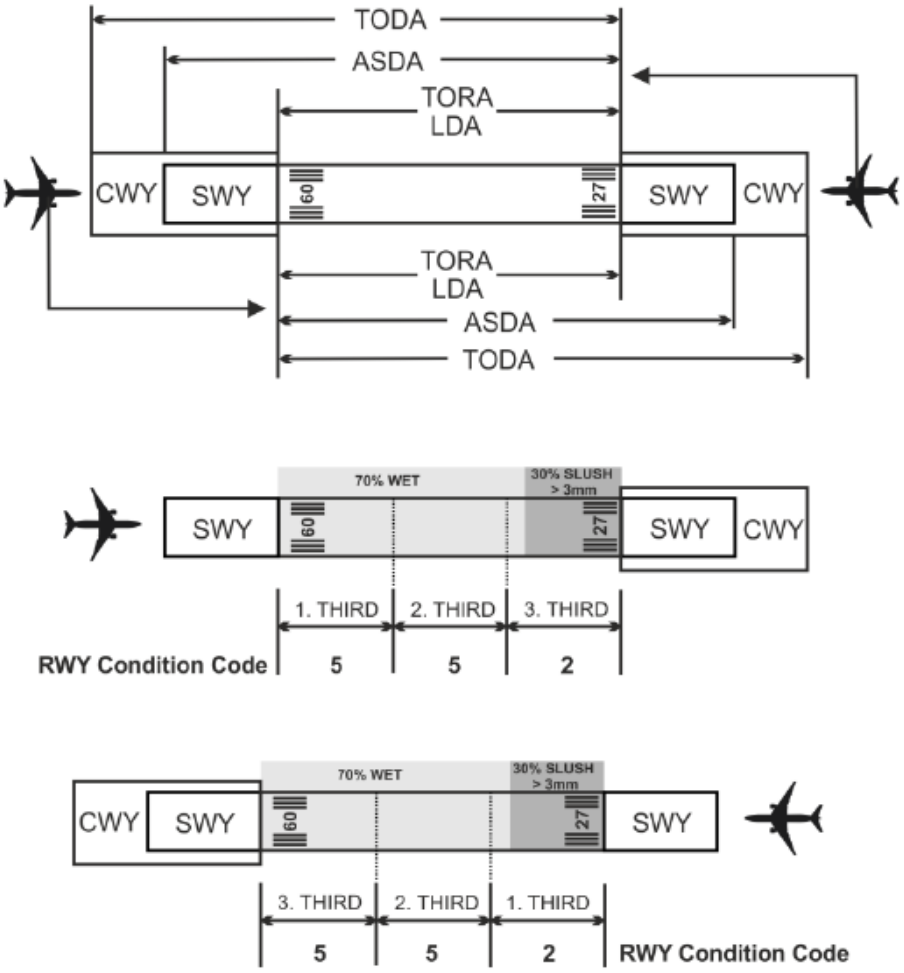

Figure 1 — Reporting of RWYCC

from air traffic services to flight crew for runway thirds

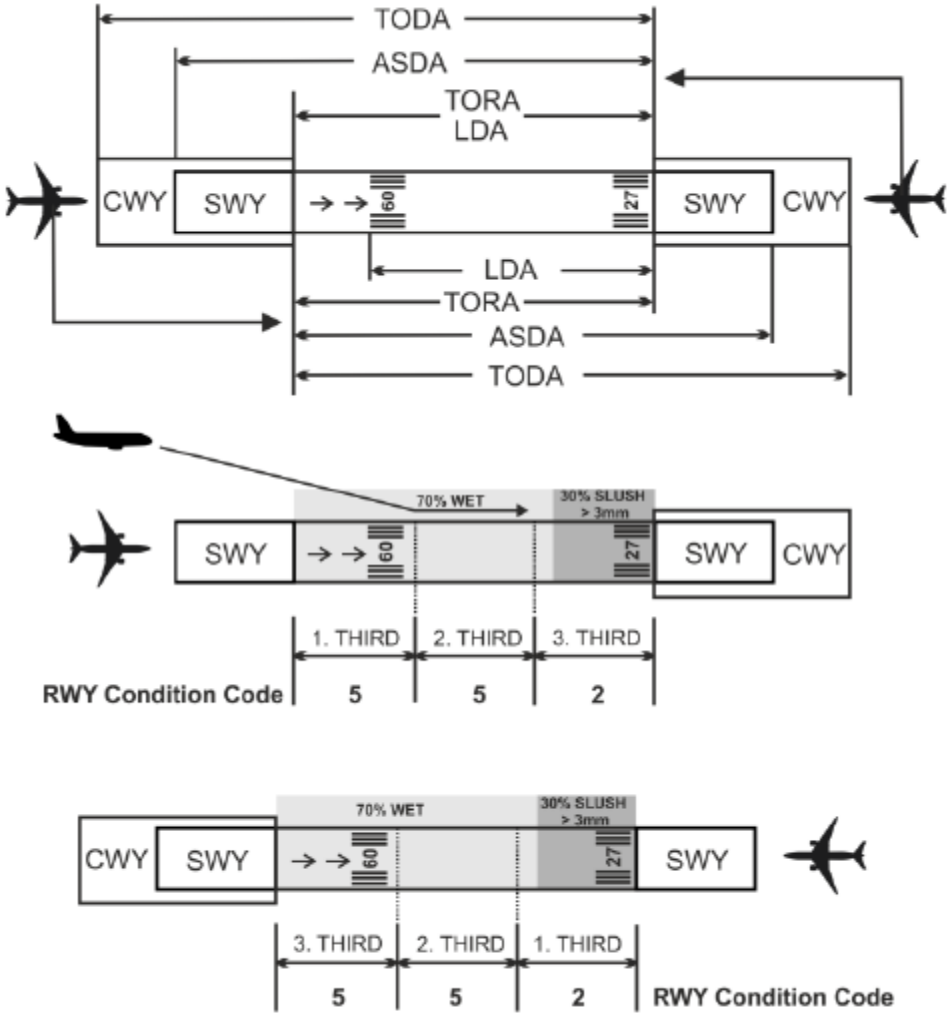

Figure 2 — Reporting of RWYCC

for runway thirds from air traffic services to flight crew on a runway with displaced threshold

(5) **Per cent coverage contaminant for each runway third:** a number identifying the percentage coverage. The percentages are to be reported in an up-to-nine character group separated by a '/' for each runway third. The assessment is based upon an even distribution within the runway thirds using Table 1.

This information is conditional. It is not reported for any runway third that is dry or covered with less than 10 per cent.

Format: [n]nn/[n]nn/[n]nn

Example: 25/50/100

In case of uneven distribution of the contaminants, additional information is given in the plain language remark part of the situational awareness section of the RCR. Where possible, a standardised text is used.

When no information is to be reported, 'NR' is inserted at the relevant position of the message, to indicate to the user that no information exists.

(6) **Depth of loose contaminant: dry snow, wet snow, slush or standing water for each runway third:** a two- or three-digit number representing the assessed depth (mm) of the contaminant for each runway third. The depth is reported in a six- to nine-character group separated by a '/' for each runway third as defined in Table YYY. The assessment is based upon an even distribution within the runway thirds following an assessment. If measurements are included as part of the assessment process, the reported values are still reported as assessed depths.

This information is conditional. It is reported only for DRY SNOW, WET SNOW, SLUSH and STANDING WATER.

Format: [n]nn/[n]nn/[n]nn

(7) **Condition description for each runway third:** to be reported in capital letters using the terms specified in ADR.OPS.A.065 point (a). The condition types are separated by an oblique stroke '/'.

This information is mandatory.

Format: nnnn/nnnn/nnnn

(8) **Width of runway to which the RWYCCs apply if less than the published width:** two-digit number representing the width of cleared runway in metres.

Format: nn

If the cleared runway width is not symmetrical along the centre line, additional information is given in the plain language remark part of the situational awareness section of the RCR.

SITUATIONAL AWARENESS SECTION

(a) All individual messages in the situational awareness section end with a full-stop sign, in order to distinguish the message from subsequent message(s).

(b) The information to be included in this section consists of the following:

(1) **Reduced runway length**

The information is conditional when a NOTAM has been published with a new set of declared distances affecting the landing distance available (LDA).

Format: Standardised fixed text – RWY nn [L] *or* nn [C] *or* nn [R] LDA REDUCED TO [n]nnn

(2) **Drifting snow on the runway**

This information is conditional.

Format: Standardised fixed text

(3) **Loose sand on the runway**

This information is conditional.

Format: RWY nn[L] *or* nn[C] *or* nn[R] LOOSE SAND

(4) **Chemical treatment on the runway**

This information is conditional.

Format: RWY nn[L] *or* nn[C] *or* nn[R] CHEMICALLY TREATED

(5) **Snowbanks on the runway**

This information is conditional.

Left or right distance in metres from centre line.

Format: RWY nn[L] *or* nn[C] *or* nn[R] SNOWBANK Lnn *or* Rnn *or* LRnn FM CL

(6) **Snowbanks on taxiway**

This information is conditional.

Left or right distance in metres from centre line.

Format: TWY [nn]n SNOWBANK Lnn *or* Rnn *or* LRnn FM CL

(7) **Snowbanks adjacent to the runway penetrating level/profile set in the aerodrome snow plan.**

This information is conditional.

Format: RWY nn[L] *or* nn[C] *or* nn[R] ADJ SNOWBANKS

(8) **Taxiway conditions**

This information is optional.

Format: TWY [nn]n POOR

(9) **Apron conditions**

This information is conditional.

Format: APRON [nnnn] POOR

(10) **Plain language remarks using only allowable characters in capital letters**

Where possible, standardised text is used. ‘UPGRADED or DOWNGRADED’ is used whenever assessed RWYCC differs from what follows directly from RCAM.

This information is optional.

Format: Combination of allowable characters where use of full stop ‘.’ marks the end of the message.

Allowable characters:

A B C D E F G H I J K LM N O P Q R S T U V W X Y Z

0 1 2 3 4 5 6 7 8 9

/ [oblique stroke] '.' [period]' ' [space]

Rationale

The GM introduces the content of the RCR in line with provisions 1.1.3.4 and 1.1.3.5 of ICAO Doc 9981.

GM3 ADR.OPS.A.065(a) Reporting of the runway surface condition (RMT.0704)

COMPLETE INFORMATION STRING

An example of a complete information string prepared for dissemination is as follows:

COM header and abbreviated header] (Completed by AIS)

GG EADBZQZX EADNZQZX EADSZQZX

070645 EADDYNYX

SWEA0151 EADD 02170055

SNOWTAM 0151

[Aeroplane performance calculation section]

EADD 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET

EADD 02170135 09R 5/2/2 100/50/75 NR/06/06 WET/SLUSH/SLUSH

EADD 02170225 09C 2/3/3 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW

[Situational awareness section]

RWY 09L SNOWBANK R20 FM CL. RWY 09R ADJ SNOWBANKS. TWY B POOR. APRON NORTH

POOR.

Rationale

The GM provides a worked example of a complete information string prepared for dissemination and is based on provision 1.1.3.6 of ICAO Doc 9981.

GM1 ADR.OPS.A.065(a)(18);(a)(19) Reporting of the runway surface condition (RMT.0704)

REPORTING OF CHEMICALLY TREATED AND LOOSE SAND

The terms 'CHEMICALLY TREATED' and 'LOOSE SAND' do not appear in the aeroplane performance calculation section but are used in the situational awareness section of the RCR.

Rationale

The GM transposes Note 3 of Standard 2.9.5 in Amendment 13-B to ICAO Annex 14.

AMC1 ADR.OPS.A.065(b);(c) Reporting of the runway surface condition (RMT.0704)

SIGNIFICANT CHANGES

A change in the runway surface condition used in the RCR is considered significant whenever there is any:

(a) change in the RWYCC;

(b) change in the contaminant type;

(c) change in reportable contaminant coverage according to Table 1;

(d) change in contaminant depth according to Table 2; and

(e) other information, for example a pilot report of runway braking action, which according to assessment techniques used, are known to be significant.

Assessed per cent	Reported per cent
10-25	25
26-50	50
51-75	75
76-100	100

Table 1 — Percentage of coverage for contaminants

Contaminant	Valid values to be reported	Significant change
STANDING WATER	04, then assessed value	3 mm
SLUSH	03, then assessed value	3 mm
WET SNOW	03, then assessed value	5 mm
DRY SNOW	03, then assessed value	20 mm

Table 2 – Depth assessments for contaminants

Note 1 — For STANDING WATER, 04 (4 mm) is the minimum depth value at and above which the depth should be reported. From 3 mm and below, the runway third should be considered WET.

Note 2 — For SLUSH, WET SNOW and DRY SNOW, depths up to and including 3 mm should be reported as 03 (3 mm).

Note 3 — Above 4 mm for STANDING WATER and above 3 mm for SLUSH, WET SNOW and DRY SNOW, an assessed value should be reported and a significant change relates to the observed change from this assessed value.

Rationale

The new AMC specifies which changes in the runway surface condition are considered significant. The text is based on provision 1.1.3.3 of ICAO Doc 9981.

GM1 ADR.OPS.A.065(b);(c) Reporting of the runway surface condition (RMT.0704)

EXAMPLE OF REPORTING DEPTH OF CONTAMINANT WHENEVER THERE IS A SIGNIFICANT CHANGE

(a) After the first assessment of runway condition, a first RCR is generated. The initial report is:

5/5/5 100/100/100 03/03/03 SLUSH/SLUSH/SLUSH

Note — The full information string is not used in this example.

(b) With continuing precipitation, a new RCR is required to be generated as a subsequent assessment reveals the depth of contamination has increased from 3 mm to 5 mm along the entire length of the runway and therefore a change in the RWYCC is needed. A second RCR is therefore created as:

2/2/2 100/100/100 05/05/05 SLUSH/SLUSH/SLUSH

(c) With even more precipitation, a further assessment reveals the depth of contamination has increased from 5 mm to 7 mm along the entire length of the runway. However, a new RCR is not required because the RWYCC has not changed (change in depth is less than the significant change threshold of 3 mm).

(d) A final assessment of the contamination reveals that the depth has increased to 10 mm. A new RWYCC is required because the change in depth from the last RCR (second RWYCC), i.e. from 5 mm to 10 mm is greater than the significant change threshold of 3 mm. A third RCR is thus created as below:

2/2/2 100/100/100 10/10/10 SLUSH/SLUSH/SLUSH

For contaminants other than STANDING WATER, SLUSH, WET SNOW or DRY SNOW, the depth is not reported. The position of this type of information in the information string is then identified by /NR/.

When the depth of the contaminants varies significantly within a runway third, additional information is to be given in the language remark part of the situational awareness section of the RCR.

Rationale

The GM provides an example of reporting the depth of contaminant whenever there is a significant change and is based on provision 1.1.3.4 of ICAO Doc 9981.

AMC1 ADR.OPS.B.003 Handover of activities (RMT.0703)

HANDOVER OF OPERATIONAL ACTIVITIES — PERSONNEL BRIEFING

(a) The procedures should, as a minimum:

(1) cover the initial shift, the change of a shift within the same function (e.g. between RFFS personnel), the case where a task is handed over to another person within the same shift, and the cases where an activity is handed over between different functions (e.g. from maintenance to operations);

(2) address the case where a planned activity (e.g. light maintenance) is not completed at the time of a planned shift change; and

(3) allow for the preparation of both outgoing and incoming personnel.

(b) The briefing should be face-to-face, or in a manner that allows effective two-way communication between the outgoing and incoming personnel, during which all task-relevant information necessary for the incoming personnel is provided to them, both verbally and in writing.

(c) The briefing of drivers and other operational personnel operating on the manoeuvring area should, as a minimum, include:

(1) the runway(s) in use;

(2) any significant works areas in place, or being established or removed that day;

(3) conditions of stop bars, if applicable, that may be inoperable making a taxiway unusable for runway entry or crossing; and

(4) if low-visibility procedures are in force.

Rationale

This AMC intends to support the implementation of the relevant proposed requirement regarding the need to provide operational personnel with information regarding the operational situation they may encounter at the handover of operational activities. Part of the AMC addresses the content of a relevant recommendation contained in EAPPRI.

AMC2 ADR.OPS.B.015 Monitoring and inspection of movement area and related facilities (RMT.0703 & RMT.0704)

~~PERSONNEL~~ REQUIREMENTS AND PROCEDURES FOR MOVEMENT AREA INSPECTIONS

(a) The aerodrome operator should designate the personnel responsible for carrying out movement area inspections.

(b) The aerodrome operator should ensure that all vehicles on the manoeuvring area are in radio contact with the appropriate ~~A~~air ~~T~~traffic ~~S~~services either directly or through an escort.

(c) In order to prevent runway incursions, the aerodrome operator should have procedures in place, which have been coordinated with the air traffic services unit, for conducting runway inspections, ~~including direction of runway inspection,~~ communication procedures, actions in case of radio communication or transponder failure or vehicle ~~brake down~~ breakdown, stop bars crossing, including in cases of stop bar unserviceability, runway crossings, etc. Runway inspections should be conducted in the opposite direction to that being used for landing or taking off and without interruption of the inspection, unless it is operationally impossible. The inspection procedures should also cater for the temporary suspension of runway operations to allow a full runway inspection to be carried out without interruption, and should address the need to effectively inspect unidirectional lights.

(d) The aerodrome operator should ensure that personnel conducting movement area inspections receive training in, at least, the following areas:

(1) aerodrome familiarisation, including aerodrome markings, signs, and lighting;

(2) Aerodrome Manual;

(3) Aerodrome Emergency Plan;

(4) Notice to Airmen (NOTAM) ~~notification~~ initiation procedures;

(5) aerodrome driving rules;

(6) procedures ~~of~~ for radiotelephony, phraseology and ICAO phonetic alphabet;

(7) aerodrome inspection procedures and techniques; ~~and~~

(8) procedures for reporting inspection results and observations;

(9) air traffic control procedures on the movement area; and

(10) low-visibility procedures.

(e) Personnel conducting runway surface condition assessments, in addition to the training specified in point (d) above, should receive training in, at least, the following areas:

(1) completion of/initiation procedures for RCR;

(2) type of runway contaminants and reporting;

(3) assessment and reporting of runway surface friction characteristics;

(4) use, calibration and maintenance of runway friction measurement device, where applicable; and

(5) awareness of uncertainties related to point (4) above.

Rationale

The amendment to point (c) intends to reinforce the required coordination between the aerodrome operator and the air traffic services unit. Moreover, the current AMC is amended to clarify the direction in which runway inspections should be conducted, and that the relevant procedures should take into account the case of transponder failure, apart from the case of radio communication failure. In addition, the amended AMC deals with the case of non-interruption of the inspection, as a means to improve the effectiveness of the inspections and the provision of an operational environment where a runway incursion is less probable. Finally, the amendment addresses the need for the establishment of specific procedures for the case of stop bar unserviceability in accordance with the rules of the air (SERA).

The intent of proposed change is to clarify these situations, taking also into account the relevant content of EAPPRI recommendations.

The revision of point (d) and the addition of the new point (e) aim to update the training syllabus to reflect the changes in Attachment A, point 6.8 of ICAO Annex 14 Amendment 13-B. The training syllabus is divided in two parts. The first part, point (d), defines the training for personnel conducting movement area inspections, while point (e) refers to the training of the personnel conducting runway surface condition assessments.

~~**GM2 ADR.OPS.B.015 Monitoring and inspection of movement area and related facilities**~~ **(RMT.0703)**

~~VISUAL AIDS INSPECTION~~

~~(a) Flight checks of visual aids~~

~~Flight checks of approach and runway lighting systems should be carried out to ensure the pattern is correct and the lights are working, whenever a new system is commissioned, or after a major maintenance, and at least annually. The opportunity should also be taken to identify any confusing, or misleading lights in the aerodrome surroundings.~~

~~(b) Ground checks of visual aids~~

~~Photometric testing of runway lighting and approach lighting that is accessible with the equipment to be used, should be carried out in a targeted manner aimed at maintaining high levels of serviceability. The regularity of testing should be adjusted to achieve the target level of serviceability applicable to the service being tested.~~

Rationale

GM2 ADR.OPS.B.015 (Monitoring and inspection of movement area and related facilities) is deleted, and its content is amended and included in AMC2 ADR.OPS.C.015 (b);(f) (Visual aids and electrical systems) and GM1 ADR.OPS.C.015(b);(f) (Visual aids and electrical systems) because the content of the GM was not relevant to the content of the relevant requirement it served, but rather related to the maintenance programme of the visual aids.

AMC1 ADR.OPS.B.016(a)(1) Foreign object debris control programme (RMT.0703)

FOD PREVENTION — GENERAL

The FOD control programme should be actively supported by the senior management of the aerodrome operator and of the other organisations operating or providing services at the aerodrome. The aerodrome operator should designate an individual within the aerodrome organisation to manage the aerodrome's FOD control programme.

F0D PREVENTION — PERSONNEL AWARNESS

(a) Personnel should be kept aware through appropriate activities of the existence of the FOD control programme, and should be actively encouraged to identify and report potential FOD hazards, act to remove observed FOD, and propose solutions to mitigate related safety risks.

FOD PREVENTION — TRAINING

(b) The FOD training programme should aim at increasing the personnel awareness of the causes and effects of FOD damage and to promote their active participation in eliminating FOD during the performance of daily work routines.

A FOD training programme should cover the following areas:

(1) safety of personnel and passengers as they relate to FOD;

(2) overview of the FOD control programme in place at the aerodrome;

(3) causes and principal contributing factors of FOD creation;

(4) the consequences of ignoring FOD, and/or the incentives for preventing FOD;

(5) practising 'clean-as-you-go' work habits and the general cleanliness and inspection standards of work areas;

(6) FOD detection procedures, including the proper use of detection technologies (if applicable);

(7) requirements and procedures for the regular inspection and cleaning of movement areas;

(8) FOD removal procedures;

(9) proper care, use, and stowage of material and component or equipment items used around aircraft while in servicing, maintenance or on aerodrome surfaces;

(10) control of debris in the performance of work assignments;

(11) control over personal items and equipment;

12) proper control/accountability and care of tools and hardware;

(13) how to report FOD incidents or potential incidents; and

(14) continuous vigilance for potential sources of hazardous FOD.

Rationale

The proposed AMC supports the implementation of the FOD control programme with respect to training. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

AMC1 ADR.OPS.B.016(b)(2) Foreign object debris control programme (RMT.0703)

FOD PREVENTION — MEASURES

The aerodrome operator should identify activities that may be associated with the generation of FOD, as well as measures that should be taken in order to prevent this from happening.

Rationale

The proposed AMC details the actions that need to be undertaken with regard to the identification of sources generating FOD. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

GM1 ADR.OPS.B.016(b)(2) Foreign object debris control programme (RMT.0703)

FOD PREVENTION — MEASURES

FOD may be produced by many activities and may be generated by personnel, aerodrome infrastructure (pavements, lights and signs), the environment (e.g. wind, heavy rain), aircraft, vehicles, or other equipment operating at the aerodrome. The elements below have the potential to become sources of FOD on an aerodrome.

(a) Aircraft servicing and maintenance activities

During the activities related to the aircraft servicing, various types of FOD may be generated and be left or transferred on the apron, service roads, and other operational areas. Such items may include small luggage parts, cabin waste, plastic or metallic items, etc. FOD may also be generated by vehicles or the equipment that operate in these areas. To control this type of FOD, measures may include securing and removing cabin waste from the aircraft stand.

Similarly, during aircraft maintenance, FOD may be generated either in the form of waste or small items inadvertently left on the apron such as rivets, bolts, tools etc. Procedures to address this may include measuring of tools, use of toolboxes, checklists, removal of waste produced upon the completion of the maintenance activities, etc.

Inspection of the aircraft stand or other areas that may have been used for aircraft servicing or maintenance, before and after the departure of the aircraft is an effective measure. The secure installation of suitable FOD bins, in appropriate locations, for depositing FOD is also an effective preventive measure.

(b) Cargo areas

In a cargo area, there is a high potential for blowing debris such as cargo strapping and plastic sheeting. Procedures to contain such debris, possibly by installing (and monitoring) catch fencing where appropriate, may help to control the environment. FOD trapped by such fences should be removed regularly.

(c) Construction activities

During construction activities many material (rocks, tools, vehicle parts, etc.) have the potential to become FOD if transferred by vehicles, weather phenomena, etc. on the movement area or other operational areas. For this reason, specific FOD prevention procedures should be established and employed for each construction project. These procedures should be based on the proximity of the construction activities to the movement area and other operational areas, but in general should stress containment and regular cleaning of construction debris.

Aerodrome pre-construction planning should include means for controlling and containing FOD generated by the construction. This is especially true in high-wind environments where debris is more likely to become airborne.

The designated routes of construction vehicles on the movement area should be planned so as to avoid or minimise crossing in critical areas of aircraft operations. If high-risk crossings cannot be avoided, subsequent provisions such as an increased frequency of FOD inspections could be implemented.

Contractors should fully understand and comply with the requirements regarding the control and removal of FOD. To facilitate compliance with these requirements, the aerodrome operator may consider drafting FOD control guidance for all construction projects taking place within the movement area or nearby areas. Standard and project-specific FOD measures include:

(1) requiring contractors to cover all loads;

(2) requiring contractors to secure any loose items that could easily blow away or control dust through spraying of water;

(3) ensuring the proper functioning of storm drains throughout the construction;

(4) specifying whether any mechanical FOD removal devices will be required;

(5) specifying how monitoring for FOD hazards will be accomplished; and

(6) requirements for inspecting and removing FOD from tyres prior to traversing operational areas.

(d) Aerodrome maintenance operations

Mowing and other maintenance operations routinely disturb the vegetation and soil in areas adjacent to those travelled by aircraft. Procedures to remove this debris, such as the use of an assigned aerodrome sweeper or personnel on foot using shovels to repair vegetation and soil, should be implemented.

Aerodrome lighting, pavement, and marking maintenance operations may generate concrete/asphalt debris as well as increase the potential for dropped repair parts, tools, and other items stored on the maintenance vehicles. Corrective procedures may include the use of aerodrome sweepers and the inspection of the worksite after maintenance is completed.

(e) Pavements and other aerodrome surfaces may be prone to generating FOD.

(1) Pavements

(i) Deteriorating or redundant pavements can exhibit spalling or cracks. For example, pieces of concrete can break loose from pavements or FOD can develop from fatigue corner cracks.

(ii) The service roads that cross taxiways may generate FOD from the vehicles using them, especially in the case of construction operations.

(iii) Special attention should be paid to the cleaning of cracks and pavement joints.

(iv) Asphalt and concrete pavements may be the most common source of FOD on an aerodrome; therefore, effective pavement maintenance practices are important for the prevention of FOD.

(2) Other aerodrome surfaces

Grass areas and ditches may collect and hold large amounts of light debris such as paper, cardboard, plastic and various containers that can originate from terminal aprons, cargo ramps and hangar ramps. This debris can blow back into areas used by aircraft unless collected in a timely manner.

Unpaved areas adjacent to pavements may require stabilisation, as appropriate, to prevent FOD from jet wash.

FOD fences may collect debris on windy days. This FOD should be collected before the wind increases or changes direction and the debris blows back on to areas used by aircraft.

Rationale

The proposed GM provides information regarding FOD prevention. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

AMC1 ADR.OPS.B.016(b)(3) Foreign object debris control programme (RMT.0703)

FOD DETECTION

The aerodrome operator should establish procedures for FOD detection to be included in the aerodrome manual. The procedures should be coordinated with the air traffic services provider and should:

(a) ensure that FOD detection is part of the established inspection schedule of the movement area, and that additional inspections are carried out in construction areas, and immediately after any aircraft or vehicle accident or incident, as well as following any material spill;

(b) ensure that an inspection of an aircraft stand is carried out prior to the arrival and departure of an aircraft, in order to detect and remove any FOD present;

(c) ensure that cabin waste is properly secured and removed from the aircraft, and any waste from aircraft maintenance activities is removed upon completion of the activities;

(d) ensure that FOD detection is performed in a timely manner and that it includes the identification of the FOD source and its location;

(e) ensure that aerodrome personnel are notified to remove detected FOD from the manoeuvring area, and describe how the air traffic services provider is notified to take appropriate action; and

(f) describe clearly when runway or taxiway operations have to be suspended, and the coordination required with the air traffic services provider.

Rationale

The proposed AMC details the actions that need to be undertaken with regard to FOD detection. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

GM1 ADR.OPS.B.016(b)(3) Foreign object debris control programme (RMT.0703)

FOD DETECTION

In addition to the standard inspections, personnel on the movement area should employ a 'clean-as-you-go' technique, by looking for FOD during the course of their regular duties. When inspections occur at night, after the runway is closed or before the runway is opened, additional lights/lighting systems on vehicles are beneficial to better detect FOD.

When possible, vehicles should only be driven on clean, paved surfaces. If a vehicle needs to be driven on unpaved surfaces, the driver should ensure that vehicle's tyres do not transport FOD (e.g. mud or loose stones) back onto the pavement.

Encouraging the participation of the personnel of other organisations such as air operators, ground handling companies, air traffic providers in inspections may reinforce the concept that FOD control is a team effort and demonstrates the aerodrome operator's commitment to a FOD-free environment. This practice may help increase familiarity with local aerodrome conditions, and promotes effective communication between the aerodrome operator and its stakeholders.

Rationale

The proposed GM provides information regarding FOD detection. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

AMC1 ADR.OPS.B.016(b)(4) Foreign object debris control programme (RMT.0703)

FOD REMOVAL

Detected FOD should be removed as soon as possible after detection. FOD removal should be included in the tasks of all personnel operating on the aerodrome.

Designated FOD containers should be visibly placed on the apron for the storage of debris. The FOD containers should be well marked, properly secured, and frequently emptied.

Rationale

The proposed AMC details the actions that need to be undertaken with regard to FOD removal. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

GM1 ADR.OPS.B.016(b)(4) Foreign object debris control programme (RMT.0703)

FOD REMOVAL

FOD may be removed either manually or by using mechanical equipment, such as sweepers, vacuum systems, jet air blowers, magnetic bars, etc.

Suggested locations for FOD containers include: near all entry points to the apron area, in hangars, aircraft maintenance areas, near aircraft stands and baggage areas. Clearly identified FOD storage locations increase the likelihood that collected debris will be deposited by personnel.

Rationale

The proposed GM provides information regarding methods for FOD removal. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

AMC1 ADR.OPS.B.016(b)(5) Foreign object debris control programme (RMT.0703)

FOD ANALYSIS — CONTINUOUS IMPROVEMENT

(a) All FOD identified and collected on the aerodrome should be recorded, analysed and evaluated. When needed, an investigation should be carried out to identify the source of the FOD. The sources of FOD, including its location and the activities generating FOD on the aerodrome, should be identified, recorded and analysed to identify trends and problem areas as well as to focus the efforts of the FOD control programme. Relevant records, including of the actions taken, should be maintained.

(b) The FOD control programme should be periodically reviewed to assess and continually improve its effectiveness, and updated based on the feedback received, data analysis and trends identified through the evaluation of FOD collected at the aerodrome.

Rationale

The proposed AMC details the actions that need to be taken with regard to the need to analyse the FOD in order to address its source and improve the programme's effectiveness. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

GM1 ADR.OPS.B.016(b)(5) Foreign object debris control programme (RMT.0703)

FOD REPORTING

As FOD may be composed of different material, when reporting, a proper description should be made to allow for the proper identification of the FOD source areas, as well as for the appropriate mitigation measures to be taken.

FOD may include the following:

(a) aircraft and engine fasteners (nuts, bolts, washers, safety wire, etc.);

(b) aircraft parts (fuel caps, landing gear fragments, oil sticks, metal sheets, trapdoors, and tyre fragments);

(c) mechanics' tools;

(d) catering supplies;

(e) personal items (personnel badges, pens, pencils, luggage tags, drink cans, etc.);

(f) apron items (paper and plastic debris from catering and freight pallets, luggage parts, and debris from ramp equipment);

(g) runway and taxiway materials (concrete and asphalt chunks, rubber joint materials, and paint chips);

(h) construction debris (pieces of wood, stones, fasteners and miscellaneous metal objects);

(i) plastic and/or polyethylene materials;

(j) natural materials (plant fragments, inanimate wildlife and volcanic ash); and

(k) contaminants from winter conditions (e.g. ice).

Rationale

The proposed GM provides information regarding the way that FOD reporting should be done, in order to improve its effectiveness. The content of the proposal is based on the work done in the context of the review of ICAO Doc 9981, and the FAA 150/5210-24 (Airport Foreign Object Debris Management).

~~**AMC1 ADR.OPS.B.025 Operation of vehicles**~~ **(RMT.0703)**

~~TRAINING PROGRAMME~~

~~(a) Depending upon the scale and complexity of the aerodrome and the individual requirements of the driver, the training programme should take into account the following main areas:~~

~~(1) a generic airside vehicle driver training programme which covers operational safety of operating vehicles and equipment in close proximity to aircraft on the movement area, such as runways, taxiways, aprons, stands, airside roads, and areas adjacent to the movement area;~~

~~(2) specific training on the vehicle or equipment, e.g. car, tug, high loader, coach;~~

(3) additional training on the hazards associated with runways and taxiways, and in the correct use of RTF and standard phraseology should be received by drivers required to operate on the manoeuvring area.

(b) An aerodrome operator should establish a system for issuing movement area driving authorisations, and the conditions of their renewal.

AMC2 ADR.OPS.B.025 Operation of vehicles (RMT.0703)

MOVEMENT AREA DRIVING TRAINING

The training for driving on the movement area should include the following:

(a) the geography of the aerodrome;

(b) aerodrome signs, markings and lights; and

(c) radiotelephone operating procedures if the duties require to drive on the manoeuvring area;

(d) terms and phrases used in aerodrome control, including the ICAO spelling alphabet, if the duties require interaction with aerodrome control;

(e) rules of air traffic services as they relate to ground operations;

(f) aerodrome rules and procedures;

(g) low visibility procedures; and

(h) specialist functions as required, for example, in rescue and firefighting.

GM1 ADR.OPS.B.025 Operation of vehicles (RMT.0703)

GRANT, SUSPENSION OR REVOCATION OF AN AIRSIDE DRIVING AUTHORISATION

(a) The aerodrome operator should grant an airside driving authorisation to persons provided that:

(1) their tasks involve driving on the movement area;

(2) they hold a State driving license or any other driving license recognised by the State;

(3) they hold a special State driving license if their duties involve the operation of a specialised vehicle;

(4) they meet the medical criteria according to the National Legislation;

(5) they hold a State Radiotelephony Operating License, or have a specific training on radiotelephony if their duties involve driving on the manoeuvring area;

(6) they have successfully completed an airside driving theoretical course, and passed the written exams;

(7) they have successfully demonstrated competency, as appropriate, in:

(i) the operation, or use of vehicle transmit/receive equipment;

(ii) understanding and complying with air traffic control and local procedures;

(iii) vehicle navigation on the aerodrome; and

(iv) special skills required for the particular function.

(b) The airside driving authorisation should be valid for a limited period of time, and renewed thereafter, provided that the driver has successfully completed a refresher training course, and meets the requirements (a)(1)–(a)(4) above;

(c) The aerodrome operator could suspend or revoke an airside driving authorisation when the person:

(1) does not fulfil the requirements stated in (a) (1)–(a)(4);

(2) has repeatedly been reported to violate movement area driving rules; and

(3) has been proved to drive under the effect of alcohol or drugs.

(d) It is not necessary that all operators be trained at the same level. for example, operators whose functions are restricted to the apron. For the same reason, the aerodrome operator could establish different types of driving authorisations, e.g. one class for driving at the apron, and another one for the manoeuvring area which may also have different validity periods.

GM2 ADR.OPS.B.025 Operation of vehicles (RMT.0703)

DEVELOPMENT OF A FRAMEWORK FOR A VEHICLE DRIVER TRAINING PROGRAMME

AIRSIDE VEHICLE DRIVER

The following elements could be considered when developing programs and knowledge requirements for an airside vehicle driver training programme:

(a) Airside driving permit (ADP)

(1) the issuing authority, the validity of the permit in terms of time, conditions of use, and its transferability;

(2) ownership of the permit and control, and audit of permit issue;

(3) local enforcement, and driving offence procedures; and

(4) relationship to State driver licensing system.

(b) National legislation and regulation

(1) government/State regulations related to general vehicle driving licenses;

(2) State/regional/local government requirements; and

(3) national aviation safety authority requirements/guidance for driving airside.

(c) Aerodrome regulations and requirements

(1) rules of the air, and ATC procedures applicable to aerodromes as they relate to vehicles, particularly rights of way;

(2) specific aerodrome regulations, requirements, and local instructions;

(3) local methods used to disseminate general information, and instructions to drivers; and

(4) local methods used to disseminate information regarding works in progress.

(d) Personal responsibilities

~~(1) agreed national or aerodrome requirements concerning fitness to drive (medical and health standards);~~

~~(2) issue and use of personal protective equipment, such as high visibility clothing and hearing protection;~~

~~(3) general driving standards;~~

~~(4) no-smoking/no-drinking requirements airside;~~

~~(5) responsibilities with respect to foreign object debris and fuel/oil spillage; and~~

~~(6) the responsibility to ensure that a vehicle is suitable for the task, and is used correctly.~~

~~(e) Vehicle standards~~

~~(1) condition and maintenance standards agreed at the aerodrome, and/or national level;~~

~~(2) the requirement to display obstruction lights and company insignia;~~

~~(3) the requirement for, and content of, daily vehicle inspections;~~

~~(4) agreed standards of aerodrome and company vehicle fault reporting and rectification; and~~

~~(5) local requirements for the issue and display of airside vehicle permits.~~

~~(f) General aerodrome layout~~

~~(1) the general geography of the local aerodrome;~~

~~(2) aviation terminology used such as runway, taxiway, apron, roads, crossings, runway-holding points;~~

~~(3) all aerodrome signs, markings and lighting for vehicles and aircraft;~~

~~(4) specific reference to signs, markings and lighting used to guard runways, and critical areas; and~~

~~(5) specific reference to any controlled/uncontrolled taxiway crossing procedures.~~

~~(g) Hazards of general airside driving~~

~~(1) speed limits, prohibited areas, and no parking regulations;~~

~~(2) the danger zones around aircraft;~~

~~(3) engine suction/ingestion and blast, propellers, and helicopters;~~

~~(4) aircraft refuelling;~~

~~(5) foreign object debris and spillages;~~

~~(6) vehicle reversing;~~

~~(7) staff and passengers walking across aprons;~~

~~(8) air bridges and other services such as fixed electrical ground power;~~

~~(9) the general aircraft turnaround process;~~

~~(10) aircraft emergency stop and fuel cut-off procedures;~~

~~(11) hazardous cargo;~~

~~(12) local vehicle towing requirements;~~

~~(13) requirements for driving at night; and~~

~~(14) requirements for driving in adverse weather conditions, particularly low visibility.~~

~~(h) Local organisations~~

~~(1) the role of the aerodrome operator in setting and maintaining standards;~~

~~(2) the national aviation safety authority and its responsibilities;~~

~~(3) the national and/or local police, and their involvement with airside driving; and~~

~~(4) other enforcement authorities dealing with vehicles, driving, health, and safety.~~

~~(i) Emergency procedures~~

~~(1) actions and responsibilities in a crisis situation (any accident or significant incident occurring on the aerodrome);~~

~~(2) action in the event of a vehicle accident;~~

~~(3) specific action in the event of a vehicle striking an aircraft;~~

~~(4) action in the event of fire;~~

~~(5) action in the event of an aircraft accident/incident; and~~

~~(6) action in the event of personal injury.~~

~~(j) Communications~~

~~(1) radio procedures and phraseologies to be used if applicable;~~

~~(2) light signals used by ATC;~~

~~(3) procedures to be used by vehicle drivers if lost or unsure of position;~~

~~(4) local emergency telephone numbers; and~~

~~(5) how to contact the local aerodrome safety unit.~~

~~(k) Practical training (visual familiarisation~~

~~(1) airside service roads, taxiway crossings, and any restrictions during low visibility;~~

~~(2) aprons and stands;~~

~~(3) surface paint markings for vehicles and aircraft;~~

~~(4) surface paint markings that delineate the boundary between aprons and taxiways;~~

~~(5) signs, markings and lighting used on the taxiway that indicate the runways ahead;~~

~~(6) parking areas and restrictions;~~

~~(7) speed limits and regulations; and~~

~~(8) hazards during aircraft turnarounds and aircraft movements.~~

~~MANOEUVRING AREA VEHICLE DRIVER~~

~~(a) All drivers expected to operate on the manoeuvring area of the aerodrome should obtain an ADP covering the programme above. Any driver expected to drive on the manoeuvring area should, also, obtain an agreed period of experience in general airside driving before training to operate on the manoeuvring area.~~

~~(b) All drivers should be trained initially and be provided with refresher training regularly, with particular additional emphasis on the following areas:~~

~~(1) Aerodrome regulations and requirements~~

~~(i) air traffic control rules, right of way of aircraft;~~

~~(ii) the definition of movement areas, manoeuvring areas, aprons, stands; and~~

~~(iii) methods used to disseminate information regarding works in progress.~~

~~(2) Air traffic control~~

~~(i) the aerodrome control function and area of responsibility;~~

~~(ii) the ground movement control function and area of responsibility;~~

~~(iii) normal and emergency procedures used by ATC relating to aircraft;~~

~~(iv) ATC frequencies used and normal handover/transfer points for vehicles;~~

~~(v) ATC call signs, vehicle call signs, phonetic alphabet, and standard phraseology; and~~

~~(vi) demarcation of responsibilities between ATC and apron control if applicable~~

~~(3) Personal responsibilities~~

~~(i) fitness to drive with particular emphasis on eyesight and colour perception;~~

~~(ii) correct use of personal protective equipment;~~

~~(iii) responsibilities with respect to foreign object debris; and~~

~~(iv) responsibilities with respect to escorting other vehicles on the manoeuvring area.~~

~~(4) Vehicle standards~~

~~(i) responsibility for ensuring the vehicle used is fit for the purpose and task;~~

~~(ii) requirements for daily inspection prior to operating on the manoeuvring area;~~

~~(iii) particular attention to the display of obstruction and general lights; and~~

~~(iv) serviceability of all essential communications systems with ATC and base operations.~~

~~(5) Aerodrome layout~~

~~(i) particular emphasis on signs, markings and lighting used on the manoeuvring area;~~

~~(ii) special emphasis on signs, markings and lighting used to protect the runway;~~

~~(iii) description of equipment essential to air navigation such as instrument landing systems (ILS);~~

~~(iv) description of protected zones related to ILS antenna;~~

~~(v) description of ILS protected areas, and their relation to runway-holding points;~~

~~(vi) description of runway instrument/visual strip, cleared and graded area; and~~

~~(vii) description of lighting used on the manoeuvring area with particular emphasis on those related to low visibility operations.~~

~~(6) Hazards of manoeuvring area driving~~

~~(i) engine suction/ingestion and blast, vortex, propellers, and helicopter operations;~~

~~(ii) requirements for driving at night;~~

~~(iii) requirements for operations in low visibility and other adverse weather conditions;~~

~~(iv) procedures in the event of a vehicle or radio becoming unserviceable while on the manoeuvring area; and~~

~~(v) right of way of aircraft, towed aircraft, and rescue and fire fighting vehicles in an emergency.~~

~~(7) Emergency procedures~~

~~(i) actions to be taken in the event of a vehicle accident/incident;~~

~~(ii) actions to be taken in the event of an aircraft accident/incident;~~

~~(iii) actions to be taken if foreign object debris or other debris is found on runways and taxiways~~

~~(iv) procedures to be used by vehicle drivers if lost or unsure of their position; and~~

~~(v) local emergency telephone numbers.~~

~~(8) Aircraft familiarisation~~

~~(i) knowledge of aircraft types and ability to identify all types normally operating at the aerodrome;~~

~~(ii) knowledge of airline call signs; and~~

~~(iii) knowledge of aircraft terminology relating to engines, fuselage, control surfaces, undercarriage, lights, vents, etc.~~

~~(9) Practical training (visual familiarisation)~~

~~(i) all runways (including access and exit routes), holding areas, taxiways and aprons;~~

~~(ii) all signs, surface markings and lighting associated with runways, holding positions, CAT I, II, and III operations;~~

~~(iii) all signs, surface markings and lighting associated with taxiways;~~

~~(iv) specific markings that demarcate the boundary between aprons and manoeuvring areas;~~

~~(v) navigation aids such as ILS, protected area, antenna, RVR equipment, and other meteorological equipment;~~

~~(vi) hazards of operating around aircraft landing, taking off or taxiing; and~~

~~(vii) any locally used naming convention for particular areas or routes.~~

~~RADIOTELEPHONY~~

~~All drivers of vehicles operating on the manoeuvring area should be expected to display a high degree of competence with respect to the use of RTF phraseology and ICAO language requirements for air ground radiotelephony communications. Emphasis should be placed on the following areas:~~

~~(a) Hierarchy of message priority~~

~~Message priorities, an understanding of distress, alerting, control and information messages.~~

~~(b) Phonetic alphabet~~

~~Correct pronunciation of letters, words, and numbers.~~

~~(c) Standard phraseology~~

~~(1) emphasis on the need for drivers to use standard phraseology; and~~

~~(2) the need for caution with certain phrases such as 'cleared' and 'go ahead'.~~

~~(d) Call signs for aircraft, ATC, and vehicles~~

~~(1) an understanding of terminology and acronyms used by ATC and pilots;~~

~~(2) knowledge of the airline call signs used at the aerodrome; and~~

~~(3) knowledge of vehicle call signs, and that they should be appropriate to their function (e.g. 'Operations', 'Fire', 'Engineer') and numbered when more than one vehicle is used (e.g. 'Fire 2').~~

~~(e) Read back procedures~~

~~The need for vehicle drivers to use standard readback, in the same manner as pilots, for instructions such as 'enter/cross the runway', and if conditional clearances are used.~~

~~(f) Readability scale~~

~~Understanding and use of the readability scale from 1 to 5.~~

~~(g) Lost or uncertain of position~~

~~Understanding of local procedures for vehicle drivers lost or uncertain of their position on the manoeuvring area.~~

~~(h) Vehicle breakdown~~

~~(1) local procedure for vehicle breakdown on runways and taxiways; and~~

~~(2) procedure for notifying ATC of vehicle failure.~~

~~(i) Radio failure~~

~~(1) understanding of the local procedure if radio failure occurs while on the runway or taxiway; and~~

(2) understanding of the light signals that can be used by ATC to pass instructions to vehicles.

(j) Transmitting techniques and use of RTF

(1) understanding the reasons for listening out prior to transmitting;

(2) use of standard phraseology and ICAO air-ground radiotelephony communications procedures;

(3) words and sounds to be avoided;

(4) correct positioning of microphones to avoid voice distortion;

(5) avoidance of 'clipped' transmissions;

(6) awareness of regional accents and variations of speech; and

(7) speed of delivery of RTF phraseology.

(k) Portable radios

(1) correct use of radios;

(2) effective range and battery life;

(3) screening/shielding effects on the aerodrome; and

(4) use of correct call signs, either related to a vehicle or a person.

(l) Safety while using radios

(1) local instructions regarding the use of portable radios and hand-held microphones while driving a vehicle; and

(2) local instructions on the use of mobile telephones while operating airside.

GENERAL CONSIDERATIONS

(a) All three training programmes should consist of two main parts, the first being the theoretical part which should include the use of prepared presentations, maps, diagrams, videos, booklets and checklists as appropriate. The second part should involve practical training and visual familiarisation on the aerodrome with a suitably trained person. This practical tuition will take time depending upon the complexity of the aerodrome.

(b) Where the responsibility for vehicle driver training (apron and manoeuvring area) and RTF training is delegated to a third-party provider, the aerodrome management should institute a programme of audits, as part of its safety management system, to ensure that agreed standards are being maintained.

(c) The framework for a vehicle driver training programme outlined above is intended only as a guide, and is based on current 'good practice'. It is incumbent on aerodrome operators to regularly review their vehicle driver training programmes against programmes and documentation available across the industry.

Rationale

ADR.OPS.B.025 (Operation of vehicles) has been replaced by ADR.OPS.B.025 (Authorisation of vehicle drivers), so the related AMC & GM are deleted and new ones are introduced below.

GM1 ADR.OPS.B.025(a)(1) Authorisation of vehicle drivers (RMT.0703)

GENERAL

Driving authorisations are meant to be issued only to persons whose functions and tasks require the driving of a vehicle on the movement area or other operational areas of the aerodrome.

Driving authorisations cover all types of activities that involve driving in these areas, including but not limited to, aerodrome operations and maintenance, ground handling, security, aircraft maintenance, etc. The identity of the organisation with which a driver is associated (e.g. private entity, State entity) is not considered relevant.

The number of persons authorised to drive on the manoeuvring area, and particularly on runways, should be limited to the minimum required in order to minimise the risk of runway incursions and should be reviewed periodically.

Rationale

This GM explains the intent of the relevant requirement and the activities it concerns, taking into account ICAO Doc 9870 and the content of the EAPPRI.

AMC1 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

TRAINING OF DRIVERS — GENERAL

(a) The training programme that drivers need to follow should depend on the areas where they need to be operating. The following two training programmes should be developed:

(1) General driving training programme

This training should cover the needs of all drivers operating on the apron area and other operational areas of the aerodrome. The successful completion of this training grants a driver the right to operate unescorted a vehicle on aprons and other operational areas of the aerodrome, except on the manoeuvring area.

(2) Manoeuvring area training programme

This training should cover the additional, specific needs of the drivers who will be operating on the manoeuvring area. A driver is granted the right to operate unescorted on the manoeuvring area subject to the:

(a) provisions of AMC3 ADR.OPS.B.025(b) and ADR.OPS.B.025(c);

(b) the successful completion of the general driving training programme; and

(c) the successful completion of the manoeuvring area training programme.

(b) Each of the above-mentioned training programmes (general driving training programme and manoeuvring area training programme) should consist of the following parts:

(1) Theoretical training

The theoretical training should be of a defined and adequate duration, supported by suitable educational means and material, and should take place in a suitably equipped facility. The theoretical training should be followed by a written assessment of the trainees. Once the theoretical part has been successfully completed, the driver should undertake on-the-job training.

(2) On-the-job training

During the phase of the on-the-job training, which needs to be of a defined and adequate duration, the trainees should be provided with adequate practical training and familiarisation with the aerodrome and its procedures. The training during this phase should also cover the use of any specialised vehicle/equipment associated with the driver's task, as appropriate. The performance of the trainee during the provision of the on-the-job training should be assessed.

(3) Assessment of the candidate

Following the completion of the on-the-job-training, the competence of the driver as a whole should be assessed and if found adequate, a driving authorisation should be issued.

Rationale

Currently, the areas that a driver's training should contain are part of GM2 ADR.OPS.B.025 (Operation of vehicles); therefore, not ensuring a minimum set of information to be included in the relevant training programme as AMC1 ADR.OPS.B.025 and AMC2 ADR.OPS.B.025 contain high-level information. For this reason, GM2 ADR.OPS.B.025, AMC1 ADR.OPS.B.025 and AMC2 ADR.OPS.B.025 are deleted and the relevant parts of GM2 ADR.OPS.B.025, AMC1 ADR.OPS.B.025 and AMC2 ADR.OPS.B.025 are slightly adjusted and transferred to this AMC, which describes the types of training programmes that need to be developed as well as the required phases for their implementation.

GM1 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

TRAINING OF DRIVERS — GENERAL

The theoretical training should be supported by material, which provides up-to-date, adequate and suitable information regarding the aerodrome, in the form of presentations, maps, diagrams, videos, booklets, checklists, etc. as appropriate.

Rationale

This GM reproduces the content of a part of GM2 ADR.OPS.B.025.

AMC2 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

DRIVING TRAINING PROGRAMMES

(a) The theoretical part of the general driving training programme should, as a minimum, cover the following areas:

(1) Driving authorisation framework, including:

(i) issuance, validity, conditions of use;

(ii) control and audit of its issue;

(iii) driving violations and enforcement procedures;

(iv) relationship with the national driver licensing system;

(v) national requirements related to general vehicle driving licences;

(vi) national Competent Authority guidance for movement area driving;

(vii) roles of various organisations;

(A) the role of the aerodrome operator in setting and maintaining standards;

(B) the Competent Authority's role and its responsibilities;

(C) the national and/or local police, and their involvement with airside driving; and

(D) any other enforcement authorities dealing with vehicles, driving, health, and safety.

(2) Personal responsibilities, including:

(i) requirements concerning fitness to drive (medical and health standards);

(ii) use of personal protective equipment, (e.g. high-visibility clothing and hearing protection);

(iii) general driving standards;

(iv) no-smoking; use of psychoactive substances and medicines; alcohol consumption requirements;

(v) avoiding disturbing and distracting activities while driving;

(vi) responsibilities with respect to FOD and fuel/oil spillage; and

(vii) the responsibility to ensure that a vehicle is suitable for the task, and is used correctly.

(3) Vehicle standards, including:

(i) condition and maintenance standards at the aerodrome and/or national level;

(ii) the requirement to display obstruction lights and company insignia;

(iii) the requirement for, and content of, daily vehicle inspections;

(iv) vehicle fault reporting and rectification;

(v) requirements for the issue and display of vehicle authorisations; and

(vi) serviceability of all essential communication systems with air traffic services and base operations.

(4) Aerodrome rules and procedures, including:

(i) rules of the air, and air traffic services procedures applicable to aerodromes as they relate to vehicles, particularly rights of way;

(ii) aerodrome regulations, procedures and instructions pertaining to vehicle operations;

(iii) definition of movement areas, manoeuvring areas, aprons, and stands;

(iv) methods used to disseminate general information, and instructions to drivers; and

(v) methods used to disseminate information regarding works in progress.

(5) General aerodrome layout, including:

(i) the general geography of the aerodrome;

(ii) aviation terminology used such as runway, taxiway, apron, roads, crossings, runway-holding points;

(iii) all aerodrome signs, markings and lighting for vehicles and aircraft, including their meaning;

(iv) specific reference to signs, markings and lighting used to guard runways, and critical areas; and

(v) specific reference to any controlled/uncontrolled taxiway crossing procedures.

(6) Hazards of general movement area driving, including:

(i) speed limits, prohibited areas, and no parking requirements;

(ii) the danger zones around aircraft;

(iii) engine suction/ingestion and blast, propellers, and helicopters;

(iv) aircraft refuelling;

(v) FOD and spillages;

(vi) vehicle reversing;

(vii) staff and passengers walking across aprons;

(viii) air bridges and other services such as fixed electrical ground power;

(ix) the general aircraft turnaround process;

(x) aircraft emergency stop and fuel cut-off procedures;

(xi) hazardous cargo;

(xii) vehicle-towing requirements and procedures;

(xiii) driving at night; and

(xiv) driving in adverse weather conditions, particularly low visibility.

(7) Human performance, including:

(i) basic concepts of human factors;

(ii) basic aviation psychology, including:

(A) attention and vigilance;

(B) perception;

(C) memory;

(D) human error;

(E) decision-making;

(F) avoiding and managing errors;

(G) human behaviour; and

(H) human overload and underload.

(8) Emergency procedures, including:

(i) actions and responsibilities in a crisis situation (any accident or serious incident occurring on the aerodrome);

(ii) action in the event of a vehicle accident;

(iii) specific action in the event of a vehicle striking an aircraft;

(iv) action in the event of fire;

(v) action in the event of an aircraft accident/incident; and

(vi) action in the event of personal injury.

(9) Communications, including:

(i) radio procedures and phraseologies to be used (other than with air traffic services);

(ii) light signals used by air traffic services;

(iii) procedures to be used by vehicle drivers if lost or uncertain of their position;

(iv) local emergency telephone numbers;

(v) how to contact the local aerodrome unit;

(vi) portable radio, including:

(A) correct use of radios;

(B) effective range and battery life;

(C) screening/shielding effects on the aerodrome;

(D) use of correct call signs, as applicable; and

(E) safety while using radios, including procedures and instructions regarding the use of portable radios and hand-held microphones while driving a vehicle.

(b) The on-the-job part of the general driving training programme should, as a minimum, include the following visual familiarisation of the aerodrome:

(1) airside service roads, taxiway crossings, and any restrictions during low-visibility conditions;

(2) aprons and stands;

(3) surface paint markings for vehicles and aircraft;

(4) surface paint markings that delineate the boundary between aprons and taxiways;

(5) signs, markings and lighting used on the taxiway that indicate the runways ahead;

(6) parking areas and restrictions;

(7) speed limits and regulations; and

(8) hazards during aircraft turnarounds and aircraft movements.

(c) The theoretical part of the manoeuvring area training programme should, as a minimum, cover the following areas:

(1) Air traffic services, including:

(i) the aerodrome's air traffic services function and area of responsibility;

(ii) the ground movement control function and area of responsibility;

(iii) normal and emergency procedures used by air traffic services relating to aircraft;

(iv) normal handover/transfer points for vehicles;

(v) air traffic services call signs, vehicle call signs; and

(vi) demarcation of responsibilities between air traffic services and apron management unit, if applicable.

(2) Personal responsibilities, including:

(i) fitness to drive with particular emphasis on eyesight and colour perception;

(ii) correct use of personal protective equipment;

(iii) responsibilities with respect to FOD; and

(iv) responsibilities with respect to escorting other vehicles on the manoeuvring area.

(3) Vehicle standards, including:

(i) responsibility for ensuring the vehicle used is fit for the purpose and task and appropriately marked and lighted;

(ii) requirements for daily inspection prior to operating on the manoeuvring area;

(iii) particular attention to the display of obstruction and general lights; and

(iv) serviceability of all essential communication systems with air traffic services and base operations.

(4) Aerodrome layout, including:

(i) particular emphasis on signs, markings and lighting used on the manoeuvring area;

(ii) special emphasis on signs, markings and lighting used to protect the runway;

(iii) description of equipment essential to air navigation such as instrument landing systems (ILS);

(iv) description of protected zones related to ILS antenna;

(v) description of ILS protected areas, and their relation to runway-holding points;

(vi) description of runway instrument/visual strip, cleared and graded area; and

(vii) description of lighting used on the manoeuvring area with particular emphasis on those related to low-visibility operations.

(5) Hazards of manoeuvring area driving, including:

(i) engine suction/ingestion and blast, vortex, propellers, and helicopter operations;

(ii) requirements and procedures for driving at night;

(iii) requirements and procedures for operations in low visibility and other adverse weather conditions;

(iv) right of way of vehicles, aircraft, towed aircraft, and rescue and firefighting vehicles in an emergency.

(6) Emergency procedures, including:

(i) actions to be taken in the event of a vehicle accident/incident on the manoeuvring area;

(ii) actions to be taken in the event of an aircraft accident/incident on the manoeuvring area;

(iii) actions to be taken if FOD or other debris is found on runways and taxiways; and

(iv) local emergency telephone numbers.

(7) Communication procedures, including:

(i) air traffic services frequencies used and areas of applicability;

(ii) language to be used when communicating with the air traffic services;

(iii) procedure to be used by vehicle drivers if lost or uncertain of their position on the manoeuvring area;

(iv) procedure for a vehicle breakdown on runways and taxiways and notifying the air traffic services unit of such events; and

(v) radio communication failure:

(A) procedure in the event of a radio communication or transponder failure while a vehicle is on manoeuvring area; and

(B) procedures for light signals that can be used by the air traffic services unit to pass instructions to a vehicle driver on the manoeuvring area.

(8) Aircraft familiarisation, including:

(i) knowledge of aircraft types and ability to identify all types normally operating at the aerodrome;

(ii) knowledge of aircraft call signs; and

(iii) knowledge of aircraft terminology relating to engines, fuselage, control surfaces, undercarriage, lights, vents, etc.

(d) The on-the-job part of the manoeuvring area training programme should, as a minimum, include the following visual familiarisation of the aerodrome:

(1) all runways (including access and exit routes), holding areas, taxiways and aprons;

(2) all signs, surface markings and lighting associated with runways, holding positions, CAT I, II, and III operations;

(3) all signs, surface markings and lighting associated with taxiways;

(4) specific markings that demarcate the boundary between aprons and manoeuvring areas;

(5) navigation aids such as ILS, protected areas, antenna, RVR equipment, and other meteorological equipment;

(6) hazards of operating around aircraft landing, taking off or taxiing; and

(7) any used naming convention for particular areas or routes.

Rationale

Currently, the areas that a driver's training should contain are part of GM2 ADR.OPS.B.025 (Operation of vehicles); therefore, not ensuring a minimum set of information to be included in the relevant training programme, as AMC1 ADR.OPS.B.025 and AMC2 ADR.OPS.B.025 contain high-level information. For this reason, GM2 ADR.OPS.B.025, AMC1 ADR.OPS.B.025 and AMC2 ADR.OPS.B.025 are deleted and the relevant part of GM2 ADR.OPS.B.025 is transferred in this proposed AMC.

The new AMC defines the areas of training for the two types of training programme to be developed. Moreover, the area of human performance has been added in the training areas, given its direct relation to the effective management of the related risks.

AMC3 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

RADIOTELEPHONY

(a) Any driver who will be operating on the manoeuvring area should undertake and complete a radiotelephony training, demonstrating both theoretical knowledge and practical competency in voice communication procedures.

(b) Theoretical training

The theoretical training should emphasise on the following areas:

(1) Categories of messages

Message categories and priorities; an understanding of distress, alerting, control and information messages.

(2) Use of phonetic alphabet

Correct pronunciation and transmission of letters, words and numbers.

(3) Use of standard phraseology

(i) emphasis on the need for drivers to use standard phraseology; and

(ii) the need for caution with certain phrases such as 'cleared' and 'go ahead'.

(4) Use of call signs for aircraft, air traffic services, and vehicles

(i) understanding of terminology and acronyms used by air traffic services and pilots;

(ii) knowledge of the airline call signs used at the aerodrome; and

(iii) knowledge of the vehicle call signs used at the aerodrome.

(5) Read-back procedures

The need for vehicle drivers to use standard read back, in the same manner as pilots, for instructions such as 'enter/cross the runway', and if conditional clearances are used.

(6) Test procedures including readability scale

Understanding and use of the readability scale from 1 to 5.

(7) Transmitting techniques and use of radiotelephony

(i) understanding the reasons for listening out prior to transmitting;

(ii) use of standard phraseology and ICAO air-ground radiotelephony communication procedures;

(iii) words and sounds to be avoided;

(iv) correct positioning of microphones to avoid voice distortion;

(v) avoidance of 'clipped' transmissions;

(vi) awareness of regional accents and variations of speech; and

(vii) speed of delivery of RTF phraseology.

(c) On-the-job training

In this phase, the training should cover the use of fixed or portable radio communication devices, and the practical use of the theoretical knowledge acquired in the previous phase of the training, through the implementation of the aerodrome's communication procedures.

The on-the-job training on radiotelephony may be provided in the course of an overall on-the-job training, which involves the training on the use of vehicles or specialised vehicle/equipment associated with the driver's task, or training on the operating procedures of the aerodrome, etc.

Rationale

Currently, the areas that need to be included in the radiotelephony training are part of GM2 ADR.OPS.B.025. However, the existing provisions do not ensure a minimum of training areas to be included in the training programme. For this reason, GM2 ADR.OPS.B.025 is deleted and the relevant part of its content is transferred in this AMC, slightly modified to align with the other

proposed AMC. This AMC covers the training areas of the radiotelephony training of drivers operating on the manoeuvring area.

AMC4 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

LANGUAGE COMPETENCE

(a) The aerodrome operator should develop a method to assess the language competence of drivers who will be operating on the manoeuvring area, and to ensure that they remain competent in the language or languages used at the aerodrome for radio communication purposes with the air traffic services unit, both in the use of phraseologies and plain language, at the required level. The assessment method should be designed to reflect a range of tasks undertaken by a driver but with focus on the language rather than on operational procedures. The assessment should determine the person's ability to:

(1) communicate effectively using standard radiotelephony phraseology; and

(2) deliver and understand messages in plain language in both usual and unusual situations that necessitate departure from standard radiotelephony phraseology.

ASSESSORS

(b) The assessment of the language competency should be conducted by suitably trained and qualified persons. They should be either aviation specialists or language specialists with additional aviation-related training. An alternative approach may be to form an assessment team consisting of an operational expert and a language expert. The assessors should be trained on the specific requirements of the assessment and should not test persons to whom they have provided language training.

(c) The aerodrome operator may develop or conduct the language assessment itself or contract this task to language assessment bodies, which are independent of the language training provision, and which are acceptable to the Competent Authority.

Rationale

This specific AMC intends to provide a means to assess one's ability to speak and understand the language used for radiotelephony communications, thus supporting the implementation of the relevant proposed requirement on language competence.

AMC5 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

TRAINING OF DRIVERS EMPLOYED BY OTHER ORGANISATIONS

(a) In the case that the aerodrome operator permits an organisation operating or providing services at the aerodrome to provide, in whole or in part, the required training to the organisation employees, a relevant agreement should be in place.

In such cases, as the aerodrome operator remains responsible for the implementation of the relevant training programme in a seamless and consistent manner that meets the required training objectives, it should include such activities under its safety management system, and ensure, through an audit programme implemented by its compliance monitoring function, that:

(1) the organisation possesses the required facilities, means, resources and competence; and

(2) the training is continually delivered according to the required standard, the syllabus and content of the programme established and updated by the aerodrome operator, and that the relevant procedures are adhered to.

(b) In case the aerodrome operator agrees with an organisation operating or providing services at the aerodrome that the latter will provide the necessary training to its own employees, the aerodrome operator should ensure, through an appropriate mechanism, that the relevant records are forwarded to the appropriate organisational unit of the aerodrome operator prior to and following the issuance of a driving authorisation.

Rationale

Currently, GM2 ADR.OPS.B.025 refers to the delegation of such training to third parties, without providing further details. Given that GM2 ADR.OPS.B.025 is proposed to be deleted, the intent of this AMC is to clearly specify the conditions to be met for the cases where an aerodrome operator accepts that a third party will provide the necessary training for its own personnel, thus supporting the implementation of the relevant proposed requirement.

GM2 ADR.OPS.B.025(b) Authorisation of vehicle drivers (RMT.0703)

TRAINING OF DRIVERS EMPLOYED BY OTHER ORGANISATIONS

Irrespective of the identity of the organisation that provides the training to the required personnel, the driving authorisation may only be issued by the aerodrome operator itself, as foreseen in point (a) of the requirement.

Rationale

This GM provides information as to the intent of the requirement regarding the issuance of a driving authorisation.

AMC1 ADR.OPS.B.025(e)(3) Authorisation of vehicle drivers (RMT.0703)

RECURRENT AND REFRESHER TRAINING

(a) Recurrent training

The recurrent training should cover the areas addressed in the initial training provided. The duration of the training should also take into account the changes that have taken place in the subjects covered by the initial training.

(b) Refresher training

The refresher training may be shorter than the recurrent training, and should aim at providing drivers who have been absent with information regarding their duties, especially about changes that may have taken place during their absence.

Rationale

The proposed AMC intends to support the implementation of the proposed requirement by providing a means to comply with the requirement to provide recurrent and refresher training.

GM1 ADR.OPS.B.025(g) Authorisation of vehicle drivers (RMT.0703)

DRIVING AUTHRORISATION FORMAT

There are many solutions for issuing a driving authorisation. A combination of the driving authorisation with the badge issued to personnel or the issuance of a separate card are some of the possible solutions. In any case, it is important that the rights of the holder are clearly contained in the authorisation.

Rationale

This GM provides information regarding the implementation of the relevant requirement.

AMC1 ADR.OPS.B.025(h) Authorisation of vehicle drivers (RMT.0703)

TEMPORARILY PERMITTING THE DRIVING OF VEHICLES

When permitting temporarily the driving of a vehicle, the period for which the permit is valid and the areas in which the driver will be allowed to operate under escort should be specified.

The escort of a vehicle whose driver has been issued a temporary driving permit should only be performed by the aerodrome operator.

Rationale

This AMC details the way in which a temporary driving permit may be issued and the relevant information that it needs to contain.

GM1 ADR.OPS.B.025(h) Authorisation of vehicle drivers (RMT.0703)

TEMPORARILY PERMITTING THE DRIVING OF VEHICLES

ADR.OPS.B.025 in general addresses the case of authorisation of drivers whose nature of work and activities involves regular presence and driving within the aerodrome environment.

However, there are cases where it may be necessary to temporarily allow the driving of a vehicle on the movement area or other operational areas of the aerodrome for other reasons (e.g. a contractor's vehicle that needs to enter the movement area for maintenance activities taking place at the aerodrome, etc.).

In cases where the driving on the movement area or other operational areas is necessary but for a limited period of time, the aerodrome operator may permit such driving without requiring the driver to undergo the process for the issuance of an authorisation for the driving of this vehicle. It is expected, however, that before being permitted to operate in such areas, such drivers will be adequately briefed about their obligations while operating within the aerodrome perimeter, and that the aerodrome operator has developed procedures to be implemented during this type of operations.

In any case, the issuance of such a permit for such a driver does not waive the obligation of the aerodrome operator to ensure:

— the suitability of the vehicle that this driver may be temporarily driving into the aerodrome area, in accordance with ADR.OPS.B.026 (d)(1); and

— that this vehicle will in any case be escorted. For the characteristics of the vehicle that will be escorting that vehicle, see ADR.OPS.B.026 (d)(2);(3).

Rationale

This GM provides explanation about the intent of the relevant requirement for the issuance of temporary driving permits and the expected actions from an aerodrome operator.

AMC1 ADR.OPS.B.025(e) Authorisation of vehicle drivers (RMT.0703)

PROCEDURES FOR ISSUANCE OF DRIVING AUTHORISATIONS AND TEMPORARILY PERMITTING DRIVING OF VEHICLES, AND RELEVANT MONITORING ACTIVITIES

(a) The aerodrome operator should clearly identify responsibilities for:

(1) assessing language competence, issuing driving authorisations and temporary driving permits;

(2) ensuring that the prerequisites for maintaining a driving authorisation valid continue to be met;

(3) monitoring the compliance of the drivers with the driving rules applicable at the aerodrome, and taking appropriate action as the case may be. Such actions should include the possibility of suspension of revocation of the driving authorisation or of temporary driving permit.

(b) Issuing such authorisations, temporarily permitting the driving of vehicles and ensuring that the prerequisites for maintaining a driving authorisation valid should be a controlled activity.

(c) Irrespective of the organisational setup chosen, it should be ensured that information regarding drivers who:

(1) do not continue to meet the requirements for maintaining the validity of the relevant driving authorisation; or

(2) violate the driving requirements,

is forwarded to the aerodrome unit(s) responsible for the issuance/revocation of the driving authorisations, in a timely manner, to take appropriate action depending on the case.

(d) The established procedures should clearly indicate how cases of violations of the applicable driving requirements at the aerodrome are dealt with. They should especially take into account the seriousness of each violation and also address cases of repeated violations of the applicable driving requirements. The cases where a driver should be required to undergo additional training should also be addressed in the procedures.

Rationale

This AMC contains general means to support the implementation of the relevant provisions of the proposed requirement.

AMC1 ADR.OPS.B.026(a)(1);(3) Authorisation of vehicles (RMT.0703)

EQUIPAGE OF VEHICLES — GENERAL

(a) An updated copy of the movement area chart of sufficient size, including Hot-Spots, as well the visual aids configuration on the aerodrome, and areas to be safeguarded, should be readily available in the driver's cabin.

(b) The aerodrome operator, in coordination with the air traffic services provider and, if applicable, the apron management services provider, if different, should assess in which areas of the aerodrome, except the manoeuvring area, a vehicle needs to be equipped with a radio.

In this case, the radio should allow two-way communication with the air traffic services unit, and any other unit that the driver of the vehicle may need to establish contact with.

Information regarding the frequencies of each unit should be readily available in the driver's cabin, as well as the frequencies that may need to be used at different areas of the aerodrome.

Rationale

The content of the AMC and GM is addressing recommendations contained in ICAO Doc 9870 and EAPPRI.

GM1 ADR.OPS.B.026(b) Authorisation of vehicles (RMT.0703)

LIMITING THE NUMBER OF VEHICLES

The aerodrome operator should try to limit vehicular activity to what is necessary, in order to ensure the safety of operations, but also taking into account the need to ensure the proper and smooth functioning of the aerodrome.

In this respect, vehicle use may be limited to those vehicles which are necessary to support the ground servicing and handling of aircraft cargo/mail and passengers, aerodrome maintenance and operations, including aerodrome emergency services, aerodrome security services, and State authorities vehicles.

Vehicles on the manoeuvring area should be limited to those absolutely necessary, especially on the runway. Vehicles allowed to operate on the runway should include only these necessary for operational activities such as inspections and maintenance, and emergency vehicles. It is not advisable to increase runway use by other vehicles such as those involved in ground operations, such as aircraft towing, etc. unless there is no alternative route.

Rationale

This GM provides information as to the need to limit the number of vehicles authorised to operate on the movement area and other operational areas of an aerodrome. Moreover, it provides guidance that may be applied to effectively control the number of vehicles and to avoid additional traffic at high-risk areas.

AMC1 ADR.OPS.B.026(c)(1) Authorisation of vehicles (RMT.0703)

GENERAL

A vehicle authorisation should be carried at a prominent place inside the vehicle.

Rationale

This AMC aims at satisfying the need to monitor the access rights granted to any given vehicle.

GM1 ADR.OPS.B.026(c)(1) Authorisation of vehicles (RMT.0703)

GENERAL

Depending on the number of vehicles and the complexity of the aerodrome, the use of colour-coded vehicle authorisations is a solution that may be considered, to facilitate the control of the vehicles.

Rationale

This GM provides information on possible solutions that may be applied with regard to the need to monitor the access rights to any given vehicle.

GM1 ADR.OPS.B.026(d) Authorisation of vehicles (RMT.0703)

TEMPORARILY PERMITTING VEHICLE OPERATION

When it is necessary to allow the use of a vehicle on the movement area or other operational areas for any reason for a limited period of time (e.g. maintenance activities, etc.), the aerodrome operator may issue a temporary permit for the operation of this vehicle.

In such cases, a visual inspection of the vehicle should at least be conducted, for obvious damages or malfunctions of the vehicle (e.g. leakages, braking system, condition of tyres, lights, etc.) to determine the serviceability of the vehicle.

If the vehicle will not be operated on the manoeuvring area, then apart from determining its serviceability, such a vehicle needs to be escorted by a vehicle equipped with a radio, in accordance with ADR.OPS.B.026 (d)(2), if in the areas where it is going to operate vehicles are required to be equipped with a radio.

Moreover, vehicles intended to be operated on the manoeuvring area, are required to comply with lighting and marking requirements as defined in ADR.OPS.B.080. Thus, if the vehicle needs to enter the manoeuvring area for a limited period of time, this may be done after ensuring compliance with the provisions of ADR.OPS.B.080 (b)(2), but also with the requirement for the vehicle to be escorted by a vehicle, or vehicles equipped with a radio, in accordance with ADR.OPS.B.026 (d)(2). Particular attention should be paid to the cases where two or more vehicles are temporarily entering the aerodrome, and particularly the manoeuvring area, forming a convoy. In such cases, the escorting vehicles should be in positions that allow the monitoring of all escorted vehicles at all times, to ensure that all vehicles comply with the instructions of the air traffic services unit.

In any case, temporarily permitting the use of the vehicle in accordance with ADR.OPS.B.026(d) does not waive the obligation of the aerodrome operator to ensure that the driver of the vehicle holds a driving authorisation or a permit to temporarily drive into the aerodrome area, as the case may be, in accordance with ADR.OPS.B.025.

Rationale

This GM provides explanation about the intent of the relevant requirement for the issuance of temporary vehicle permits and the actions expected from an aerodrome operator.

GM1 ADR.OPS.B.026(e) Authorisation of vehicles (RMT.0703)

VEHICLE CALL SIGNS

The use of similar call signs may lead to call sign confusion, which is one of the factors associated with runway incursions.

To avoid call sign confusion, when assigning a call sign to a vehicle, careful consideration should be given to the call signs used by aircrafts operating at the aerodrome, as well as the call signs of other vehicles.

Ways to reduce the possibility of call sign confusion include:

(a) use of unique numbers or identification call signs for each vehicle; and

(b) use of call signs which are appropriate to the function of the vehicle (e.g. 'Operations', 'Fire'. Where more than one vehicle is used in the same function, then a numbering policy may be used, such that the call sign is followed by a number, e.g. 'Operations 1'.

At aerodromes where the number of vehicles and the aircraft traffic is high, before assigning a call sign to a vehicle, it is recommended that the aerodrome operator consult the air traffic services provider and the other organisations operating vehicles at the aerodrome. As soon as a call sign is assigned to a vehicle, this needs to be known by at least the air traffic services provider.

Rationale

The proposed GM, is based on ICAO Doc 9870 and the content of EAPPRI, and provides information as to use of vehicle call signs.

AMC1 ADR.OPS.B.026(f) Authorisation of vehicles (RMT.0703)

PROCEDURES FOR ISSUANCE OF VEHICLE AUTHORISATIONS, TEMPORARILY PERMITTING THE OPERATION OF VEHICLES, ASSIGNING CALL SIGNS AND RELEVANT MONITORING ACTIVITIES

(a) The procedures should clearly identify responsibilities for:

(1) issuing vehicle authorisations, temporarily permitting the operation of a vehicle and assigning call signs to vehicles;

(2) ensuring that the prerequisites for maintaining a vehicle authorisation valid continue to be met;

(3) monitoring the compliance of vehicles with the relevant requirements, and taking of appropriate action depending on the case. Such actions should include the possibility of suspension and revocation of a vehicle authorisation or a permission for the temporary operation of a vehicle.

(b) Issuing vehicle authorisations, temporarily permitting the operation of vehicles and ensuring that the prerequisites for maintaining a vehicle authorisation valid should be a controlled activity.

(c) Irrespective of the organisational setup chosen to monitor the compliance of vehicles with the applicable requirements, a close cooperation should be established with the organisational unit(s):

(1) responsible for the implementation of the maintenance programme (see ADR.OPS.C.007); and

(2) monitoring the implementation of the maintenance programme of the vehicles of organisations operating or providing services at the aerodrome.

It should be ensured that information regarding vehicles which do not continue to meet the relevant requirements is forwarded to the responsible aerodrome unit(s) (if different) to take appropriate action.

(d) The established procedures should clearly indicate how cases of violations of the applicable requirements are dealt with, taking also into account the significance of each violation.

Rationale

This AMC contains general means to support the implementation of the relevant provisions of the proposed new requirement ADR.OPS.B.026.

GM1 ADR.OPS.B.027(e)(1) Operation of vehicles (RMT.0703)

OPERATION OF VEHICLES ON RUNWNAY STRIPS, RESA AND CLEARWAYS

For the establishment of a runway-holding position or any road holding positions, see CS ADR-DSN.D.340.

Rationale

This GM provides information about the certification specification according to which a runway-holding position or road-holding position is established.

AMC1 ADR.OPS.B.027(h)(2) Operation of vehicles (RMT.0703)

DISTURBING AND DISTRACTING ACTIVITIES WHILE DRIVING

When driving, a 'sterile-cab concept' should be implemented. In line with this, drivers should avoid being involved in non-essential activities that may affect their attention, situational awareness or judgement.

Such activities include but are not limited to the following:

(a) texting with mobile phones;

(b) making or answering phone calls;

(c) listening to music when driving a radio-equipped vehicle;

(d) being involved in activities that require the lowering of the radio volume; and

(e) non-essential conversations with other persons that are in the driver's cabin, or over the radio.

Rationale

The AMC defines some activities that are considered distracting and to have a negative effect on situational awareness or decision-making, based on ICAO Doc 9870 and EAPPRI.

AMC1 ADR.OPS.B.028 Aircraft towing (RMT.0703)

AIRCRAFT TOWING PROCEDURES

(a) The procedures should, as a minimum, cover the following:

(1) manoeuvring procedures, including turning direction(s), when exiting a stand, and limitations to aircraft types as applicable;

(2) measures to control other traffic on the apron area during the manoeuvring of the towed aircraft;

(3) towing routes to be followed, taking into account the aircraft characteristics and its compatibility with the design characteristics of the aerodrome and its operation;

(4) coordination with the air traffic services unit and the apron management services unit, if different;

(5) communication procedures to be applied during towing procedures;

(6) ensuring the display of lights by the aircraft to be towed, at day and night;

(7) cases where guidance (e.g. marshaller and/or wing-walker) is needed in order to ensure aircraft clearance from obstacles;

(8) runway crossing, if applicable;

(9) cases where the use of a 'follow-me' service is required; and

(10) the safety measures to be taken to execute towing operation in adverse weather phenomena (slush, ice, etc.) or visibility conditions, and cases where such an operation may be limited or not permitted.

Rationale

The AMC defines the minimum content of the towing procedure from an aerodrome's perspective, taking also into account the SERA rules regarding aircraft towing activities.

GM1 ADR.OPS.B.028 Aircraft towing (RMT.0703)

LIGHTS TO BE USED DURING TOWING

For the lights that need to be operated during towing of an aircraft, see SERA.3215 'Lights to be displayed by aircraft'.

Rationale

This GM provides information as to the lights that need to be displayed in accordance with the SERA requirements.

AMC1 ADR.OPS.B.030(b) Surface movement guidance and control system (RMT.0703)

STANDARD TAXI ROUTES

(a) Where established, such routes should:

(1) cover aircraft taxiing between runways, aprons, and maintenance areas (if available);

(2) be direct, simple and, where practicable, designed to avoid traffic conflicts and capable of being used in both good- and low-visibility conditions;

(3) be identified by designators distinctively different from those of the runways and air traffic services routes;

(4) if possible, be direct, simple and capable of being used in all weather conditions and should offer minimum conflict with the routes of other aircraft or vehicles;

(5) be adequate and suitable for the largest aircraft likely to use them, taking as a minimum into account its interaction with the aerodrome facilities, navigation aids, aerodrome surfaces, and the operation of other aircraft.

(b) Where standard taxi routes are provided, details of such routes should be published in the Aeronautical Information Publication (AIP) and shown on aerodrome charts, or ground movement chart, depending on the complexity of the movement area, available aids and facilities.

Where a route includes taxiing between areas under control of air traffic services and the apron management services, the transition points should be indicated on either the aerodrome chart or ground movement chart.

Rationale

The AMC is based on the relevant content of ICAO Doc 9476 (SMGCS) with a view to facilitating the implementation of the relevant proposed provision ADR.OPS.B.030.

GM1 ADR.OPS.B.030(b) Surface movement guidance and control system (RMT.0703)

STANDARD TAXI ROUTES

Standard taxi routes may be provided in order to maintain or increase safety, regularity, and efficiency of operations especially in low-visibility conditions or high traffic, by minimising the amount of control intervention and the consequent volume of radiotelephony communications and workload.

However, as not all aerodromes:

— serve the same level of traffic or have the same traffic density;

— are operated in the same pattern, or under the same visibility conditions;

— have the same size, design and complexity,

the aerodrome operator should assess, in coordination with the air traffic services provider, the need to establish standard taxi routes. In this process, the views of the aerodrome users may also be sought, through the aerodrome's local runway safety team.

Further guidance for the development of standard taxi routes may be found in ICAO Manual of Surface Movement Guidance and Control Systems (Doc 9476), Chapters 3 and 6.

Rationale

This GM is based on the relevant content of ICAO Doc 9476 (SMGCS) with a view to facilitating the implementation of the relevant proposed provision ADR.OPS.B.030.

AMC1 ADR.OPS.B.030(c) Surface movement guidance and control system (RMT.0703)

USE OF AIRCRAFT TRANSPONDER

The transponder operating procedures and the relevant information that needs to be sent to the aeronautical information services provider for publication in the AIP should include the phases and areas of the aerodrome that the transponder needs to be used when an aircraft is on the movement area of the aerodrome, and measures to prevent causing false ACAS II Resolution Advisories to airborne aircraft in the vicinity of the aerodrome.

Such information should be published in the local aerodrome regulations and in the AIP, following coordination with the Competent Authority. The aerodrome operator may additionally consider requesting the broadcast of relevant information via the local Automated Terminal Information Service (ATIS).

Rationale

The proposed AMC provides details as to the actions an aerodrome operator needs to undertake in order to ensure the adequacy of the information published in the AIP with regard to the use of transponder by aircraft at the aerodrome.

GM1 ADR.OPS.B.031(b) Communications (RMT.0703)

SITUATIONAL AWARENESS

Improving the situational awareness of vehicle drivers operating on the manoeuvring area is important, as it may also affect the situational awareness and decision-making of the air traffic services personnel, and flight crews. Situational awareness is improved by conducting communications in a common frequency and language, whenever this is possible.

Rationale

The proposed GM, which is based on the content of ICAO Doc 9870 and the EAPPRI, aims at providing information about the need to ensure situational awareness of all parties concerned.

GM1 ADR.OPS.B.031(b)(4) Communications (RMT.0703)

RADIO COMMUNCIATION FAILURE

(a) The signals to be used in case of radio communication failure between air traffic services and vehicles or pedestrians authorised to operate on the manoeuvring area should have the following meaning:

LIGHTS SIGNAL FROM AIR TRAFFIC SERVICES	MEANING
Green flashes	Permission to cross landing area or to move onto taxiway
Steady red	Stop
Red flashes	Move off the landing area or taxiway and watch out for aircraft
White flashes	Vacate manoeuvring area in accordance with local instructions

(b) In emergency conditions or if the signals in point (a) are not observed, the signal given below will be used for runways or taxiways equipped with a lighting system and should have the following meaning:

LIGHT SIGNAL	MEANING
Flashing runway or taxiway lights	Vacate the runway and observe the tower for light signal

(c) Care should be taken to ensure that the procedures address the case where due to the prevailing visibility conditions, the light signals may not be seen by the driver or the pedestrian authorised to operate on the manoeuvring area.

Rationale

The proposed GM, which mirrors relevant draft provisions proposed through EASA Opinion No 03/2018, is based on PANS-ATM provisions (paragraphs 7.6.3.2.3.2 and 7.6.3.2.3.3) regarding the case of radio communication failure. Similar recommendations are contained in ICAO Doc 9870 and the EAPPRI.

AMC1 ADR.OPS.B.033(a) Control of pedestrians (RMT.0703)

GENERAL

The procedures to prevent unauthorised access to the movement area and other operational areas of the aerodrome to persons who are not allowed to have access to such areas should be coordinated with the responsible security competent authority.

In case passengers are embarking/disembarking on the apron, or if no transportation means is used for their transfer to/from the terminal building or from one stand to the other, then apart from the need to ensure that they are always escorted, the procedures should, amongst others, include jet-blast protection measures during their presence on the apron.

Rationale

The content of the AMC aims at addressing the need to coordinate the procedures to control unauthorised access on the movement area, which could, amongst others, lead to runway safety occurrences, as well as to control the movement of passengers on the apron in order to prevent similar safety occurrences.

AMC1 ADR.OPS.B.033(b) Control of pedestrians (RMT.0703)

PERSONNEL OPERATING ON THE MANOEUVRING AREA

(a) Personnel allowed access to the manoeuvring area without the use of a vehicle should be equipped at least with personal protective equipment, suitable charts of the aerodrome, and other appropriate means to conduct their duties suitable to the situation and local condition.

(b) The procedures should, as a minimum, provide information as to:

(1) which personnel can enter the manoeuvring area and for which purposes;

(2) the points from which entry to the manoeuvring area can take place;

(3) the hours and minimum visibility conditions that such an entry is allowed;

(4) communication with the air traffic services unit prior to entering the manoeuvring area and afterwards;

(5) communication with the respective unit of the aerodrome operator;

(6) actions to be taken in the event of communication failure;

(7) right of way between vehicles, pedestrians and aircraft.

(c) The procedures should be coordinated with the air traffic services unit.

Rationale

The content of this AMC intends to facilitate the implementation of the proposed requirement regarding the entry of pedestrians on the manoeuvring area, by addressing the minimum content of the safety procedures that need to be in place for such an operation and providing a means to comply with the need to provide such personnel with suitable equipment.

~~**AMC1 ADR.OPS.B.035 Operations in winter conditions**~~ **(RMT.0704)**

~~**GENERAL**~~

~~(a) The aerodrome operator should prepare, in collaboration with air traffic services provider and other relevant parties, procedures for winter maintenance (snow plan). The procedures should include requirements for inspections, criteria for snow-clearing, priorities for snow-clearing, criteria for preparation of operational surfaces, requirements for marking of snow-covered operational surfaces, and methods for assessing and reporting the surface conditions. The criteria specified in the winter maintenance procedures should be minimum criteria for maintaining safe aerodrome operations, including criteria for suspension of runway operation.~~

~~(b) The aerodrome operator should ensure that snow, slush, ice, standing water, and other contaminants are removed from the surface of a paved runway, as rapidly and completely as possible, to minimise accumulation.~~

~~(c) The aerodrome operator should, as adequate, avoid harmful effects on environment, aircraft or pavements when using chemicals to remove snow, slush, ice, and other contaminants from operational surfaces.~~

Rationale

It is proposed to delete the AMC because the content of point (a) that refers to the content of the snow plan is transferred to the new AMC1 ADR.OPS.B.035(a)(3). Point (b) which refers to the removal of contaminants is transferred to the new AMC1 ADR.OPS.B.035(a)(1), and point (c) that refers to the use of material to prevent the formation of ice or frost is transferred to the new AMC1 ADR.OPS.B.035(a)(2).

~~**GM1 ADR.OPS.B.035 Operations in winter conditions**~~ **(RMT.0704)**

~~**AERODROME SNOW PLAN**~~

~~(a) The aerodrome snow plan should be published and made available to all concerned in snow clearance.~~

~~(b) Details of the equipment available at the aerodrome should be published in the Aeronautical Information Publication (AIP).~~

~~(c) The aerodrome snow plan should include the following:~~

~~(1) the Snow Committee members and the person in charge of the snow clearance operation, with a chain of command giving a breakdown in duties;~~

~~(2) methods of communication between aerodrome operations, air traffic control, and the Meteorological Office;~~

~~(3) the equipment available for snow clearance. This should include equipment for ploughing, sweeping, and blowing snow;~~

~~(4) priority of surfaces to be cleared, and clearance limits for aircraft using the aerodrome;~~

~~(5) collection of information for SNOWTAM and dissemination of this information;~~

~~(6) designated snow dumping or melting areas to avoid confusion during the actual clearance operations;~~

~~(7) an alerting system in order that sufficient warning is given to all bodies concerned;~~

~~(8) the manpower available, including staff for equipment maintenance arrangements for shifts, and call out procedures;~~

~~(9) deployment of equipment and tactical approaches to be used;~~

~~(10) general principles to be followed in deciding when to close runways for snow clearance and designation of management personnel authorised to make the decision;~~

~~(11) methods of assessing and reporting the surface conditions; and~~

~~(12) criteria for the suspension of runway operations.~~

Rationale

It is proposed to delete this GM which covers the aerodrome snow plan. The content of the GM is transferred to the new AMC1 ADR.OPS.B.035(a)(3).

AMC1 ADR.OPS.B.035(a)(1) Operations in winter conditions (RMT.0704)

REMOVAL OF CONTAMINANTS

The aerodrome operator should ensure that:

(a) snow, slush, ice, standing water, and other contaminants are removed from the surface of a paved runway, as rapidly and completely as possible, to minimise accumulation;

(b) operational taxiways are kept clear of snow slush or ice to the extent necessary to enable aircraft to be taxied to and from an operational runway; and

(c) those parts of the apron which are intended to be used by aircraft are kept clear of snow, slush or ice, to the extent necessary to enable aircraft to manoeuvre safely, or where appropriate, to be towed or pushed.

Rationale

The new AMC refers to the removal of contaminants. Point (a) is related to the removal of the contaminants from the surface of the runway, while points (b) and (c) refer to taxiways and the parts of the apron intended to be used by aircraft. The AMC transposes Standard 10.3.1 and Recommendations 10.3.2 and 10.3.3 of ICAO Annex 14.

AMC1 ADR.OPS.B.035(a)(2) Operations in winter conditions (RMT.0704)

USE OF MATERIALS

(a) The aerodrome operator should use materials to remove or to prevent the formation of ice and frost on aerodrome pavements or to improve runway surface friction when conditions indicate that their use could be effective. Caution should be exercised in the application of the materials so as not to create more slippery conditions.

(b) The aerodrome operator should, as practicable, avoid harmful effects on environment, aircraft or pavements when using chemicals to remove snow, slush, ice and other contaminants from operational surfaces.

Rationale

This new AMC is proposed and it covers the use of de-/anti-icing materials. Point (a) transposes Recommendation 10.3.5 ICAO Annex 14 and point (b) is transferred from the proposed to be deleted AMC1 ADR.OPS.B.035 and transposes the Standard 10.3.6 of ICAO Annex 14.

AMC1 ADR.OPS.B.035(a)(3) Operations in winter conditions (RMT.0704)

AERODROME SNOW PLAN

The aerodrome snow plan should be proportionate to the exposure of the aerodrome to winter conditions and should include the following, where appropriate:

(a) the Snow Committee members and the person in charge of the winter operation, with a chain of command giving a breakdown in duties;

(b) methods of communication between aerodrome operations, air traffic control, and the Meteorological Office;

(c) the equipment available for snow clearance and surface treatment. This should include equipment for ploughing, sweeping, and blowing snow and application of materials;

(d) priority of surfaces to be cleared, and clearance limits for aircraft using the aerodrome;

(e) collection of information for RCR and dissemination of this information;

(f) designated snow dumping or melting areas;

(g) an alerting system in order that sufficient warning is given to all bodies concerned;

(h) the manpower available, including staff for equipment maintenance arrangements for shifts, and call out procedures;

(i) deployment of equipment and tactical approaches to be used;

(j) general principles to be followed in deciding when to close runways for snow clearance and designation of management personnel authorised to take the decision;

(k) methods of assessing and reporting the surface conditions; and

(l) criteria for the suspension of runway operations.

Rationale

Currently, the content of the aerodrome snow removal plan is in GM1 ADR.OPS.B.035 (Operations in winter conditions). The plan must be part of the aerodrome manual; however, the existing provisions do not ensure a minimum set of information to be included. For this reason, GM1 ADR.OPS.B.035 is deleted and its content is transferred to this AMC, thereby elevating its content from GM to AMC.

AMC2 ADR.OPS.B.035(a)(3) Operations in winter conditions (RMT.0704)

COORDINATION

The aerodrome operator should establish the order of priority for snow, slush and ice clearance, from the movement area, in coordination with the affected parties such as air traffic services, rescue and firefighting services and aircraft operators.

Rationale

This proposed new AMC addresses the coordination for the development of the aerodrome snow plan, formalises current practices and transposes Recommendation 10.3.4 of ICAO Annex 14.

GM1 ADR.OPS.B.035(b)(3) Operation in winter conditions (RMT.0704)

INFORMATION ON ALKALI-ORGANIC RUNWAY DE-/ANTI-ICING SUBSTANCES

During winter operations, the aircraft carbon brakes and open wheel/bay are exposed to alkali-organic salt runway de-/anti-icing substances during taxi, take-off and landing. A slush mixture of snow and alkali-organic salt de-/anti-icing substances could freeze onto the landing gear and inside the wheel well/bay. After landing gear retraction, the frozen slush deposits begin to melt. The resulting liquid flows into the core of the carbon brake, further contaminating the carbon discs. The presence of the alkali-organic salt creates a catalytic condition lowering the temperature oxidation of the carbon, resulting in structural deterioration of the carbon disc material and reducing the service life and long-term efficiency of the brakes.

It is very important that aircraft operators have information on the de-/anti-icing substances used at the aerodrome that they operate to and from, in order to assess the exposure of their aircraft to these substances and adjust their maintenance programme.

The information, when provided in the RCR or in the AIP, should be given using the following abbreviations/words:

— KAC for potassium acetate fluids

— KFOR for potassium formate fluids

— GAC for glycerine acetate fluids

— NAFO for sodium formate solids

— NAAC for sodium acetate solids

— EG for ethylene glycol fluids

— PG for propylene glycol fluids

— UREA

— SAND

Rationale

On 9 January 2018, EASA published a Safety Information Bulletin (SIB 2018-01) to draw the attention of aerodrome operators to the effects of certain types of runway de-/anti-icing materials and to emphasise the need to make this information available to aeroplane operators. The proposed GM reproduces to a large extent the content of the SIB.

AMC1 ADR.OPS.B.036(b)(1)(i) Operations on specially prepared winter runways (RMT.0704)

PROCEDURES FOR USE OF SAND OR GRIT

The aerodrome operator should:

(a) when the runway is contaminated with compacted snow:

(1) use loose sand or grit at an application rate appropriate to achieve the desired effect;

(2) use loose sand or grit where the grain passes through a 4.75 mm sieve; and

(3) remove as completely as possible any loose contaminants;

(b) when the runway is contaminated with ice:

(1) use sand or grit at an application rate appropriate to achieve the desired effect;

(2) use sand or grit where the grain passes through a 4.75 mm sieve;

(3) remove as completely as possible any loose contaminants; and

(4) and the air temperature is stable and the surface temperature is below freezing, use frozen sand; and

(c) ensure that sand or grit maintains the required specifications until application.

Rationale

The AMC provides the basic principles that need to be followed in order to apply sand or grit to runways covered by compacted snow or ice. The text has been drafted taking into consideration the content of Doc 9137 ‘Airport Services Manual – Part 2’ as well as procedures that are applied for many years at aerodromes exposed to prolonged winter periods, very low temperatures and where the runway is contaminated by compacted snow or ice.

GM1 ADR.OPS.B.036(b)(1)(i) Operations on specially prepared winter runways (RMT.0704)

PROCEDURES FOR USE OF SAND OR GRIT

The application rate depends on a number of parameters including temperature, wind speed, vehicle speed, the quality of the material, wear and tear from operations and local experience. Consideration should be given to the application rate in order to achieve the desired effect. Very low

application rate may only tolerate a very limited number of operations or pass by the sweeping machines, whereas higher application rates may be detrimental to the effectiveness of the treatment.

In order to ensure that the sand or grit is in contact with the aeroplane tyres during operations, the surface should be free of any loose contaminants. In practicable terms, sand or grit should be visible during operations.

Light precipitation or drifting snow should be removed to ensure the effectiveness of the treatment.

The need to ensure that the material maintains the required specification until application requires that actions be taken in order to ensure that no foreign objects are mixed with the sand or grit from origin to the dispenser vehicle, and storage should be in a suitable environment to avoid the formation of frozen lumps.

Rationale

This proposed GM provides further information concerning the procedures that have to be followed when applying sand or grit on runways covered with compacted snow or ice.

AMC1 ADR.OPS.B.036(b)(1)(ii) Operations on specially prepared winter runways (RMT.0704)

METEOROLOGICAL PARAMETERS

In order to ensure the effectiveness of the use of materials, the aerodrome operator should establish limitations and ranges for when the procedures may be applied using the following meteorological parameters:

(a) Air temperature

(b) Surface temperature (when available)

(c) Dew point

(d) Wind speed and direction

Rationale

The AMC specifies the meteorological parameters that need to be considered in order to ensure the effectiveness of the material which is used for runway treatment.

GM1 ADR.OPS.B.036(b)(1)(iii) Operations on specially prepared winter runways (RMT.0704)

MANAGEMENT OF LOOSE MATERIALS

Excess material or material no longer adhering to the surface can reduce aircraft braking performance and could be ingested by engines. When using sand or grit, it is essential that the aerodrome operator monitors the situation and removes loose material from the operational surfaces as soon as possible. Excess material can be efficiently removed by sweeping and blowing.

Rationale

The proposed GM refers to the treatment of loose contaminants, because they can reduce the aircraft braking performance and be ingested by engines.

AMC1 ADR.OPS.B.036(b)(1)(iv) Operations on specially prepared winter runways (RMT.0704)

ASSESSMENT OF ACHIEVED RESULTS

(a) The procedures should define the operational objectives for specially prepared winter runways.

(b) The aerodrome operator, when operating in accordance with the requirements for specially prepared winter runways, should monitor continuously and assess the achieved results.

(c) In case of deviations from operational objectives when materials are applied, the aerodrome operator should take mitigating actions to correct the achieved results and inform aeroplane operators as necessary.

Rationale

The AMC details how the achieved results are assessed. This is a combination of operational objectives, normally associated with a RWYCC 4 or better, continuous monitoring of the achieved results and mitigating measures when performance is not as expected.

GM1 ADR.OPS.B.036(b)(1)(iv) Operations on specially prepared winter runways (RMT.0704)

ASSESSMENT OF ACHIEVED RESULTS

The operational objectives should be aligned with the need to establish a runway surface at least with friction characteristics commensurate with RWYCC 4. This could mean a need to apply materials (sand, grit or chemicals) and to assess whether frozen sand can be applied.

If it is assessed that the treatment (frozen sand or other method) has not achieved the desired results (i.e. at least the equivalent of RWYCC 4), a specially prepared winter runway should be reported with the appropriate lower RWYCC, and in the RCR Free text field, the word 'DOWNGRADED' should be used.

Depending on the actual weather and traffic conditions, the continuous monitoring and assessment of the achieved results may be carried out by the same staff operating the equipment for surface treatment or by staff operating an independent vehicle in contact with the equipment operator.

Rationale

The proposed text provides guidance on how the assessment of the achieved results should be conducted.

AMC1 ADR.OPS.B.036(b)(2) Operations on specially prepared winter runways (RMT.0704)

AEROPLANE DATA

The aeroplane data related to stopping performance should:

(a) include a timestamp for each flight and be related to the subject runway;

(b) contain all necessary parameters for the chosen method of analysis, recorded with an appropriate frequency; and

(c) permit the isolation of the effective braking action.

If available, braking action information identified by a third party from aeroplane data may be used when it can be related to specific landings on the subject runway.

Rationale

The proposed AMC specifies the aeroplane data that should be used in order to assess the effectiveness of runway surface treatment. The AMC has been developed taking into consideration the data which is available by the aeroplane manufacturers.

GM1 ADR.OPS.B.036(b)(2) Operations on specially prepared winter runways (RMT.0704)

AEROPLANE DATA ANALYSIS

The analysis of aeroplane performance data for the purpose of deducing available braking action usually implies the isolation of the total friction force. Either isolating the friction coefficient or comparing the actual stopping capability with a reference capability permits identification of a RWYCC experienced by the aeroplane. Typically, this requires a technical or simulation model of the aeroplane performance produced by the manufacturer. The analysis may be performed through a third party or through its own resources. The aeroplane operator planning to perform operations on a specially prepared winter runway should set up the arrangement with the aeroplane manufacturer.

Rationale

The proposed text provides guidance on how aeroplane data should be analysed.

AMC1 ADR.OPS.B.036(b)(3) Operations on specially prepared winter runways (RMT.0704)

DEMONSTRATION OF CAPABILITY TO ESTABLISH THE RUNWAY SURFACE CONDITION IN ACCORDANCE WITH A GIVEN RUNWAY CONDITION CODE

In order to demonstrate the capability to establish the runway surface condition in accordance with a given RWYCC, the aerodrome operator should use a statistical level of confidence of 95 per cent to verify that a given RWYCC is consistently the same or better than that indicated by aeroplane data.

Rationale

The proposed AMC details how the demonstration of capability to establish a runway surface condition code in accordance with a given RWYCC should be done.

GM1 ADR.OPS.B.036(b)(3) Operations on specially prepared winter runways (RMT.0704)

DEMONSTRATION OF CAPABILITY TO ESTABLISH THE RUNWAY SURFACE CONDITION IN ACCORDANCE WITH A GIVEN RUNWAY CONDITION CODE

The statistical level of confidence is established by analysing data obtained from aeroplane operators and data from aerodrome operators. The analysis is done by the aerodrome operator.

The experienced RWYCC is compared with the RWYCC reported by the aerodrome operator. An analysis is performed to calculate the statistical level of confidence for the number of landings when the reported RWYCC was deemed the same or better than the experienced RWYCC.

To obtain statistical significance, the total number of landings on a winter-contaminated surface prepared such as intended to benefit from the improved braking action used in the demonstration should be as large as possible, but not less than 30.

Rationale

In this GM, additional guidance is provided on how the capability should be demonstrated.

GM1 ADR.OPS.B.036(b)(4) Operations on specially prepared winter runways (RMT.0704)

MAINTENANCE PROGRAMME

(a) The maintenance programme should include at least the following equipment:

(1) sand spreaders including heating and pre-wetting equipment; and

(2) chemical spreaders.

(b) The maintenance programme should include regular verification of the accuracy of distribution rates and temperature measurements for material spreaders.

Rationale

The performance of the sand and chemical spreaders as well the heating and pre-wetting equipment is important in order to achieve the desired results. Therefore, additional guidance is provided concerning their maintenance programme.

AMC1 ADR.OPS.B.036(c) Operations on specially prepared winter runways (RMT.0704)

MONITORING PROGRAMME — PERFORMANCE INDICATORS

The aerodrome operator should:

(a) establish a system of performance indicators to monitor the effectiveness of the procedures which are applied to support operations on specially prepared winter runways;

(b) record the performance indicators on a monthly basis during the winter season for each runway and review them on an annual basis; and

(c) prepare an annual report, which includes comparison with the performance indicators of at least the previous three years.

Rationale

The proposed AMC details the monitoring programme and more specifically refers to performance indicators that need to be established in order to ensure the effectiveness of the procedures. This provides the necessary assurance to the Competent Authority in order to allow the continuation of the procedures, or ask for corrective actions.

GM1 ADR.OPS.B.036(c) Operations on specially prepared winter runways (RMT.0704)

MONITORING PROGRAMME — PERFORMANCE INDICATORS

The following performance indicators could be used in order to monitor the success in correctly assessing and reporting the runway surface condition:

(a) Number of movements on reported RWYCC 4. The indicator aims to measure the frequency of operations with the greater safety concern;

(b) Proportion of landings identified under (a) where the braking action computed based on aeroplane data was one RWYCC worse than the RCRs issued by the aerodrome operator;

(c) Proportion of landings identified under (a) where the braking action computed based on aeroplane data was two RWYCCs worse than the RCRs issued by the aerodrome operator.

The indicators mentioned in (a), (b) and (c) provide information concerning the quality of the runway surface condition assessment.

(d) Number of movements on a contaminated runway per total number of movements. This number provides an indication of the exposure of the aerodrome to winter conditions. Information concerning the contamination of the runway is derived from the RCRs.

Rationale

The proposed GM provides further information on the different performance indicators that could be established in order to monitor the effectiveness of the procedures.

AMC1 ADR.OPS.B.037(a) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

RUNWAY CONDITION ASSESSMENT MATRIX (RCAM)

(a) The aerodrome operator should use the following RCAM in order to assign the RWYCC:

Runway condition assessment matrix (RCAM)			
	Assessment criteria	**Downgrade assessment criteria**	
RWYCC	**Runway surface description**	**Aeroplane deceleration or directional control observation**	**Pilot report of runway braking action**
6	DRY	-	-
5	• FROST • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) **Up to and including 3 mm depth:** • SLUSH • DRY SNOW • WET SNOW	Braking deceleration is normal for the wheel braking effort AND directional control is normal	GOOD
4	• SPECIALLY PREPARED WINTER RUNWAY **-15°C and lower outside temperature** • COMPACTED SNOW	Braking deceleration OR directional control is between good and medium	GOOD TO MEDIUM
3	• SLIPPERY WET • DRY SNOW or WET SNOW	Braking deceleration is noticeably reduced for the wheel braking	MEDIUM

	(any depth) ON TOP OF COMPACTED SNOW **More than 3 mm depth:** • DRY SNOW • WET SNOW **Higher than -15°C outside air temperature:** • COMPACTED SNOW	effort applied OR directional control is noticeably reduced	
2	**More than 3 mm:** • STANDING WATER • SLUSH	Braking deceleration OR directional control is between medium and poor	MEDIUM TO POOR
1	• ICE	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced	POOR
0	• WET ICE • WATER ON TOP OF COMPACTED SNOW • DRY SNOW or WET SNOW ON TOP OF ICE	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain	LESS THAN POOR

Rationale

The proposed AMC introduces the RCAM in accordance with Table II-1-5 of ICAO Doc 9981. Nevertheless, there are two differences between the matrix proposed by ICAO and the one prepared by EASA. The first one is the introduction of SPECIALLY PREPARED WINTER RUNWAY in RWYCC 4 and the second one is the replacement of WET with SLIPPERY WET in RWYCC 3, as already explained in ADR.OPS.A.065.

GM1 ADR.OPS.B.037(a) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

AVAILABLE MEANS USED TO DETERMINE THE RWYCC

(a) The visual inspection of the movement area to assess the surface condition is the core method to determine the RWYCC. An overall assessment however implies more than that. The continuous monitoring of the development of the situation and the prevailing weather conditions is essential to ensure safe flight operations. Other factors that might have influence on the assessment result are the outside air temperature, the surface temperature, the dew point, the wind speed and direction, the effect of surface treatment, control and deceleration of the inspection vehicle, the pilot reports of braking action, the output from friction measuring devices, the weather forecast, etc. Due to interaction between them, a deterministic method on how these factors affect the RWYCC to be reported cannot be precisely defined.

(b) The RCAM supports the classification of runway surface conditions by their effect on aeroplane braking performance using a set of criteria identified and quantified based on the best industry knowledge, built on dedicated flight testing and in-service experience. The

thresholds at which a criterion changes the classification of a surface condition are intended to be reasonably conservative, without being excessively pessimistic.

(c) The following describe why the primary classification criteria in the RCAM have been set this way, and why it is important for aerodrome personnel to monitor and accurately report conditions when operating close to the boundaries of each RWYCC:

(1) Percentage of coverage with contamination in each runway third

A runway is considered contaminated whenever the extent of the coverage is more than a quarter of the surface of at least one third of the runway. It is important to note that whenever coverage is assessed to be below the 25 per cent threshold in each third, the computation assumption made by flight crew will be a dry runway (uniformly bare of moisture, water and contamination). It has been demonstrated that in conditions of contamination just below the reporting threshold but concentrated in the most unfavourable location, this assumption of dry runway still provides positive stop margins.

(2) Type of contaminant

Different contaminants affect the contact area between tyre and runway surface, where the stopping force is generated, in different ways. A water film of any depth leads to the partial (viscous aquaplaning) or total separation (dynamic aquaplaning) of the tyre from the surface. The smaller the surface, the smaller the force of adhesion, the less braking is available. This is why the maximum braking force decreases at higher speed and depends on contaminant depth. Other fluid contaminants have a similar effect. Hard contaminants, such as ice or compacted snow, prevent the contact between tyre and runway surface completely and at any speed, effectively providing a new surface that the tyre rolls on. A deterministic classification of the stopping performance can be made only for the contaminants listed in the RCAM. For other reportable contaminants (oil, mud, ash, etc.), a large variance in the aeroplane performance effect exists, or insufficient data is available to permit a deterministic classification. An exception is rubber contamination, for which in-service data indicates that an assumption of RWYCC 3 provides a satisfactory performance margin. Runway surface treatments with sand, grit or chemicals may be very effective or even detrimental depending on the conditions of the application, and no credit can be attributed to such treatment without verification and validation.

(3) Depth of the contamination

The industry accepts that the threshold for the effect of depth of fluid contaminants on aeroplane performance is at 3 mm. Below this threshold, any type of fluid contaminant can be removed from the tyre/runway contact zone either by forced drainage or by compressing it into the macrotexture of the surface, thus allowing adhesion between tyre and surface to exist, albeit on less than the full footprint surface area. This is the reason that contamination depths up to 3 mm are expected to provide similar stopping performance as a wet runway. It should be noted that the physical effects causing reduced friction forces begin to take effect from very small film thickness, therefore damp conditions are considered to provide no better braking action than a wet runway.

Aerodrome personnel should be aware of the fact that the capability to generate friction in wet (or with thin layers of fluid contaminants) conditions is very dependent upon the inherent qualities of the runway surface (friction characteristics) and may be less than normally expected on poorly drained, polished or rubber contaminated surfaces. Above the 3 mm threshold, the impact on friction forces is more significant, leading to classification in lower RWYCCs. Above this depth, and depending on the density of the fluid, additional drag effects start to apply, due to displacement or compression of the fluid and impingement on the airframe of the aeroplane. These latter effects depend on the depth of the fluid and affect the ability of the aeroplane to accelerate for take-off.

(4) Surface or air temperature

It is self-evident that close to the freezing point significant changes in surface conditions can occur very quickly. Surface temperature is more significant for the relevant physical effects, and surface and air temperature may be significantly different due to latency and radiation. However, surface temperature may not be readily available and it is acceptable to use air temperature as a criterion for the contaminant classification. The threshold for the classification of compacted snow in RWYCC 4 (below OAT -15 degrees) or RWYCC 3 (above this temperature) is based on historical North American operational practice and may be very conservative, therefore other assessment means should be used to support the classification. Such assessment means should be based upon specific rationale, specific procedures and substantiating aeroplane data.

Rationale

The proposed GM provides information on the available means that could be used in order to determine the RWYCC. The origin of the text is the revised ICAO Circular 329 ‘Assessment, Measurement and Reporting of Runway Surface Conditions’ and more specifically its provisions 4.34, 4.36, 4.37, 4.38, 4.39, 4.40 and 4.41.

GM2 ADR.OPS.B.037(a) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

ICE is considered untreated ice that covers the runway macrotexture.

Rationale

The proposed GM gives guidance on how to differentiate from ICE that has received treatment on specially prepared winter runways.

AMC1 ADR.OPS.B.037(b) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

ASSIGNMENT OF RUNWAY CONDITION CODE

(a) The aerodrome operator should:

(1) assign a RWYCC 6, if 25 per cent or less area of a runway third is wet or covered by contaminant;

(2) describe in the plain language remarks part of the situational awareness section of the RCR the location of the area that is wet or covered by the contaminant, if the distribution of the contaminant is not uniform;

(3) assign a RWYCC based on the contaminant that will most likely affect the aeroplane's performance, if multiple contaminants are present and the total coverage is more than 25 per cent but no single contaminant covers more than 25 per cent of any runway third;

(4) not upgrade an assigned RWYCC 5, 4, 3, or 2; and

(5) not upgrade beyond RWYCC 3 an assigned RWYCC 1 or 0.

(b) The aerodrome operator may upgrade an assigned RWYCC 1 or 0 when all available means of assessing runway slipperiness, including properly operated and calibrated measuring devices, if available, have been used to support the decision.

(c) The aerodrome operator, when RWYCC 1 or 0 is upgraded, should assess the runway surface frequently during the period the higher RWYCC is in effect, to ensure that the runway surface condition does not deteriorate below the assigned code.

(d) The aerodrome operator, if sand or other runway treatments are used to support upgrading of the RWYCC, should assess the runway surface frequently to ensure the continued effectiveness of the treatment.

(e) The aerodrome operator should appropriately downgrade the RWYCC taking into consideration all available means of assessing runway slipperiness, including pilot reports.

Rationale

The AMC introduces how a RWYCC is assigned and when the code should be upgraded or downgraded. The proposed text is based on ICAO Doc 9981 and more specifically:

— Point (a)(1) transposes provision 1.1.3.8;

— Point (a)(2) transposes provision 1.1.3.9;

— Point (a)(3) transposes provision 1.1.3.11;

— Point (a)(4) transposes provision 1.1.3.14;

— Point (a)(5) transposes provision 1.1.3.16;

— Point (b) transposes provision 1.1.3.15 points (a) and (b);

— Point (c) transposes provision 1.1.3.15 point (c);

— Point (d) transposes provision 1.1.3.17; and

— Point (e) transposes provision 1.1.3.18.

GM1 ADR.OPS.B.037(b) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

SINGLE AND MULTIPLE CONTAMINANTS

When single or multiple contaminants are present, the RWYCC for any third of the runway is determined as follows:

(a) When the runway third contains a single contaminant, the RWYCC for that third is based directly on that contaminant in the RCAM as follows:

(1) If the contaminant coverage for that third is less than 10 per cent, a RWYCC 6 is to be generated for that third, and no contaminant is to be reported. If all thirds have less than 10 per cent contaminant coverage, no report is generated; or

(2) If the contaminant coverage for that third is greater than or equal to 10 per cent and less than or equal to 25 per cent, a RWYCC 6 is to be generated for that third and the contaminant reported at 25 per cent coverage; or

(3) If the contaminant coverage for that third is greater than 25 per cent, the RWYCC for that third is based on the contaminant present.

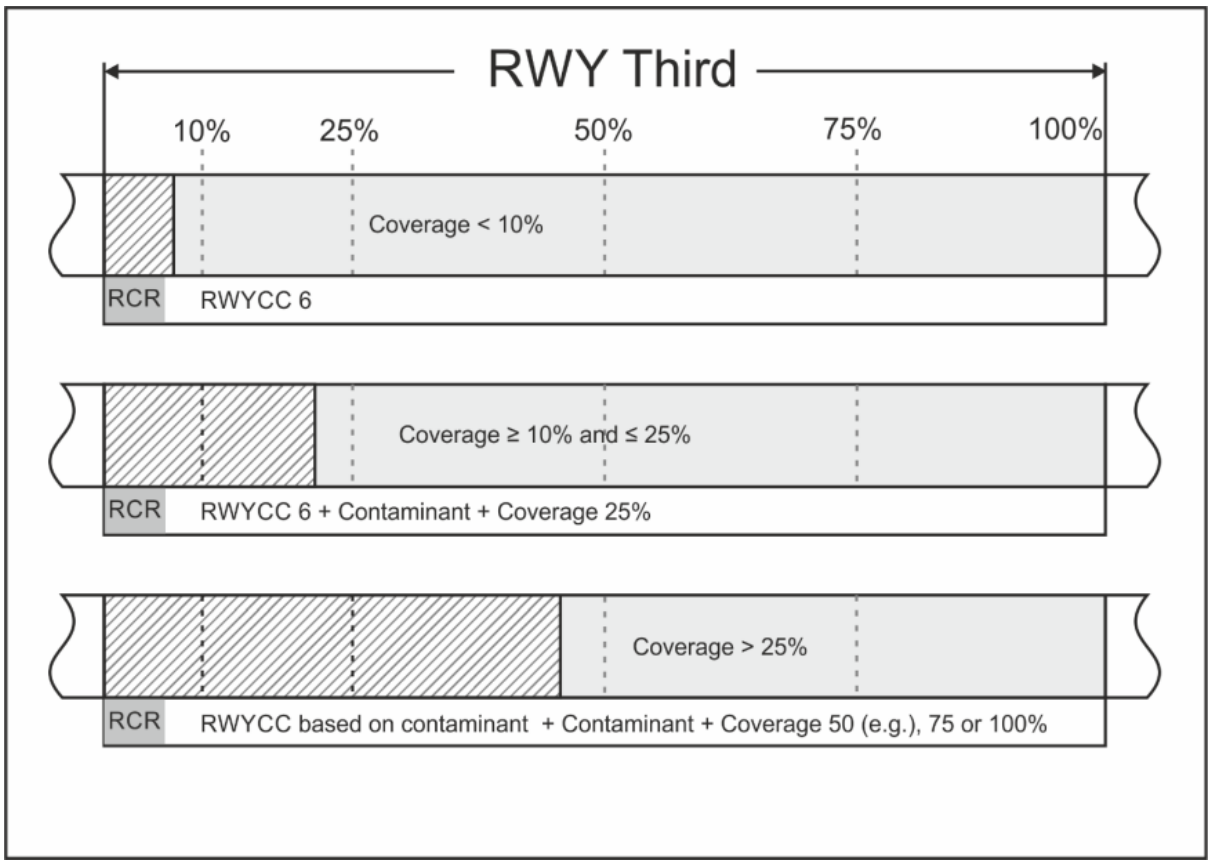

Figure 1 — Single contaminant

(b) If multiple contaminants are present where the total coverage is more than 25 per cent but no single contaminant covers more than 25 per cent of any runway third, the RWYCC is based upon the judgement of the runway inspector, considering what contaminant will most likely be encountered by the aeroplane and its likely effect on the aeroplane's performance. Typically, this would be the most widespread contaminant, but this is not an absolute.

(c) The structure of the RCAM is ranging the contaminants in the column 'Runway surface description' from top to bottom and is having the most slippery contaminants at the bottom. However, this ranging is not an absolute, as the RCAM by design is landing oriented and if judged in a take-off scenario, the ranging could be different due to drag effects of loose contaminants.

Rationale

The proposed GM provides information on how to determine the RWYCC for any third of the runway when it is covered by either single or multiple contaminants. The origin of the text is provision 4.60 of ICAO Circular 329.

GM2 ADR.OPS.B.037(b) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

DOWNGRADING AND UPGRADING

(a) The RCAM allows making an initial assessment based on visual observation of contaminants on the runway surface: their type depth and coverage, as well as the outside air temperature. Downgrading and upgrading is an integral part of the assessment process and essential to developing relevant reports of the prevailing runway surface condition. When all other observations, experience and local knowledge indicate that the primary assignment of the RWYCC does not reflect the prevailing conditions accurately, a downgrade or upgrade should be made.

(b) Examples of aspects to be considered in assessing the runway slipperiness for the downgrade process:

(1) Prevailing weather conditions

(i) stable sub-freezing temperature

(ii) dynamic conditions

(iii) active precipitation

(2) Observations

(3) Measurements

(i) friction measurements

(ii) vehicle behaviour

(iii) shoe scraping

(4) Experience (local knowledge)

(5) SPECIAL AIR-REPORTS

(c) When the complete removal of contaminants cannot be achieved, but the RWYCC initially assigned does not reflect the real surface condition, the aerodrome personnel may apply the upgrade procedures. Upgrading is applicable only when the initial RWYCC is 0 or 1. Upgrading can only occur up to RWYCC 3. Upgrading is conditioned when the friction measuring device

meets the established standards and supported by all other aspects, such as listed in point (b) above.

(d) When friction measurements are used as part of the overall runway surface assessment on compacted snow- or ice-covered surfaces, the friction measuring device should meet the established standard. Table 1 gives information on which reportable runway surface descriptions the friction measuring device could be used for downgrading and upgrading.

Runway surface description (Reportable)	Criterion	RWYCC	Downgrading using friction measuring device	Upgrading using friction measuring device
DRY		6	N/A	N/A
FROST				
WET	The runway surface is covered by any visible dampness or water up to and including 3 mm depth	5		
SLUSH	Up to and including 3 mm depth			
DRY SNOW				
WET SNOW				
SPECIALLY PREPARED WINTER RUNWAY COMPACTED SNOW	-15°C and lower outside air temperature	4	Standard set or agreed by the State	
SLIPPERY WET		3	N/A	
WET SNOW ON TOP OF COMPACTED SNOW				
DRY SNOW ON TOP OF COMPACTED SNOW				
DRY SNOW	More than 3 mm depth			
WET SNOW				
COMPACTED SNOW	Higher than -15 °C outside air temperature		Standard set or agreed by the State	
STANDING WATER		2	N/A	
SLUSH				

	ICE		1	Standard set or agreed by the State	Standard set or agreed by the State
	WET ICE		0	N/A	N/A
	WATER ON TOP OF COMPACTED SNOW				
	DRY SNOW ON TOP OF ICE				
	WET SNOW ON TOP OF ICE				

Table 1 — Downgrading or upgrading using friction measuring device

(e) This allows aerodromes to receive credit for improving a runway surface that normally is categorised as RWYCC 0 or 1, or improve a compacted snow surface that had been downgraded due to a low friction measurement.

(f) When used for upgrading purposes, a preponderance of evidence should exist. In order to upgrade a RWYCC 0 or 1 to no higher than RWYCC 3, the friction measuring device should demonstrate an equivalent friction to that of a wet runway (RWYCC 5) or higher.

Rationale

The proposed GM provides information on how to upgrade or downgrade the assigned RWYCC. The origin of the text are provisions 4.42, 4.43, 4.44, 4.45, 4.48 and 4.51 of ICAO Circular 329.

AMC1 ADR.OPS.B.037(c) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

USE OF SPECIAL AIR-REPORTS

(a) The aerodrome operator should:

(1) re-assess the runway surface condition if RWYCC 2 or better has been reported and two consecutive SPECIAL AIR-REPORTS of POOR runway braking action are received; and

(2) re-assess the runway surface condition and consider the suspension of operations on that runway when one pilot has reported a LESS THAN POOR runway braking action.

(b) The aerodrome operator may use a SPECIAL AIR-REPORT of runway braking action for upgrading purposes only if it is used in combination with other information qualifying for upgrading.

Rationale

The AMC introduces how special air-reports should be used for triggering a re-assessment of the runway surface condition. The proposed text is based on the following:

— Point (a)(1) transposes provision 1.1.3.20 of ICAO Doc 9981;

— Point (a)(2) transposes provision 1.1.3.21 of ICAO Doc 9981; and

— Point (b) transposes provision 1.1.3.19(b) of ICAO Doc 9981.

GM1 ADR.OPS.B.037(c) Assessment of runway surface condition and assignment of runway condition code (RMT.0704)

USE OF SPECIAL AIR-REPORTS

Pilot SPECIAL AIR-REPORTS typically provide aerodrome personnel and other pilots with an observation that can confirm the ground-based assessment of or alert to degraded conditions experienced in terms of braking capability and/or lateral control during the landing roll. The braking action observed is dependent on the type of aircraft, aircraft weight, runway portion used for braking, and other factors. Pilots will use the terms GOOD, GOOD TO MEDIUM, MEDIUM, MEDIUM TO POOR, POOR and LESS THAN POOR. When receiving a SPECIAL AIR-REPORT, the recipient should consider that it rarely applies to the full length of the runway and is limited to the specific sections of the runway surface in which sufficient wheel braking was applied. As SPECIAL AIR-REPORTS are subjective and contaminated runways may affect the performance of different aeroplane types in a different way, the reported braking action may not be directly applicable to another aeroplane.

Rationale

The proposed GM provides information on how special air-reports could be used by the aerodrome operator in the overall assessment process. The origin of the text is provision 4.53 of ICAO Circular 329.

AMC1 ADR.OPS.B.065 Visual aids and aerodrome electrical systems (RMT.0703)

GENERAL

(a) The aerodrome operator should establish a monitoring system of aerodrome ground lights so as to inform the air traffic services provider when safe operation is no longer possible.

(b) The aerodrome operator should establish procedures for the operation of visual aids and, in coordination with the air traffic services provider, procedures to be implemented in the event of unserviceability of stop bars. The procedures should cover the situation where the stop bars cannot be turned off because of a technical problem, and the measures to be taken should not undermine the principle that a lit stop bar must not be crossed.

(c) The aerodrome operator should establish procedures for the provision and removal of temporary markings, lights and signs.

Rationale

The amendment of the AMC reflects the need to address the potential issue of the malfunction of a stop bar without undermining the principle of not crossing a red stop bar.

GM1 ADR.OPS.B.065 Visual aids and aerodrome electrical systems (RMT.0703)

UNSERVICEABILITY OF STOP BARS

In situations where the stop bars cannot be turned off because of a technical problem, the aerodrome operator may consider, inter alia, the following:

(a) physically disconnecting the respective lit stop bar from its power supply;

(b) physically obscuring the lights of the lit stop bar;

(c) providing for a marshaller or a follow-me vehicle to lead the aircraft to cross the lit stop bar; or

(d) using a different route, until the malfunctioning system has been repaired.

Rationale

This new GM provides information as to the measures that may be taken to address the potential issue of the malfunction of a stop bar without undermining the principle of not crossing a red stop bar. Similar material may be found in ICAO Doc 9870, the EAPPRI and the AMC & GM to Regulation (EU) No 923/2012 (SERA).

AMC1 ADR.OPS.B.070 Aerodrome works safety (RMT.0703)

GENERAL

[…]

(c) The scope of work, physical extent, and time period should be notified to the ~~concerned~~ relevant parties concerned. If such work will render limitations to the use of a particular runway, additional measures should be implemented to ensure safety. In case the works necessitate the temporary change of the declared distances of the runway, a recalculation of the declared distances should be performed, in accordance with an established procedure, and the relevant information should be provided to the Competent Authority, the air traffic services and aeronautical information services unit, before the implementation of the new declared distances.

[…]

Rationale

The AMC is amended to cover the case of aerodrome works requiring a temporary change to the declared distances of the runway. The AMC addresses a recommendation contained in EAPPRI.

AMC2 ADR.OPS.B.070 Aerodrome works safety (RMT.0703)

RUNWAY PAVEMENT OVERLAYS

The aerodrome operator should ensure that:

(a) When a runway is to be returned temporarily to an operational status before resurfacing is complete, the longitudinal slope of the temporary ramp, measured with reference to the existing runway surface or previous overlay course, should be:

(1) 0.5 to 1.0 % for overlays up to and including 5 cm in thickness; and

(2) not more than 0.5 % for overlays more than 5 cm in thickness.

(b) Runway overlaying proceeds from one end of the runway toward the other end so that based on runway utilisation, most aircraft operations will experience a down ramp.

(c) The entire width of the runway is overlaid during each work session.

(d) ~~(b)~~ Before a runway being overlaid is returned to a temporary operational status, a runway centre line marking, conforming to the applicable specifications included in the aerodrome certification basis of the aerodrome, should be provided.

(e) ~~(c)~~ The location of any temporary threshold should be identified by a 3.6 m wide transverse stripe.

Rationale

The AMC is amended to transpose paragraphs 10.4.2 and 10.4.3 of Annex 14 regarding runway pavement overlays.

AMC4 ADR.OPS.B.070 Aerodrome works safety (RMT.0703)

CLOSED RUNWAYS AND TAXIWAYS, OR PARTS THEREOF

The aerodrome operator should ensure that:

(a) a closed marking as defined in CS ADR-DSN.R.855(c) is displayed on a temporarily closed runway, or taxiway, or a portion thereof, except that such a marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided;

(b) lighting on a closed runway or taxiway, or a portion thereof is not operated, except as required for maintenance purposes; ~~and~~

(c) in addition to closed markings, when the runway, taxiway, or portion thereof is closed and is intercepted by a usable runway or taxiway which is used at night, unserviceability lights as defined in CS ADR-DSN.R.870(c) should be placed across the entrance to the closed area at intervals not exceeding 3 m~~.~~ ; and

(d) a closed runway or taxiway marking as defined in CS ADR-DSN.R.855(c), or a portion thereof, is displayed on new runways and taxiways that are still under construction.

Rationale

The current AMC does not take into account the need to apply a closed runway/taxiway marking to runways or taxiways that are still under construction, in order to prevent their unintended use.

GM6 ADR.OPS.B.070 Aerodrome works safety (RMT.0703)

CLOSED RUNWAY AND TAXIWAY MARKINGS — AVOIDING THE LACK OF CONTRAST

(a) In certain circumstances, e.g. due to the colour of the material used during construction works, there may be insufficient contrast between the surface of the runway or taxiway and the respective closed runway or taxiway marking. This may result in the closed runway or taxiway markings not fulfilling their purpose. To avoid the lack of contrast, the closed runway or taxiway markings should include an appropriate border, whose colour should be black.

(b) At aerodromes where operations take place at night, the closed runway or taxiway markings should be made with reflective materials designed to enhance their visibility. Guidance on reflective materials is given in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids.

Rationale

The proposed GM provides information on how to deal with cases where there is lack of contrast between the closed runway or taxiway marking and the runway/taxiway surface. The proposed GM is based on the findings of the investigation of a serious incident.

AMC1 ADR.OPS.B.075 Safeguarding of aerodromes (RMT.0703)

GENERAL

(a) The aerodrome operator should have procedures to monitor the changes in the obstacle environment, marking and lighting, and in human activities or land use on the aerodrome and the areas around the aerodrome, as defined in coordination with the Competent Authority. The scope, limits, tasks and responsibilities for the monitoring should be defined in coordination with the relevant air traffic services providers and with the Competent Authority and other relevant authorities, and should ensure the protection of the visibility from the air traffic control tower, the apron management services unit, and the watch-room of the RFFS station, from permanent or temporary obstacles or activities.

[…]

Rationale

The amendment to the AMC aims at safeguarding the visibility from the ATC tower, as well as from the apron management unit and the watch-room of the RFFS station. The text is based on the content of the EAPPRI and the findings of two investigations involving a collision between a vehicle and an aircraft during its take-off, and an accident that took place during the landing of an aircraft.

~~**AMC1 ADR.OPS.B.080 Marking and lighting of vehicles and other mobile objects**~~ **(RMT.0703)**

~~GENERAL~~

~~(a) The aerodrome operator should ensure that all vehicles operating on the manoeuvring area are marked by colours or display flags.~~

~~(b) When mobile objects are marked by colour, conspicuous colours should be used.~~

~~(c) When flags are used to mark mobile objects, they should be displayed around, on top of, or around the highest edge of the object. Flags should not increase the hazard presented by the object they mark.~~

~~(d) When flags are used to mark mobile objects they should not be less than 0.9 m on each side and should consist of a chequered pattern, each square having sides of not less than 0.3 m. The colours of the pattern should contrast each with the other and with the background against which they will be seen. Orange and white, or alternatively red and white should be used, except where such colours merge with the background.~~

~~(e) Low-intensity obstacle lights, Type C, should be displayed on vehicles and other self-powered mobile objects excluding aircraft.~~

~~(f) Low-intensity obstacle lights, Type D, should be displayed on follow-me vehicles.~~

~~**GM1 ADR.OPS.B.080 Marking and lighting of vehicles and other mobile objects** **(RMT.0703)~~

~~COLOURS TO BE USED~~

~~Red or yellowish green colour should preferably be used for marking emergency vehicles and yellow colour for service vehicles~~

AMC1 ADR.OPS.B.080(a) Marking and lighting of vehicles and other mobile objects (RMT.0703)

MARKING OF VEHICLES

(a) Vehicles to be marked should be coloured or display flags as follows:

(1) Red or yellowish green colour should preferably be used for marking emergency vehicles and yellow colour for service vehicles.

(2) When flags are used to mark vehicles, they should:

(i) be displayed around, on top of, or around the highest edge of the vehicle. Flags should not increase the hazard presented by the vehicle they mark;

(ii) not be less than 0.9 m on each side and should consist of a chequered pattern, each square having sides of not less than 0.3 m. The colours of the pattern should contrast each with the other and with the background against which they will be seen. Orange and white, or alternatively red and white should be used, except where such colours merge with the background.

LIGHTING OF VEHICLES

(b) Lighting of vehicles should be as follows:

(1) Low-intensity obstacle lights, Type C, should be displayed on vehicles;

(2) Low-intensity obstacle lights, Type C, displayed on vehicles associated with emergency or security should be flashing-blue and those displayed on other vehicles should be flashing-yellow;

(3) Low-intensity obstacle lights, Type D, should be displayed on follow-me vehicles.

(c) Low-intensity obstacle lights, Types C and D should be in accordance with the specifications contained in Table Q-1, CS ADR-DSN.U.930 and Figure U-1A or U-1B, as appropriate.

AMC2 ADR.OPS.B.080(a) Marking and lighting of vehicles and other mobile objects (RMT.0703)

MARKING OF MOBILE OBJECTS OTHER THAN VEHICLES

(a) Mobile objects, other than vehicles, to be marked should be coloured or display flags as follows:

(1) When they are marked by colour, conspicuous colours should be used.

(2) When they are marked by flags, they should:

(i) be displayed around, on top of, or around the highest edge of the object. Flags should not increase the hazard presented by the object they mark;

(ii) not be less than 0.9 m on each side and should consist of a chequered pattern, each square having sides of not less than 0.3 m. The colours of the pattern should

contrast each with the other and with the background against which they will be seen. Orange and white, or alternatively red and white should be used, except where such colours merge with the background.

LIGHTING OF MOBILE OBJECTS OTHER THAN VEHICLES

(b) Lighting of mobile objects, other than vehicles, should be as follows:

(1) Low-intensity obstacle lights, Type C, should be displayed on mobile objects;

(2) Low-intensity obstacle lights on objects with limited mobility, such as aerobridges, shall be fixed-red, and as a minimum be in accordance with the specifications for low-intensity obstacle lights, Type A, in Table Q-1 of CS-ADR-DSN.Q.852. The intensity of the lights shall be sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general levels of illumination against which they would normally be viewed.

Rationale

AMC1 ADR.OPS.B.080 and GM1 ADR.OPS.B.080 are replaced by the two new, separate, AMC1 ADR.OPS.B.080(a) and AMC2 ADR.OPS.B.080(a) dedicated to vehicles and other mobile objects respectively, in order to improve readability, avoid unnecessary cross-references, and incorporate operational items from CS ADR-DSN.Q.850 (Lighting of other objects).

AMC1 ADR.OPS.C.005 General (RMT.0703)

MAINTENANCE PROGRAMME

(a) The aerodrome operator should ensure that ~~a~~ the maintenance programme: ~~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~~:

(1) specifies the aerodrome facilities, systems and equipment subject to maintenance;

(2) contains the necessary information for its timely and correct implementation including but not limited to:

(i) the type of inspections/checks to be carried out (e.g. visual inspection, cleaning of equipment, equipment stability/alignment, calibration, etc.) for each facility, system, installation and equipment, taking also into account factors such as their location and meteorological phenomena;

(ii) the frequency of inspections/checks for each facility, system installation and equipment;

(iii) the tools and equipment required for each type of inspection/check; and

(iv) the periodic replacement of parts of equipment that may be required in accordance with the maintenance instructions of the manufacturer of the respective facility, system, installation and equipment, as appropriate.

(b) The aerodrome operator should ensure that arrangements are in place for timely corrective maintenance actions. Such arrangements should cover the cases of maintenance needs that are:

(1) identified either during preventive maintenance activities; or

(2) raised at any other time (e.g. due to equipment malfunction or failure).

Rationale

AMC1 ADR.OPS.C.005 is amended because certain parts are no longer needed as a result of the proposed amendment to the relevant implementing rules, or due to the existence of specific requirements (e.g. vehicle and visual aids maintenance). The revised content of the AMC aims at facilitating the attainment of the general objectives of a maintenance programme.

GM1 ADR.OPS.C.005 General (RMT.0703)

~~HUMAN FACTORS~~ MAINTENANCE PROGRAMME

~~The design and application of the maintenance programme should observe human factors principles.~~

The maintenance programme includes also maintenance of communication and alerting systems, fences and access control devices, perimeter roads and lighting, passenger boarding bridges, etc.

Rationale

The content of GM1 ADR.OPS.C.005 is replaced by information regarding certain elements that need to be included in the maintenance programme, while the previous content of the GM is transferred into AMC1 ADR.OPS.C.005.

AMC1 ADR.OPS.C.007(a) Maintenance of vehicles (RMT.0703)

MAINTENANCE OF VEHICLES — GENERAL

The maintenance of the vehicles may be performed by the aerodrome operator or by a contracted organisation. The maintenance programme should be individual for each vehicle, depending on its function and characteristics. The maintenance programme should take into account the following:

(a) regulatory requirements (e.g. certification of pressure vessels, hoses, roadworthiness certificates);

(b) the manufacturer's maintenance recommendations;

(c) local environmental conditions (e.g. heat versus cold winters);

(d) the need to ensure the serviceability of the equipment installed on the vehicle (e.g. radio, transponders); and

(e) regular performance test results, if appropriate.

Rationale

This AMC intends to support the implementation of the proposed requirement for the development of a maintenance programme for individual vehicles. Its content is based on the provisions of Chapter 17 of the ICAO Airport Services Manual Part 1 (Rescue and Firefighting), adopted to accommodate the general maintenance needs of other vehicles.

AMC1 ADR.OPS.C.007(b)(1) Maintenance of vehicles (RMT.0703)

MAINTENANCE PROCEDURES — GENERAL

The maintenance procedures should be established to ensure a standardised manner in which vehicles are maintained and should cover as a minimum:

(a) activities to be undertaken to ensure that disruption to aerodrome services (e.g. RFFS) is minimised;

(b) the frequency of maintenance services;

(c) activities to be undertaken at each type of maintenance service (e.g. visual check, inspections, measurements, etc.);

(d) arrangements for technical support from the manufacturer;

(e) spare parts that should be kept on site;

(f) procedures to ensure the safety of maintenance personnel;

(g) environmental procedures, including appropriate disposal procedures for old parts, and other material; and

(h) documentation and reporting of any defects that have been identified by operational and/or maintenance personnel.

Rationale

This AMC intends to provide the framework for the development of a maintenance programme for individual vehicles. Its content is based on the provisions of Chapter 17 of the ICAO Airport Services Manual Part 1 (Rescue and Firefighting), adopted to accommodate the general maintenance needs of other vehicles.

AMC1 ADR.OPS.C.007(b)(2) Maintenance of vehicles (RMT.0703)

MAINTENANCE FACILITIES — GENERAL

If maintenance services are provided by a contracted organisation, the aerodrome operator should have in place arrangements, to allow the timely maintenance of the vehicles in order to avoid disruptions to aerodrome operations.

Consideration should be given to the provision of:

(a) adequate facilities for the maintenance activities and the storage of spare parts and other material;

(b) tools and equipment necessary for the maintenance activities, especially for RFFS vehicles and related equipment;

(c) availability of maintenance documentation; and

(d) appropriate and adequate training to the personnel involved in maintenance activities.

Rationale

This AMC is based on the provisions of Chapter 17 of the ICAO Airport Services Manual Part 1 (Rescue and Firefighting), adopted to accommodate the general maintenance needs of other vehicles.

AMC1 ADR.OPS.C.007(b)(3) Maintenance of vehicles (RMT.0703)

MAINTENANCE RECORDS

The maintenance records should, as a minimum, include the following:

(a) maintenance type (preventive/corrective);

(b) items checked/repaired;

(c) maintenance date (entry/exit date to/from the workshop); and

(d) name of the person that conducted the inspection/repair.

Rationale

This AMC provides the means for the aerodrome operator to discharge its responsibilities regarding the maintenance records to be kept, and a way to ensure that other organisations at the aerodrome maintain their own system for record-keeping regarding vehicle maintenance.

AMC1 ADR.OPS.C.007(c) Maintenance of vehicles (RMT.0703)

MAINTENANCE OF VEHICLES — OTHER ORGANISATIONS

The aerodrome operator should establish and implement an audit programme to ensure compliance of the organisations operating or providing services at the aerodrome.

A feedback mechanism should be established with the aerodrome unit responsible for authorising the operation of vehicles as per ADR.OPS.B.026, to enable it to take appropriate action.

Rationale

This AMC provides the means for the aerodrome operator to discharge its responsibilities arising from the introduction of the requirement to ensure that other organisations at the aerodrome maintain their vehicles.

AMC1 ADR.OPS.C.007(a);(c) Maintenance of vehicles (RMT.0703)

PREVENTIVE MAINTENANCE

(a) As part of the preventive maintenance programme, the operator of a vehicle should determine the items that need to be checked daily, prior to the operation of the vehicle. As a minimum, the following items should be checked on a daily basis, prior to the operation of a vehicle:

(1) steering wheel;

(2) lighting system;

(3) braking system;

(4) communication systems;

(5) tyre condition;

(6) items that need to be secured on the vehicle;

(7) leaks; and

(8) new external damages to the vehicle.

(b) A feedback mechanism should be established to ensure that any defects identified are communicated to the unit responsible for the maintenance of the vehicle.

Rationale

This AMC is related to the daily inspections that need to be performed as a part of the preventive maintenance programme prior to operating a vehicle. This widespread best practice intends to mitigate risks through the identification of possible wear and tear signs or other events.

GM1 ADR.OPS.C.007(e) Maintenance of vehicles (RMT.0703)

UNINTENDED USE OF UNSERVICEABLE VEHICLES

Apart from the obligation to ensure that an unserviceable vehicle is removed from operations, measures also need to be taken to avoid the unintended use of an unserviceable vehicle. The latter may include the placing of a warning placard inside the vehicle, and the establishment of a method for the provision of such information to the relevant personnel, especially those of the next shift.

Rationale

This GM provides information regarding the intent of the requirements and possible measures to prevent the unintended use of an unserviceable vehicle.

AMC1 ADR.OPS.C.010 Pavements, other ground surfaces, and drainage (RMT.0704)

GENERAL

(a) The aerodrome operator should maintain the surface of a paved runway in a condition so as to provide good friction characteristics and low rolling resistance. ~~Mud, dust, sand, oil, rubber deposits, and other pollutants should be removed, as rapidly and completely as possible, to minimise accumulation.~~

(b) Taxiways and aprons should be kept clear of pollutants to the extent necessary to enable aircraft to be taxied to and from an operational runway.

(c) Drainage systems and storm water collection systems should be periodically checked and, if necessary cleaned or maintained, to ensure efficient water run-off.

~~(d) The aerodrome operator should measure the runway surface friction characteristics for maintenance purpose with a continuous friction measuring device using self-wetting features.~~

~~The frequency of these measurements should be sufficient to determine the trend of the surface friction characteristics of the runway.~~

~~(e) The aerodrome operator should take corrective maintenance action to prevent the runway surface friction characteristics for either the entire runway, or a portion thereof from falling below the minimum friction level specified by the State.~~

~~(f) When the friction of a significant portion of a runway is found to be below the minimum friction level value, the aerodrome operator should report such information in order to promulgate it in a NOTAM specifying which portion of the runway is below the minimum friction level and its location on the runway, and take immediate corrective action.~~

Rationale

The AMC has been revised and more specifically:

— Part of point (a) is transferred to ADR.OPS.C.010 point (b)(5) to ensure that these pollutants are removed.

— Points (d) and (e) have been transferred to ADR.OPS.C.010 points (b)(4) and (b)(5) respectively because these are obligations of the aerodrome operator; therefore, it is more appropriate to have these requirements at implementing rule level.

— The content of point (f) has been transferred to ADR.OPS.A.065 point (g) because it refers mainly to reporting.

AMC2 ADR.OPS.C.010 Pavements, other ground surfaces, and drainage (RMT.0703)

REMOVAL OF MARKINGS

Whenever, for maintenance or other purposes (e.g. relocation or markings, redesign of pavements), a marking on the movement area is not needed any longer, the marking should be physically removed. In no case, a non-needed marking should be painted over.

The removal of the marking may be accomplished by using various techniques, but irrespectively of the technique used, it should not cause damage to the pavement or parts of the lighting systems.

In order to eliminate the visual appearance of the removed marking(s) on the pavement, the physical removal of any old marking(s) should include a predetermined larger size and shape of the area occupied by the marking(s), that encompasses the old marking(s), and by grouping adjacent markings together into a larger rectangular removal area.

Rationale

The proposed AMC provides an acceptable methodology as to the way markings that are not needed any longer should be treated, in order to ensure that there is no misunderstanding of the word ‘obliterated’ that is used in Annex 14 paragraph 7.1.5. This practice is expected to contribute to the prevention of confusion of flight crews and ground personnel.

GM4 ADR.OPS.C.010(b)(2) Pavements, other ground surfaces, and drainage (RMT.0703)

REMOVAL OF MARKINGS

A marking may need to be removed for various reasons (marking patterns are changed, physical areas or operating procedures are modified, or the thickness of the layers of paint becomes excessive, etc.).

It has been found that covering markings that need to be removed with a darker colour (e.g. black or dark grey) in order to make them resemble the colour of the adjacent pavement (e.g. runway, apron, taxiway) is likely to mislead the flight crews as well as drivers operating in this area because of the reflection of the sun or other sources of light upon the new surface. Moreover, the surface layer of paint will wear away or erode and the lower layers will become visible and thus may cause confusion.

Methods used for removing unnecessary markings include but are not limited to water blasting, sand blasting, chemical removal, burning, etc.

If the sand blasting method is used, arrangements should be in place to remove the sand deposited on the pavement as the work progresses, in order to prevent accumulation.

Grinding is not recommended because of the damage to the pavement surface and probable reduction of the friction characteristics.

When chemicals are used for marking removal, a large and continuous source of water is usually needed to reduce potential damage to pavement surfaces and to dilute the chemicals washed into drains or channels.

If burning is used to remove a marking, care should be exercised not to damage the pavement surface, as a result of the extended periods of exposure to the heat source.

Examples of predetermined areas that should cover the area of the old markings, as well as adjacent markings, appear in Figure 1.

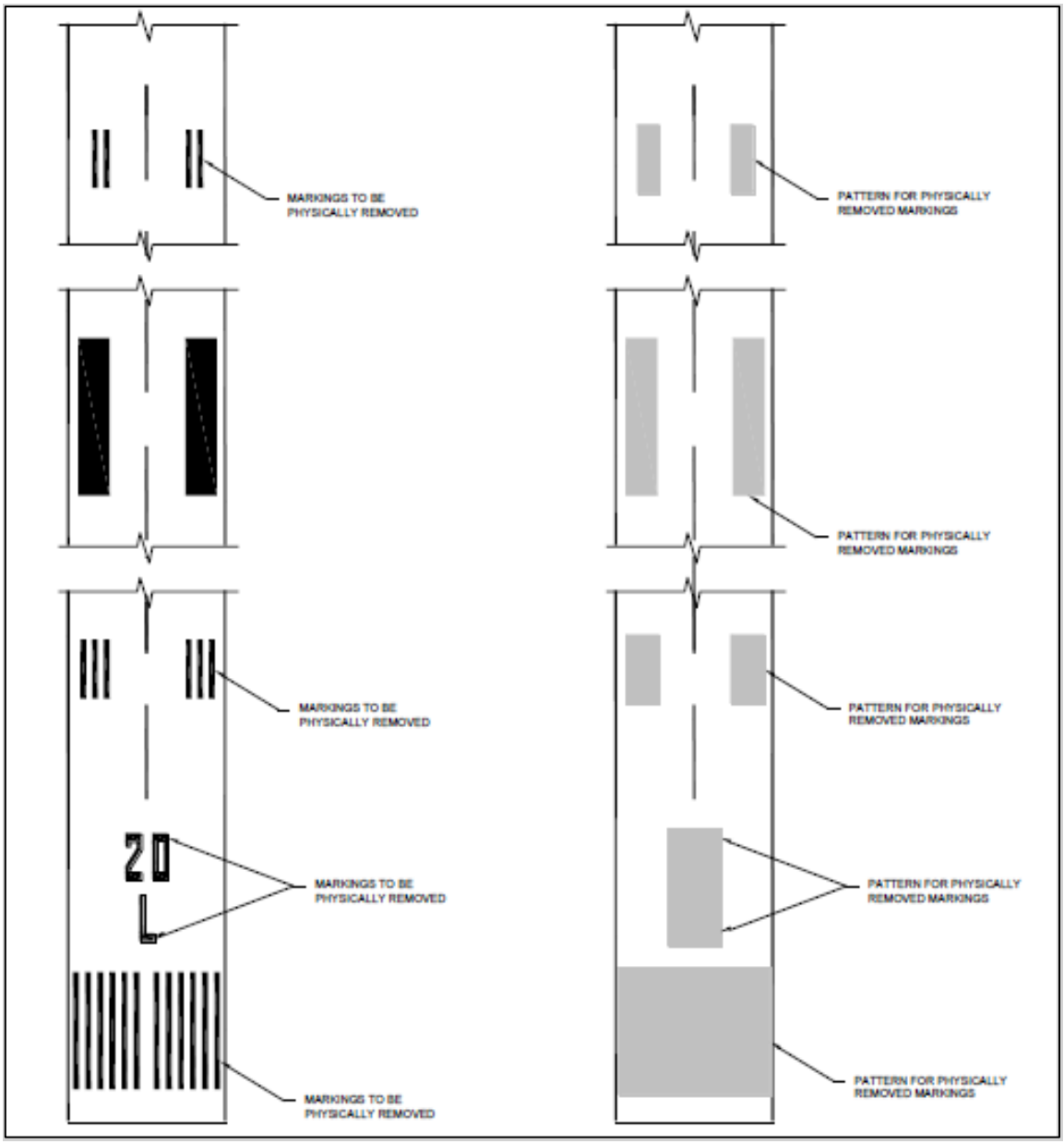

Figure 1

Rationale

The new GM provides relevant supportive information for the implementation of an acceptable methodology as to the way markings that are not needed any longer should be treated. This practice is expected to contribute to the prevention of confusion of flight crews and ground personnel.

GM1 ADR.OPS.C.010(b)(3) Pavements, other ground surfaces and drainage (RMT.0704)

MAINTENANCE PLANNING AND MINIMUM FRICTION LEVEL

~~DETERMINATION OF FRICTION CHARACTERISTICS OF WET PAVED SURFACES~~

~~(a) The surface friction characteristics of a paved runway should be:~~

~~(1) assessed to verify the surface friction characteristics of new or resurfaced paved runways; and~~

~~(2) assessed periodically in order to determine the slipperiness of paved runways;~~

~~(b) The condition of a runway pavement is generally assessed under dry conditions using a self-wetting continuous friction measuring device. Evaluation tests of runway surface friction characteristics are made on clean surfaces of the runway when first constructed or after resurfacing.~~

~~(c) Friction tests of existing surface conditions are taken periodically in order to avoid falling below the minimum friction level specified by the State. When the friction of any portion of a runway is found to be below this value, then such information should be promulgated in a NOTAM, specifying which portion of the runway is below the minimum friction level and its location on the runway. A corrective maintenance action must be initiated without delay. Friction measurements should be taken at time intervals that will ensure identification of runways in need of maintenance or special surface treatment before their condition becomes serious. The time intervals and mean frequency of measurements depend on factors such as: aircraft type and frequency of usage, climatic conditions, pavement type, and pavement service and maintenance requirements.~~

~~(d) Friction measurements of existing, new, or resurfaced runways should be made with a continuous friction measuring device provided with a smooth tread tire. The device should use self-wetting features to allow measurements of the friction characteristics to be made at a water depth of 1 mm.~~

~~(e) When it is suspected that the surface friction characteristics of a runway may be reduced because of poor drainage, owing to inadequate slopes or depressions, then an additional measurement should be made, but this time under natural conditions representative of a local rain. This measurement differs from the previous one in that water depths in the poorly cleared areas are normally greater in a local rain condition. The measurement results are, thus, more apt to identify problem areas having low friction values that could induce aquaplaning than the previous test. If circumstances do not permit measurements to be conducted during natural conditions representative of a rain, then this condition may be simulated.~~

~~(f) When conducting friction tests using a self-wetting continuous friction measuring device, it is important to note that, unlike compacted snow and ice conditions, in which there is very limited variation of the friction coefficient with speed, a wet runway produces a drop in friction with an increase in speed. However, as the speed increases, the rate at which the friction is reduced becomes less. Among the factors affecting the friction coefficient between the tire and the runway surface, texture is particularly important. If the runway has a good macro-texture allowing the water to escape beneath the tire, then the friction value will be less affected by speed. Conversely, a low macro-texture surface will produce a larger drop in friction with increase in speed.~~

~~(g) The design objective for new runway surfaces and maintenance planning, and minimum friction levels for runway surface in use, should be according to the following table:~~

	~~Test tire~~						
~~Test equipment~~	~~Type~~	~~Pressure (kPa)~~	~~Test speed (km/h)~~	~~Test water depth (mm)~~	~~Design objective for new surface~~	~~Maintenance planning level~~	~~Minimum friction level~~
~~Mu-meter~~ ~~Trailer~~	~~A~~ ~~A~~	~~70~~ ~~70~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.72~~ ~~0.66~~	~~0.52~~ ~~0.38~~	~~0.42~~ ~~0.26~~
~~Skiddometer~~ ~~Trailer~~	~~B~~ ~~B~~	~~210~~ ~~210~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.82~~ ~~0.74~~	~~0.60~~ ~~0.47~~	~~0.50~~ ~~0.34~~
~~Surface Friction Tester Vehicle~~	~~B~~ ~~B~~	~~210~~ ~~210~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.82~~ ~~0.74~~	~~0.60~~ ~~0.47~~	~~0.50~~ ~~0.34~~
~~Runway Friction Tester Vehicle~~	~~B~~ ~~B~~	~~210~~ ~~210~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.82~~ ~~0.74~~	~~0.60~~ ~~0.54~~	~~0.50~~ ~~0.41~~
~~TATRA Friction Tester Vehicle~~	~~B~~ ~~B~~	~~210~~ ~~210~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.76~~ ~~0.67~~	~~0.57~~ ~~0.52~~	~~0.48~~ ~~0.42~~
~~Grip Tester Trailer~~	~~B~~ ~~B~~	~~140~~ ~~140~~	~~65~~ ~~95~~	~~1.0~~ ~~1.0~~	~~0.74~~ ~~0.64~~	~~0.53~~ ~~0.36~~	~~0.43~~ ~~0.24~~

~~Table 1~~

(a) The maintenance planning, and minimum friction levels for runway surface in use, should be according to the following table:

	65 km/h		95 km/h	
	Minimum	Maintenance planning	Minimum	Maintenance planning
Airport Surface Friction Tester	0.50	0.60	0.34	0.47
Dynatest Consulting Inc. Dynatest Runway Friction Tester	0.50	0.60	0.41	0.54
Findlay, Irvine, Ltd Griptester Friction Meter	0.43	0.53	0.24	0.36
Halliday Technologies RT3	0.45	0.55	0.42	0.52
Moventor Oy Inc. BV-11 Skiddometer	0.50	0.60	0.34	0.47
Mu Meter	0.42	0.52	0.26	0.38
NAC Dynamic Friction Tester	0.42	0.52	0.28	0.38
Norsemeter RUNAR (operated ay fixed 16% slip)	0.45	0.52	0.32	0.42
Automatic Friction Measuring Device (Instrument de Measure Automatique de Glissance) - IMAG	0.30	0,40	0.20	0.30

Table 1

(~~a~~b) Other friction measuring devices can be used, provided they have been correlated with, at least, one test equipment mentioned in the table above.

(c) The table originates from aircraft equipped with on/off anti-skid system

Rationale

ICAO Annex 14 does not contain any longer references to the design objective, maintenance and minimum friction level; however, it is required by the States to establish the minimum friction level. In order to find the most appropriate means to preserve the table, EASA investigated two different options in relation to this subject matter.

The first option was to retain the existing table in the GM that is identical to the one that was existing in Annex 14. This option has been dismissed because although the States are currently using it, there is no evidence that the different devices are correlated to each other. Furthermore, this table will not be maintained in the future.

The second option is to make use of the FAA correlation table. The table was developed after correlating the different devices and is subject to updates as soon as new devices are introduced. For this reason, the second option was selected.

Another issue is the allocation of the table at AMC or GM level. If it is at AMC level, this will ensure to some extent that a harmonised approach will be followed across the States. If on the other hand is at GM level, this would result in different approaches and a minimum friction level will not be actually established.

Question to stakeholders:

Competent Authorities and aerodrome operators are asked to express their opinion whether the table should be at AMC or GM level, providing also the rationale behind their opinion.

AMC1 ADR.OPS.C.010(b)(4) Pavements, other ground surfaces and maintenance (RMT.0704)

PERIODIC MEASUREMENT OF RUNWAY SURFACE FRICTION

The aerodrome operator when establishing a plan of periodic measurements of runway surface friction, should take into consideration the number of jet aircraft movements per runway end, the weight of the aircraft, the type and age of the surface of the runway as well as climate conditions.

Rationale

The AMC introduces the method described in ICAO Doc 9137 Part 2 concerning the frequency of the measurements of runway surface friction.

AMC2 ADR.OPS.C.010(b)(4) Pavements, other ground surfaces and maintenance (RMT.0704)

TREND MONITORING OF RUNWAY SURFACE FRICTION CHARACTERISTICS

The aerodrome operator should monitor the trend of degradation of runway surface friction characteristics that is caused by:

(a) rubber deposits;

(b) surface polishing; and

(c) poor drainage.

Rationale

The proposed AMC originates from paragraph 3.73 of ICAO Circular 329 and lists the factors that could cause degradation of the runway surface friction.

AMC3 ADR.OPS.C.010(b)(4) Pavements, other ground surfaces and maintenance (RMT.0704)

FRICTION EVALUATIONS WITH CONTINUOUS FRICTION MEASURING EQUIPMENT

The aerodrome operator when conducting friction evaluations with continuous friction measuring equipment, should:

(a) for friction evaluations on runways at 65 km/h, begin recording the data 150 m from the threshold end to allow for adequate acceleration distance and terminate approximately 150 m from the opposite end of the runway to allow for adequate distance to safely decelerate the vehicle;

(b) for friction evaluations on runways at 95 km/h, begin recording the data 300 m from the threshold end and terminate approximately 300 m from the opposite end of the runway; and

(c) conduct the surveys at a distance from the runway centre line that is representative of the wheel span of the aeroplanes operating on the runway.

Rationale

The proposed AMC describes the method that should be used for conducting friction evaluations using continuous friction measuring equipment.

GM1 ADR.OPS.C.010(b)(4) Pavements, other ground surfaces and maintenance (RMT.0704)

TREND MONITORING PROGRAMME

(a) The objective of the trend monitoring programme is to ensure that the surface friction characteristics for the entire runway remain at or above the minimum friction level.

(b) Degradation is typically caused by rubber deposits, surface polishing or poor drainage. These can be mitigated as follows:

(1) Accumulation trend of rubber can be managed through a rubber removal programme.

(2) Polishing trend of the surface can be managed by monitoring loss of sharpness and retexturing/resurfacing programme.

(3) Drainage trend can be managed by monitoring changes in geometry and blocking of drainage channels and reshaping programme.

(c) In the construction of new runways or the resurfacing of existing runways, the construction of surfaces with adequate slopes and aggregate of angular fragments from crushed gravel or stone so as to provide a sharp texture will help to ensure surface friction characteristics providing good braking action in wet conditions. The surface friction characteristics of a new constructed or resurfaced runway surface establish the normal starting point for trend monitoring; however, trend monitoring can also start at any given time through the lifespan of a pavement.

(d) The determination that a runway or portion thereof is slippery wet stems from various methods used by themselves or in combination. Additionally, substandard runways or portion thereof can be identified through repeated reports by aeroplane operators based upon flight crew experience or through analysis of aeroplane stopping performance. When such reports are received, it is an indication that the surface friction characteristics are likely to be severely degraded and immediate remedial action is necessary.

Rationale

The GM provides further information on the trend monitoring programme. The origin of the text is ICAO Circular 329 paragraphs 3.73, 3.75 and 3.77.

GM2 ADR.OPS.C.010(b)(4) Pavements, other ground surfaces and drainage (RMT.0704)

FRICTION EVALUATIONS WITH CONTINUOUS FRICTION MEASURING EQUIPMENT

(a) The lateral location on the runway for performing friction measurements is based on the type and/or mix of aircraft operating on the runway:

(1) For runways serving only narrow-body aircraft, friction measurements should be conducted 3 m from the runway centre line.

(2) For runways serving narrow-body and wide-body aircraft, friction measurement should be conducted 3 and 6 m from the runway centre line to determine the worst-case condition. If the worst-case condition is found to be consistently to one track, future measurements may be limited to this track. Care should be exercised, however, to account for any future and/or seasonal changes in aircraft mix.

(b) Friction measurements at 65 km/h provide an indication of the overall microtexture/contaminant/drainage condition of the pavement surface. The higher speed provides an indication of the condition of the surface's macrotexture. A complete survey should include tests at both speeds.

Rationale

The proposed GM provides further information regarding the distance from the runway centre line and the speeds at which friction measurement runs should be conducted using a continuous friction measuring device.

~~**AMC1 ADR.OPS.C.015 Visual aids and electrical systems**~~ **(RMT.0703)**

~~**GENERAL**~~

~~(a) The aerodrome operator should establish a system of corrective and preventive maintenance which ensures that a light is deemed unserviceable when the main beam average intensity is less than 50 % of the value specified in the applicable CSs. For light units where the designed main beam average intensity is above the specified in the applicable CSs, the 50 % value should be related to that design value.~~

~~(b) The aerodrome operator should establish a system of preventive maintenance of visual aids to ensure lighting and marking system reliability and serviceability as required for the intended operations.~~

Rationale

AMC1 ADR.OPS.C.015 (Visual aids and electrical systems) is deleted because its content is now covered by the proposed new requirement ADR.OPS.C.015 (points (b) and (c)(1)).

AMC1 ADR.OPS.C.015(a);(f) Visual aids and electrical systems (RMT.0703)

ELECTRICAL SYSTEMS

(a) Schedules of routine maintenance of the individual elements of the aerodrome's electrical systems should be based on manufacturers' instructions, adjusted to the aerodrome operator's experience regarding the frequency of malfunctions.

(b) The maintenance programme should, as a minimum, include the following:

(1) power cables and distributors in field;

(2) transformers and regulators;

(3) transformer stations for electric power supply;

(4) relay and switch cabinets;

(5) control cables, monitoring units and control desk;

(6) secondary power supply;

(7) fixed ground power supply for aircraft,

and should contain the frequency of the scheduled maintenance activities and the elements that should be checked during each inspection.

(c) Checklists to be used during the scheduled maintenance activities should be developed by the aerodrome operator.

(d) The relevant procedures should cover the maintenance activities for each area, including the way such activities should be implemented.

Rationale

The proposed AMC is based on ICAO Doc 9137 Part 9 (Airport Maintenance Practices) and defines the minimum parts of the electrical systems of an aerodrome that need to be included in the maintenance programme of an aerodrome.

GM1 ADR.OPS.C.015(a);(f) Visual aids and electrical systems (RMT.0703)

ELECTRICAL SYSTEMS

The serviceability and reliability of air navigation equipment and installations are prerequisites for the safe operation of aircraft in the aerodrome area, but also for the regularity and efficiency of the air transportation system.

The required serviceability of installations and equipment can only be achieved as long as constant power supply is ensured.

To this end, regular maintenance work is required for aerodrome equipment and installations distributing primary power and equipment supplying the secondary power when there is such a need.

Special attention should be given to cases where there is interconnection between the electrical systems of the various components of the aerodrome (e.g. terminal building, with lighting systems etc.).

Further guidance on the issue may be found in Chapter 3 of ICAO Doc 9137 Part 9 (Airport Maintenance Practices).

Rationale

The proposed GM is based on ICAO Doc 9137 Part 9 (Airport Maintenance Practices) and provides information regarding the maintenance of the electrical systems of an aerodrome that need to be included in the maintenance programme of an aerodrome.

GM1 ADR.OPS.C.015(b) Visual aids and electrical systems (RMT.0703)

LIGHTING SYSTEMS

The allowable percentages of serviceable lights are shown in Table 1 below.

Light type	CAT II/III approach	CAT I approach	RVR<550 m take-off	RVR>550 m take-off
Approach inner 450 m	95 %	85 %	-	-
Approach outer 450 m	85 %	85 %	-	-
Runway threshold	95 %	85 %	-	-
Runway centre line	95 %	85 %	95 %	85 %
Runway edge	95 %	85 %	95 %	85 %
Runway end	75 %	85 %	75 %	85 %
Touchdown zone	90 %	(85 %)[a]	-	-
Note (a): If touchdown zone lights are available. *Note (b}: The table covers only the lighting systems for which the requirement provides for a percentage.*				

Table 1 — Allowable percentages of serviceable lights

Rationale

GM1 ADR.OPS.C.015(b) is based on the relevant content of CS ADR-DSN.S.895. Given that the relevant figures are now contained in ADR.OPS.C.015, this GM provides an overview of the allowable percentages, where the requirement contains such provisions.

GM2 ADR.OPS.C.015(b) Visual aids and electrical systems (RMT.0703)

LED LIGHTS — MAINTENANCE PROGRAMME — ICING AND SNOWING CONDITIONS

(a) The energy savings of light emitting diodes (LEDs) are due in large part to the fact that they do not produce the infrared heat signature of incandescent lamps.

Thus, operators of aerodromes with presence of ice or snow, who have come to expect their melting by this heat signature, should evaluate whether or not a modified maintenance schedule is required during such conditions, or evaluate the possible operational value of installing LED fixtures with heating elements. Manufacturers can provide a heater, sometimes referred to as an 'arctic kit', for their LED light units. Whether a heater is needed is dependent upon the site location and the weather conditions to which it is exposed. In some instances, the low operating temperature is an advantage in that drifting snow does not melt and attach itself to the fixture lens. It is likely that LED PAPI will require some form of lens heater regardless of site location to ensure that condensation/icing does not occur.

(b) While LEDs could last for many thousands of hours under certain conditions, the life of the LED itself, and more importantly, that of the complete luminaire including the electronics, still depends on the system integration and the actual conditions in which the luminaire is used. Application conditions that could have an impact on the expected life of the luminaire include, primarily, the temperature of operation, on-off cycling patterns and humidity. Because LEDs do not have filaments that break or deteriorate, when operated under normal conditions, they tend to last for a long time. However, their light output decreases and the colour of their light shifts over time, with the rate of depreciation increasing at higher operating temperatures. The implication for practice is that at some point in time the loss of light output or the colour shift may render the LED source outside the specifications for a given application or purpose; while the LEDs may technically still be operating, they would no longer be considered useful.

Therefore, the long life of the LED in comparison to that of an incandescent lamp should not be taken as reason for 'install and forget'. A system of preventive maintenance should remain in place as the LED light does eventually fail. In addition, there are other factors that can reduce performance such as contamination on the lens of in-pavement fixtures.

Rationale

The content of the new GM2 ADR.OPS.C.015 is based on the content of note 2 to paragraph 10.5 of Annex 14, and on paragraphs 12.13 and 12.14 of the ICAO Aerodrome Design Manual Part 5 (Electrical Systems).

GM3 ADR.OPS.C.015(b) Visual aids and electrical systems (RMT.0703)

LIGHTING SYSTEMS

Serviceability levels are intended to define the maintenance performance level objectives.

With respect to barrettes, crossbars and runway edge lights, lights are considered adjacent if located consecutively and:

— laterally: in the same barrette or crossbar; or

— longitudinally: in the same row of edge lights or barrettes.

In barrettes and crossbars, guidance is not lost by having two adjacent unserviceable lights.

Further guidance on the development of preventive maintenance programme of lights is given in Chapter 2 of ICAO Doc 9137, Airport Services Manual, Part 9, Airport Maintenance Practices.

Rationale

The content of the proposed GM3 ADR.OPS.C.015 is based on GM1 ADR-DSN.S.895 (Serviceability levels), which is deleted.

GM1 ADR.OPS.C.015(b);(c) Visual aids and electrical systems (RMT.0703)

UNSERVICEABLE LIGHTS

CS ADR-DSN.U.940 'Aeronautical ground light characteristics' contains the figures for determining the unserviceability of individual lights.

The aerodrome operator should however consider defining, as part of its maintenance programme, two levels of intensity for individual lights, i.e. a maintenance level and the unserviceability level.

The higher level should be set to give aerodrome maintenance personnel advance warning that a light unit is beginning to produce an output significantly below the required value. This level should always be above 50 per cent of the specified intensity, which is the level at which the light is classed as being outside specification tolerance and therefore to have failed from an operational perspective. Once the light output reaches the maintenance level, corrective action can be scheduled. This should prevent lights from losing performance to the level where immediate maintenance action must be taken.

Rationale

The proposed GM provides guidance for the development of the maintenance programme in a way that the need for taking of immediate action is avoided by the aerodrome operator.

AMC1 ADR.OPS.C.015(b);(f) Visual aids and electrical systems (RMT.0703)

LIGHTING SYSTEMS

GROUND CHECKS

(a) As part of the maintenance programme, the lighting system maintenance activities should include ground checks. During the daily checks, the lighting systems should be checked at least for light failures, breakage or gross misalignment and correct operation of the intensity control system. The maintenance programme should identify the frequency of other checks

that need to be performed throughout the year, as well as their content. Moreover, irrespective of the runway type, the aerodrome operator should ensure the serviceability of the lights by conducting photometric measurements, at appropriate intervals, as part of its maintenance programme.

(b) Ground checks of Visual Approach Slope Indicator Systems (VASIS) should determine their alignment and serviceability. VASIS alignment should be checked at defined intervals, taking into account environmental conditions (e.g. rain, drought, etc.) that may affect the stability of the system, using an appropriate intensity setting. Additional checks should be conducted following an aircraft occurrence. Errors in excess of one minute of arc should be corrected. The maintenance programme should also cover the Obstacle Protection Surface of the VASIS to ensure that it is clear of all obstacles.

VASIS serviceability should be checked on each runway inspection. With regard to Precision Approach Path Indicator (PAPI) and Abbreviated Precision Approach Path Indicator (APAPI) serviceability, whenever a red filter does not produce the correct colour light beam, is missing, or is damaged, all the lights associated with that filter should be extinguished until the red filter is rectified.

(c) For a precision approach runway category II or III:

(1) The system of preventive maintenance employed should include at least the following checks:

(i) visual inspection and in-field measurement of the intensity, beam spread and orientation of lights included in the approach and runway lighting systems;

(ii) control and measurement of the electrical characteristics of each circuitry included in the approach and runway lighting systems; and

(iii) control of the correct functioning of light intensity settings used by air traffic control.

(2) In-field measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems should be undertaken by measuring all lights, as far as practicable, to ensure conformance with the appropriate figure in CS ADR-DSN.U.940.

(3) Measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems should be undertaken using an appropriate measuring unit of sufficient accuracy to analyse the characteristics of the individual lights.

(4) The frequency of measurement should be based on traffic density, the local pollution level, the reliability of the installed lighting equipment and the continuous assessment of the results of the in-field measurements but, in any event, should not be less than twice a year for in-pavement lights and not less than once a year for other lights.

FLIGHT CHECKS

(d) As part of the maintenance programme of the lighting systems, flight check of the approach and runway lighting systems, including VASIS, should be carried out at regular intervals, at least on a yearly basis, to ensure the pattern is correct and that lights are operating properly.

Special flight checks should be arranged in case of major maintenance of such systems, as well as before the commissioning of new systems, both at day and night.

Rationale

This aims at facilitating the development of the maintenance programme of the lighting systems of an aerodrome. This is done by transposing material based on the relevant ICAO Documents 9137 and 9157 (Part 8 and Part 4 respectively), regarding the maintenance of visual aids. With regard to the lightings systems of CAT II/III runways, this AMC transposes paragraphs 10.4.3, 10.4.4, 10.4.5 and 10.4.6 of Annex 14 defining the types of checks to be conducted as well as their minimum frequency.

GM1 ADR.OPS.C.015(b);(f) Visual aids and electrical systems (RMT.0703)

LIGHTING SYSTEMS

GROUND CHECKS — GENERAL

The ground checks of the lighting system includes a set of different actions that would need to be undertaken at different intervals. These checks include, but are not limited, to the following:

(a) broken lights or parts of the unit;

(b) condition of filters;

(c) corrosion;

(d) cleanness;

(e) tightening of fasteners of units;

(f) alignment of lights;

(g) presence of moisture/water;

(h) electrical connections of lights; and

(i) condition of structure and the foundation of each unit.

GROUND CHECKS — VASIS

VASIS are used in order to provide correct visual glide slope indication to the flight crews in all variable weather conditions, by day and by night. It is therefore imperative that the maintenance programme ensures the correct alignment of the system, as well as its serviceability at all times. In order to achieve this, a suitable maintenance programme, including the correct frequency of ground checks, should be developed and implemented.

During daily checks, the general condition of each unit should be checked to determine the following:

(a) all lights are lighted and illuminated evenly;

(b) there is no evidence of apparent damages;

(c) the change from red to white is coincident for all elements in a unit; and

(d) the lenses are not contaminated.

Regarding the alignment of VASIS, the individual unit setting angles should be checked by means of angular measurement, in accordance with the manufacturer's instructions. A visual comparison

between all the units in the system set at the same angle may be used to identify a unit in which there is a misalignment between the optical system and the datum plate. The cause of any misalignment of this nature should be ascertained and corrected before any adjustment is made to the setting angles. Where the ground where the VASIS are installed is less stable, or intense weather phenomena such as frost, heavy rain or drought take place, or variations in weather occur, the aerodrome operator should adjust the ground checks of the VASIS, as such phenomena may lead to misalignment of the VASIS. In this way, gross alignment errors may be prevented.

FLIGHT CHECKS

Flight checks should be conducted at least on a yearly basis.

The flight checks should include the approach lighting system, the runway lights, the VASIS and the location/identification beacon of the aerodrome. Lights should be checked for failures and alignment, while the VASIS should also be checked for correct approach slope, uniformity of intensity and compatibility with the non-visual approach system, if available.

Flight checks may be arranged to be conducted with the planned calibration flights of the no-visual aids, during which an assessment of the markings may take place. The opportunity should also be taken to identify any confusing or misleading lights in the aerodrome surroundings.

Further guidance on how to conduct a flight check and the items that need to be checked during the check may be found in ICAO Doc 9137 Part 8 Chapter 5, and Doc 9157 Part 4 Chapter 8.

Rationale

GM1 ADR.OPS.C.015(b)(1) (Visual aids and electrical systems) is proposed in order to provide guidance for the implementation of ground and flight checks of certain visual aids. The content of this GM is based on the content of ICAO Documents 9137 and 9157 (Part 8 and Part 4 respectively).

AMC1 ADR.OPS.C.015(d) Visual aids and electrical systems (RMT.0703)

REMOVAL OF MARKINGS

Whenever, for maintenance or other purposes (e.g. relocation or markings, redesign of pavements), a marking on the movement area is not needed any longer, the marking should be physically removed. In no case, a non-needed marking should be painted over.

The removal of the marking may be accomplished by using various techniques, but irrespectively of the technique used, it should not cause damage to the pavement or parts of the lighting systems.

In order to eliminate the visual appearance of the removed marking(s) on the pavement, the physical removal of any old marking(s) should include a predetermined larger size and shape of the area occupied by the marking(s), that encompasses the old marking(s), and by grouping adjacent markings together into a larger rectangular removal area.

Rationale

The proposed AMC provides an acceptable methodology as to the way markings that are not needed any longer should be treated, in order to ensure that there is no misunderstanding of the word ‘obliterated’ that is used in Annex 14 paragraph 7.1.5. This practice is expected to contribute to the prevention of confusion of flight crews and ground personnel.

GM1 ADR.OPS.C.015(d) Visual aids and electrical systems (RMT.0703)

REMOVAL OF MARKINGS

A marking may need to be removed for various reasons (marking patterns are changed, physical areas or operating procedures are modified, or the thickness of the layers of paint becomes excessive, etc.)

It has been found that covering markings that need to be removed with a darker colour (e.g. black or dark grey) in order to make them resemble the colour of the adjacent pavement (e.g. runway, apron, taxiway) is likely to mislead the flight crews, as well as drivers operating in this area because of the reflection of the sun or other sources of light upon the new surface. Moreover, the surface layer of paint will wear away or erode and the lower layers will become visible and thus may cause confusion.

Methods used for removing unnecessary markings include but are not limited to such as water blasting, sand blasting, chemical removal, burning, etc.

If the sand blasting method is used, arrangements should be in place to remove the sand deposited on the pavement as the work progresses, in order to prevent accumulation.

Grinding is not recommended because of the damage to the pavement surface and probable reduction of the friction characteristics.

When chemicals are used for marking removal, a large and continuous source of water is usually needed to reduce potential damage to pavement surfaces and to dilute the chemicals washed into drains or channels.

If burning is used to remove a marking, care should be exercised not to damage the pavement surface, as a result of the extended periods of exposure to the heat source.

Examples of predetermined areas that should cover the area of the old marking(s), as well as adjacent markings, appear in Figure 1.

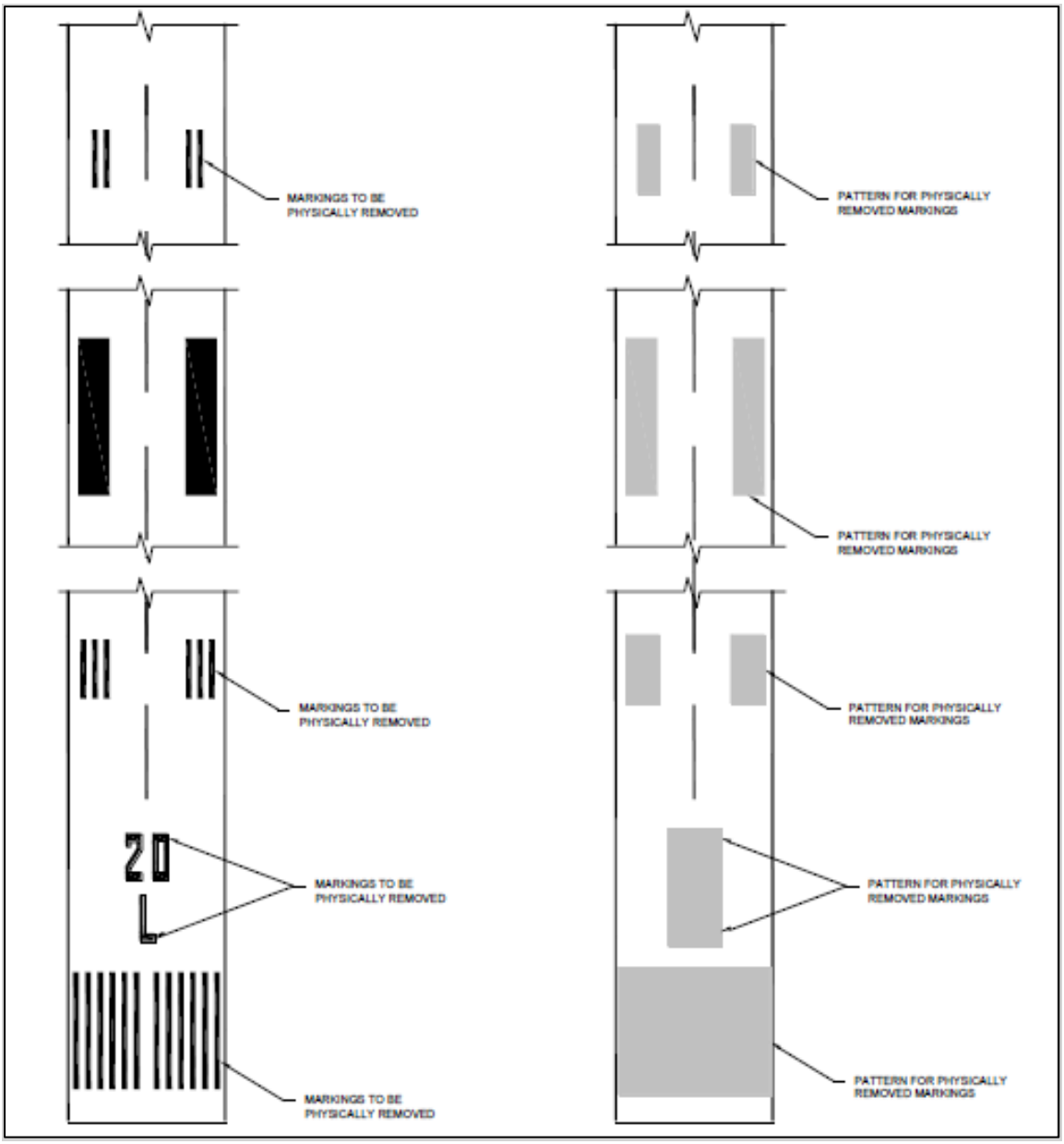

Figure 1

Rationale

The new GM provides relevant supportive information for the implementation of an acceptable methodology as to the way markings that are not needed any longer should be treated. This practice is expected to contribute to the prevention of confusion of flight crews and ground personnel.

AMC1 ADR.OPS.C.015(d);(f) Visual aids and electrical systems (RMT.0703)

MARKINGS AND SIGNS

(a) Markings

A system of preventive maintenance of visual aids should be employed to ensure marking system reliability, both day and night. All markings should be inspected thoroughly at least

semi-annually, depending on local weather conditions, and corrective action should be taken in case of need, such as peeling, discolourment, fading, or accumulation of deposits.

(b) Signs

Maintenance should ensure integrity and perfect legibility of the information provided by the signs. Checks for each sign should be both scheduled (daily, annual) and unscheduled, and should take into account the instructions of the manufacturer.

Rationale

AMC1 ADR.OPS.C.015 (Visual aids and electrical systems) did not contain any provisions for the maintenance of the markings and signs, although the relevant implementing rule is referring to visual aids in general. To address the maintenance of markings and signs, AMC1 ADR.OPS.C.015(d);(f) (Visual aids and electrical systems) is introduced, based on the content of ICAO Doc 9137 Part 9.

GM1 ADR.OPS.C.015(d);(f) Visual aids and electrical systems (RMT.0703)

MARKINGS AND SIGNS

(a) An assessment of the condition of the signs and markings performed during the night when compared with an assessment performed during the daylight, allows determining the reflectivity of the marking.

(b) Daily checks of signs should focus on the functioning of the lamps, the legibility of inscriptions, damage to the sign panels, fading of the colours, and the removal of possible obstructions. During night inspections, the proper illumination of the signs should be also checked.

(c) Annual checks of signs should include:

(1) the mounting of both the sign and its lighting; and

(2) the sign's structure.

(d) Unscheduled checks should take place after weather phenomena that may affect the functioning of a sign, such as snowfalls to remove snow accumulation, storms that may have damaged the signs, etc.

Rationale

The new GM1 ADR.OPS.C.015(d);(f) (Visual aids and electrical systems) is introduced to address the maintenance of markings and signs. Its content is based on ICAO Doc 9137 Part 9.

AMC & GM to the rules of the air

GM1 SERA.2005 Compliance with the rules of the air (RMT.0703)

LOCAL AERODROME REGULATIONS

Local aerodrome regulations are published in the relevant Aeronautical Information Publications (AIPs).

Such local regulations may include requirements for the operation of the aircraft transponder on the movement area of an aerodrome with the intent to ensure surveillance data to the air traffic services unit providing services at the aerodrome.

Rationale

The intent of the proposed GM is to draw the attention of flight crews to the fact that, depending on the aerodrome's facilities, relevant information regarding the need to use the transponder while at the aerodrome may be published in the local aerodrome regulations.

AMC1 SERA.14001 General (RMT.0704)

1. ATC PHRASEOLOGIES

1.1 General

1.1.11	AERODROME INFORMATION *Note.— This information is provided for runway thirds or the full runway, as applicable.*	a) ~~[*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number) (condition)*~~ [*(location)* RUNWAY *(number)* SURFACE CONDITION [CODE *(three digit number)*]; *followed as necessary by:* 1. ISSUED AT *(date and time UTC)*; 2. DRY, or WET ICE, or WATER ON TOP OF COMPACTED SNOW, or DRY SNOW, or DRY SNOW ON TOP OF ICE, or WET SNOW ON TOP OF ICE, or ICE, or SLUSH, or STANDING WATER, or COMPACTED SNOW, or WET SNOW, or DRY SNOW ON TOP OF COMPACTED SNOW, or WET SNOW ON TOP OF COMPACTED SNOW, or WET, or FROST; 3. DEPTH (*(depth of deposit)* MILLIMETRES or NOT REPORTED); 4. COVERAGE (*(number)* PER CENT or NOT REPORTED); 5. ESTIMATED SURFACE FRICTION (GOOD, or GOOD TO MEDIUM, or MEDIUM, or MEDIUM TO POOR, or POOR, or LESS THAN POOR); 6. AVAILABLE WIDTH *(number)* METRES; 7. LENGTH REDUCED TO *(number)* METRES; 8. DRIFTING SNOW; 9. LOOSE SAND; 10. CHEMICALLY TREATED; 11. SNOWBANK *(number)* METRES [LEFT, or RIGHT or LEFT AND RIGHT] [OF or FROM] CENTRE LINE; 12. TAXIWAY *(identification of taxiway)* SNOWBANK *(number)* METRES [LEFT, or RIGHT or LEFT AND RIGHT] [OF or FROM] CENTRE LINE; 13. ADJACENT SNOWBANKS; 14. TAXIWAY *(identification of taxiway)* POOR; 15. APRON *(identification of apron)* POOR; *16. Plain language remarks* [...] e) CAUTION *(specify reasons)* RIGHT (*or* LEFT), (*or* BOTH SIDES) OF RUNWAY [*(number)*];

	[...]
	~~g) RUNWAY REPORT AT *(observation time)* RUNWAY *(number)* *(type of precipitant)* UP TO *(depth of deposit)* MILLIMETRES. ESTIMATED SURFACE FRICTION GOOD (*or* MEDIUM TO GOOD, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR;~~
	~~h)~~ g) BRAKING ACTION REPORTED BY *(aircraft type)* AT *(time)* GOOD (*or* ~~MEDIUM to~~ GOOD TO MEDIUM, *or* MEDIUM, *or* MEDIUM ~~to~~ TO POOR, *or* POOR);
	~~i)~~ h) ~~RUNWAY (*or* TAXIWAY)~~ *~~(number~~ identification of taxiway)* WET [*or* STANDING WATER, *or* SNOW REMOVED *(length and width as applicable)*, *or* CHEMICALLY TREATED, *or* COVERED WITH PATCHES OF DRY SNOW (*or* WET SNOW, *or* COMPACTED SNOW, *or* SLUSH, *or* FROZEN SLUSH, *or* ICE, *or* WET ICE, *or* ICE UNDERNEATH, *or* ICE AND SNOW, *or* SNOWDRIFTS, *or* FROZEN RUTS AND RIDGES *or* LOOSE SAND)];
	~~j)~~ i) TOWER OBSERVES *(weather information)*;
	~~k)~~ j) PILOT REPORTS *(weather information)*.
	[...]

Rationale

The proposed changes are in accordance with ICAO Doc 4444 Amendment 7-B.

3.4. Draft performance standards for continuous friction measuring device

CS ADR.EQU.CFME.XXX Continuous friction measuring equipment performance standards

(a) The continuous friction measurement device should measure a longitudinal friction coefficient (LFC).

(b) The LFC measured by a side force continuous friction measurement device should be the ratio between the sideways forces along the axle and the vertical load.

(c) The LCF measured by a fixed brake slip continuous friction measurement device should be the ratio between the frictional force acting between the test tyre and the pavement surface and the vertical load force.

(d) An LCF value should always be associated with an assessment of the uncertainty associated with the appropriate confidence interval ($LFC=LFC_{measured}+\delta U$);

(e) The device should be capable of conducting friction measurements at speeds of 65 km/h and 95 km/h within a tolerance of ±5 km/h.

(f) Measurements should be conducted using non-ribbed (smooth) standardised tyre.

(g) The device should have a self-wetting system that distributes water in front of the measuring wheel(s) at a uniform depth of 1 mm. Water should be applied to the test surface in front of the measuring tyre in order to provide the chosen nominal water film thickness across the full width of the tyre at any test speed. Regulation of the water flow rate should be within a tolerance of ±10 %.

(h) The device should be capable of providing data, whereby the average friction value for any length of runway can be manually calculated.

(i) The device should provide a continuous trace of the friction values obtained for the entire runway minus the acceleration/stabilised water flow rate/deceleration distances, which shall not be more than 400 m.

(j) The friction measurement should be accurate, calibrated and repeatable, within a range of defined and controlled environmental conditions.

(k) The device should be accompanied with the latest operational and maintenance documentation including:

(1) procedures to identify the device malfunctions which have an impact on the quality of the measured values;

(2) instructions on the static calibration method to be used for each measurement chain of the LFC and ensure the traceability to the International System of Units (SI); and

(3) training syllabus for the operation of the equipment.

(l) The device should be accompanied with tools to perform the calibration or the manufacturer should be able to offer calibration services.

(m) The device should be accompanied with an acquisition software and its operating instructions.

(n) The Information/data collected should be stored electronically.

GM1 CS ADR.EQU.CFME.XXX(f) Continuous friction measuring equipment performance standards

STANDARDS FOR TYRES

Appropriate standards may be found from organisations such as ASTM, PIARC, ISO or BSI. For example, applicable standards include ASTM Specifications E 670, E 1551, E 1844 or PIARC standard 2009-R02.

GM1 CS ADR.EQU.CFME.XXX(j) Continuous friction measuring equipment performance standards

ACCURACY

The following criteria should be used to meet accuracy requirements:

(a) The implementation of a quality assurance system for testing, according to ISO 17025 standard or equivalent; or

(b) The control of the device is compliant with a reference, according to ISO 17043 standard or equivalent.

4. Impact assessment (IA)

4.1. What is the issue

— The issue analysis has already been detailed in Section 2.1.

4.1.1. Who is affected

The issues identified and addressed by RMT.0703 in this NPA affect aerodrome operators.

Competent Authorities are also affected to a certain extent as they will have to ensure that aerodrome operators adapt to the proposed rules.

The issues identified and addressed by RMT.0704 in this NPA affect primarily aerodrome operators and aircraft operators and to a lesser extent ANSPs.

Competent Authorities are also affected, as they have to make sure that aerodrome operators adapt to the reporting and assessment methods and, in some cases, they have to approve aerodrome operators for operations on specially prepared winter runways.

4.1.2. How could the issue/problem evolve

In case the issues considered under RMT.0703 in this NPA are not addressed, and if the regulatory framework is not updated, the following are expected:

— The identified safety risks would not be addressed, and, in some cases, as a result of further traffic increase it might lead to a worse scenario.

— The EU regulatory framework for aerodromes will not be aligned with the corresponding ICAO SARPs[26].

For RMT.0704, if the issues considered in this NPA are not addressed, and if the regulatory framework is not changed, the following are expected:

— The safety recommendations mentioned above will not be addressed and the identified risks related to operations on wet and contaminated runways would remain the same or possibly increase.

— The rules proposed in the context of the activities of RMT.0296 cannot be applied.

— EU rules will not be aligned with the corresponding ICAO SARPs. This may cause safety issues for aircraft operators outside EU, considering that the GRF aims for worldwide application.

4.2. What we want to achieve — objectives

Please see Section 2.2.

4.3. How it could be achieved — options

For RMT.0703, EASA considered the following options:

[26] Including the relevant PANS provisions.

Option No	***Short title***	**Description**
0	Do nothing	Baseline option (no change to the rules, risks remain as outlined in the issue analysis)
1	Implementation of all ICAO SARPs and recommendations	Adoption of all relevant ICAO SARPs and all EAPPRI and EAPPRE relevant recommendations
2	Implementation of all ICAO SARPs and selected recommendations	Adoption of all ICAO SARPs and selected EAPPRI and EAPPRE recommendations

— Option 0 (do nothing)

If this option is followed, no additional safety defences will be provided. Moreover, the EU regulatory framework for aerodromes will not be aligned with the corresponding ICAO SARPs.

— Option 1 (Implementation of all ICAO SARPs and recommendations)

If Option 1 is adopted, the EU regulatory framework will be aligned with the minimum safety standards contained in Annex 14 and in certain cases will exceed them, in terms of comprehensiveness. In addition, the necessary regulatory defences and material supporting implementation will be in place, thereby mitigating the relevant safety risks.

— Option 2 (Implementation of all ICAO SARPs and selected recommendations)

If Option 2 is selected, full alignment with the international framework will be achieved; however, not all recommended solutions and best practices to mitigate the risks will be taken into account. This selection is based on various criteria, including the potential impact of each measure, and the safety benefit of a single measure in relation to the cumulative safety benefit of other mitigation measures already selected. Moreover, another criterion used is the degree of controversiality of an issue, when certain issues are found to require a more in-depth assessment and which may therefore be subject to a future activity.

For RMT.0704, in order to address the issues identified, apart from Option 0 (baseline scenario), EASA considered the full adoption of ICAO Annex 14 Amendment 13 and the related ICAO Doc 9981 provisions. However, during the drafting of the rules, it was identified that because of the new reporting method, operations on some runways covered with compacted snow or ice may be restricted. It was therefore decided to explore another solution (Option 2 in the table below) for these types of operations.

Table 1: Selected policy options

Option No	*Short title*	**Description**
0	No change	Baseline options (no change to the rules; risks remain as outlined in the issue analysis).
1	Implementation of ICAO amendments	Full adoption of ICAO Annex 14 Amendment 13-B
2	Extend ICAO amendments to specially prepared winter runways	Adoption of ICAO Annex 14 Amendment 13-B including also provisions for operations on specially prepared winter runways.

4.4. Methodology and data

4.4.1. Methodology applied

The methodology applied in order to perform this RIA is the multi-criteria analysis (MCA), which allows comparing all options by scoring them against a set of criteria.

The MCA covers a wide range of techniques that aim at combining a variety of positive and negative impacts into a single framework to allow an easier comparison of scenarios.

The MCA key steps in this RIA include:

— establishing the criteria to be used for comparing the options (these criteria must be measurable, at least in qualitative terms);

— scoring how well each option meets the criteria — the scoring needs to be relative to the baseline scenario; and

— ranking the options by combining their scores.

The criteria used to compare the options were derived from the Basic Regulation and the guidelines by the EC for the RIA. The principal objective of the Basic Regulation, in accordance with Article 1(1), is to 'establish and maintain a high uniform level of civil aviation safety in the Union'. As additional objectives, the Basic Regulation identifies environmental, economic, proportionality, and harmonisation aspects, which are reflected below.

For the scoring of the impacts, a scale of -5 to +5 is used to indicate the negative and positive impacts of each option (i.e. from 'very high' to 'very low' negative/positive impacts). The intermediate levels of benefits are termed 'high', 'medium' and 'low', providing a total of 5 levels in each direction (5 in the positive and 5 in the negative one), with a 'no impact' score also being possible.

An overview of the scoring method is shown below:

Very high positive impact	*+5*	*Very high negative impact*	*-5*
High positive impact	+4	High negative impact	-4
Medium positive impact	+3	Medium negative impact	-3
Low positive impact	+2	Low negative impact	-2
Very low positive impact	+1	Very low negative impact	-1
No impact	0		

4.4.2. Data collection

For RMT.0704, in order to estimate the impact of the selected policy options for each issue considered in the RIA, a questionnaire was sent to the RMG members on 15 November 15 2017. A total number of 8 replies were received[27] from RMG members. Input was asked to better understand impacts for aerodrome operators for what concerns elements as:

— syllabus modifications;

— training for (new/existing) staff to adapt to procedures;

— impacts on increase/decrease of aerodromes' capability; and

— additional costs due to the new proposals.

— Furthermore, a detailed case study on the economic impact assessment of the new ICAO standard for contaminated runways on some Norwegian airports has been provided by Avinor AS.

4.5. What are the impacts (RMT.0703)

4.5.1. Safety impact

Option 0 (do nothing)

The safety risks that have been presented above will remain unchanged, or increase due to traffic evolution.

Option 1 (Implementation of all ICAO SARPs and recommendations)

It is expected that there will be a high positive impact on safety by mitigating the risks highlighted earlier, through the implementation of enhanced operational measures serving as safety defences. This will mitigate the safety risk highlighted in the safety risk assessment in paragraph 2.1.

Option 2 (Implementation of all ICAO SARPs and selected recommendations)

This option will also have a medium positive impact, as several measures included already in Option 1 would mitigate the safety risks highlighted earlier. However, compared to the previous option, not all possible safety measures included in the relevant recommendations will be implemented, such as: use of common frequency, and language for communication purposes associated with runway

[27] Denmark, Finland, France, Iceland, Italy, Norway, and Sweden.

operations[28]; provision of an aerodrome with datalink systems for digital transmission of aeronautical terminal information service (ATIS); installation of stop bars at all runway-holding points, etc. However, the improvement of the safety margins through the implementation of this option would lead to an acceptable safety level, which compensates for the non-implementation of Option 1.

4.5.2. Social impact

Option 0 (do nothing)

No impacts.

Option 1 (Implementation of all ICAO SARPs and recommendations)

Requiring that radio communication associated with runway operations is conducted on a common frequency and language may, in certain cases, lead to certain ground personnel not being able to continue to exercise their current duties as a result of lack of adequate knowledge of the language required to be spoken. This may also have an impact on the smooth running of some operations at certain aerodromes, irrespective of size, until ground personnel is either newly hired or trained. This impact is considered medium negative.

At the same time, this option would bring some very low positive social impacts in terms of increased knowledge and training for aerodrome staff.

Overall, considering both elements described above, this option is considered to have low negative impacts.

Option 2 (Implementation of all ICAO SARPs and selected recommendations)

As for Option 1, in this case there will be very low positive impacts as a result of the training that personnel will receive. However, because this option does not have the negative impacts of the implementation of the common language and frequency measure, overall this option has low positive social impacts.

4.5.3. Economic impact

Option 0 (do nothing)

No economic impact for the affected parties.

Option 1 (Implementation of all ICAO SARPs and recommendations)

The costs associated with this option may be grouped into the following three areas:

— Upgrade of the aerodrome infrastructure

The changes to the proposed certification specifications are minimal and are expected to affect a very limited number of aerodromes. This is because the provision of stopway lights is already required for aerodromes operating at night, and it would be rather uncommon for an

[28] Under this concept, all communications associated with runway operations, e.g. aircraft landing, taking off, or vehicles inspecting or crossing a runway etc. take place on the same frequency, which is linked to the use of a common language, to improve the situational awareness of air traffic services personnel, flight crews and drivers.

aerodrome to be able to operate in RVR below 800 m and at the same time to not be able to operate at night. Moreover, even if an aerodrome needs to comply with the amended certification specification, the overall cost is considered very low, while the provision of secondary power supply is already required under the existing certification specification. Thus, the impact of this particular change is considered low. However, other changes to infrastructure, as a result of the installation of additional measures, such as stop bars, would lead to an increase of the overall cost to low/medium, depending on the size and configuration of each individual aerodrome. Overall, the upgrade of the aerodrome infrastructure would lead to a low negative impact.

— Training needs for the aerodrome personnel

Overall, the economic impact for the training required, as a result of the changes to the requirements and subsequent changes to aerodrome operational procedures, is expected to be low negative. This is because only limited amount of time is required for this, and because such training can be combined with either planned recurrent/refresher training of the personnel or with other methods for disseminating changes to requirements/internal procedures.

— Update/implementation of the aerodrome operating procedures

The cost for the development and the implementation of the new operating procedures is overall foreseen to be low (therefore low negative impact). This is because they are expected to:

- either lead to minor adjustments to current operational practices only; or
- be applied only when necessary (e.g. physical removal of markings), and even then with minor additional impact; or
- be applied only to a limited number of aerodromes only (e.g. having an A-SMGCS), while the implementation costs are again low, and compensated by the regularity and efficiency gains in terms of operations; or
- not create any cost at all, as in some cases what is proposed is the minimum that should have already been applied to ensure safety (e.g. vehicle and light maintenance).

An exemption to this is expected to be, in certain cases, the medium negative impact for achieving radio communication associated with runway operations to be conducted on a common frequency and language, because either existing personnel (drivers) would need to be trained or new personnel would need to be hired and trained.

On the other hand, the restructuring of certain requirements is, in some cases, expected to lead to rule simplification, the removal of some regulatory uncertainties and contribute to a more level playing field. This is expected to provide a low, but still positive, impact overall for the aerodrome industry and the Competent Authorities (e.g. new proposed provisions based on positively assessed AltMoC, or a more precise framework for vehicle operation and the training of drivers).

Overall, this option is expected to have low/medium costs and some low benefits.

<u>Option 2 (Implementation of all ICAO SARPs and selected recommendations)</u>

When compared to Option 1, this option does not show the medium negative economic impacts due to the absence of the costs for the implementation of the common radio communication concept. Furthermore, certain changes to aerodrome infrastructure and respective costs are avoided (e.g. additional stop bars). Overall, this option is considered to have economic neutral impacts, because of the low positive and low negative elements mentioned in the previous option.

4.5.4. Proportionality issues

— No impacts expected

4.6. What are the impacts (RMT.0704)

4.6.1. Safety impact

Option 0 (do nothing)

The safety risks highlighted earlier in the safety risk assessment would continue to exist.

— Option 1 (Implementation of ICAO amendments)

The impact to safety will be medium positive. Aircraft operators will be able to receive information on the runway surface condition that could be used to perform more accurate in-flight landing distance assessments.

— Option 2 (Extend ICAO amendments to specially prepared winter runways)

Option 2 extends the ICAO proposal to operations on specially prepared winter runways, which is not foreseen in the ICAO proposal; however, the EASA proposal is based on data, which demonstrates that such operations can be conducted safely provided that strict control is exercised over these operations. The proposal has been prepared with the involvement of the affected stakeholders, to ensure that the impact on safety is equal to the one identified in Option 1. Therefore, medium positive impacts are expected.

	Option 0 *No change to rules*	***Option 1*** *Full adoption of ICAO Annex 14 Amendment 13-B*	***Option 2*** *Adoption of ICAO Annex 14 Amendment 13-B with specific provisions*
Safety	*0*	*+3*	*+3*

4.6.2. Environmental impact

Option 0 (do nothing)

No impacts

— Option 1 (Implementation of ICAO amendments)

Very low negative impacts might be expected because of an increased fuel consumption and CO_2 emissions in those cases where landing is not allowed as the in-flight landing distance check gives a

landing distance longer than that calculated at dispatch. In such cases, a diversion would be necessary.

This would affect though only a few runways. Airbus has conducted a large-scale check representative of 8 aircraft types on 8 000 runways: it was found that for wet runways, only 8 runways would be so limited to have operational consequences; however, in no case all runways of the same aerodrome were limited. However, operations on specially prepared winter runways have not been taken into consideration.

— Option 2 (Extend ICAO amendments to specially prepared winter runways)

This Option may have very low environmental impact for similar reasons as for Option 1 but even in fewer cases as it supports operations on specially prepared winter runways, reducing in this way the number of diverted flights. Overall, the impact for this option could be considered negligible.

	Option 0 *No change to rules*	*Option 1* *Full adoption of ICAO Annex 14 Amendment 13-B*	*Option 2* *Adoption of ICAO Annex 14 Amendment 13-B with specific provisions*
Environment	*0*	*-1*	*0*

4.6.3. Social impact

— Option 0 (do nothing)

No impacts.

— Option 1 (Implementation of ICAO amendments)

Highly negative impacts are expected for some aerodromes due to the possible consequences of the new requirements, such as:

— Possible closure of airports in winter due to extensive periods of denied landings caused by limitations on upgrading inherent in the RCAM

— Possible disruptions of service at certain city pairs due to extensive periods of denied landings caused by limitations on upgrading inherent in the RCAM

— Disruptions in flights may lead passengers to cancel their journey or take alternative options that might take much longer time

— Some important services (e.g. public service obligations) might be delayed or not be guaranteed, especially when the main connection is via air transport.

A summary of a detailed case study on Norway[29] is presented further in the text. The detailed input was provided by Avinor AS including a study commissioned by them and issued by Møreforsking

[29] The full case study can be found at http://www.moreforsk.no/publikasjoner/rapporter/transportokonomi/1804-economic-impact-assessment/1094/3193/

Molde AS in March 2018. This study focuses on the economic impact assessment of the new ICAO standard for contaminated runways on some Norwegian airports and it shows the negative consequences for four aerodromes of the Norwegian short-field regional aerodromes network.

Case study

The Norwegian short field regional aerodromes network

Norway as an arctic country is faced with a climate that challenge safe winter operations and it faced many landings on winter contaminated runways. The Norwegian regional short field aerodromes concept was developed and implemented in the late 1960's and early 1970's. The purpose was to offer the public time efficient air travel from all parts of the country to the capital Oslo.

The location very far north in combination with the time of year must be taken into consideration. Black runway surfaces usually heat up by radiation from the sun. Any residue contaminants will normally melt during the day and as such help the airport operator in the task of maintaining an acceptable runway surface.

In the arctic region this effect is not present, nor evident, in the period from November to February. Any solid contaminant must therefore be mechanically or chemically removed. Or the friction must be improved by sanding. However, when a snow shower passes over an aerodrome in late April or May, the runway surface usually has collected and stored so much heat energy from the sun that it melts contamination even if the temperature is actually subzero.

Aerodromes located at more southerly latitudes are usually faced with loose contaminants that can be easily removed. The sun is always above the horizon during daytime and this makes it fairly straightforward for the aerodrome operator to deliver a runway with little or no contamination.

As follows an overview of the SNOWTAMS issued by ANSP AVINOR versus Europe and the world – total number for year 2012/2013. This shows how high is the number of SNOWTAM in Norway.

Issued SNOWTAM's	1st half 2012	2nd half 2012	1st half 2013
World Wide - total	55305	28312	51617
Europe – EAD -ESI Clients - total	20505	13679	21793
Norway - total	19524	12832	19732
Norway versus the world	35,3%	45,3%	38,2%
Norway versus Europe	95,2%	93,8%	90,5%

The short field aerodromes are equipped with the same top end snow removal equipment as the larger aerodromes. With its short and narrow footprint, approximately 800x30 meters, snow removal of the short field aerodromes can often be performed in less than ten minutes.

One of the main benefits of keeping the depth of the contaminant as miniscule as possible is that the data from the friction meter is always within the approved limits stated in the AIP, hence it may be used as one of the factors when assessing the braking action. Other factors taken into consideration by the reporter when assessing the braking action are the general condition of the prepared runway surface, temperature, dew point, runway surface temperature, sanding, chemicals and experience.

Consequences of Option 1

The proposal of option 1 would lead to following impacts:

- 6 aerodromes will see more than 10% denied landings throughout the winter season
- 15 aerodromes will see more than 3% denied landings throughout the winter season

The consequences are especially troublesome for the airports that are part of the PSO, Public Service

Obligations.

An analysis of approximately 100000 flights during the winter seasons from November through April the last 5 years was done. It was performed as a comparison between two data sets and actual performed landings. The first data set is based on stored METAR and SNOWTAM from the actual time of landings and take-offs performed in the period. The second data set is an imagined set of Runway Reports based on the actual METAR and SNOWTAM as input variables in the RCAM. The predictions for data set 1 indicate that 81, corresponding to 0,18%, of the actual performed landings should not have happened. The explanation for this is that the analysis is based on METARS, whereas the actual landings were performed based on updated weather reports from the ATC. Typically, the visibility is much improved, and the wind force much reduced between showers in showery type of weather. However, this miniscule discrepancy is as a clear indication that the analytical method for calculating predictions is valid. Of the nearly 100000 landings, 45000 were performed on winter contaminated runways. The predictions in data set 2 is that 3600, or 8%, of these 45000 landings on winter contaminated runways would not be allowed with the proposed rules in place due to exceedance of allowed landing mass and/or cross wind limit. As follows an overview of the ADR ranked according to denied landings:

AD	Denied landings
ENHV	21,85%
ENVD	16,82%
ENBS	16,5%
ENMS	16,16%

According to the study mentioned above on the economic effects for passengers and operators in terms of additional costs the following estimates have been provided. Each row shows different scenarios:

Scenario P1 and P2 assess an increase in airfares of 20 % and 50% respectively and the use of smaller aircraft to maintain regularity on today's level

Scenario P3 deals with a winter (November–March) closure of the airports and transfer of traffic to nearest airport

P4 and U1 deal with planned or unforeseen transfers of affected flights to the nearest airport, respectively

The yellow-marked scenarios P3 and U1 appear to be the most relevant ones

Table A.2 Costs per passenger in NOK per one-way trip, and share of deterred traffic (in %).

Differences in passengers' cost from today's services, per passenger, one way. **Costs for all affected passengers (*ex ante*) in bold,** *remaining travelling passengers (ex post) in Italics* (% deterred passengers from the affected flights)	KKN	ALF	HVG	VDS
P1	**276**/*281* (7%)	**276**/*286* (7%)	**157**/*190* (5%)	**177**/*193* (5%)
P2	**647**/*703* (16%)	**655**/*715* (17%)	**392**/*450* (12%)	**443**/*463* (12%)
P3	**1,350**/*1,741* (39%)	**837**/*972* (23%)	**816**/*822* (23%)	**363**/*371* (9%)
P4	**1,352**/*1,741* (39%)	**833**/*972* (23%)	**816**/*821* (23%)	**363**/*371* (9%)
U1	**2,554**/*2,798* *(12%)*	**2,019**/*2,126* (8%)	**1,926**/*2,178* (8%)	**1,556**/*1,561* (5%)

For more information on the case study, a link has been provided in a footnote.

Considering the high negative impacts but also the fact that only a few aerodromes would be affected, overall this option is considered to have medium negative impacts.

— Option 2 (Extend ICAO amendments to specially prepared winter runways)

Compared to Option 1, aerodromes will not be negatively affected, as no additional restrictions will be placed on their current traffic.

No impacts overall.

	Option 0 *No change to rules*	***Option 1*** *Full adoption of ICAO Annex 14 Amendment 13-B*	***Option 2*** *Adoption of ICAO Annex 14 Amendment 13-B with specific provisions*
Social	*0*	*-3*	*0*

4.6.4. Economic impact

— Option 0 (do nothing)

Since the ICAO proposal will not be implemented, there will be no additional cost for aerodrome operators. Nevertheless, because the information will not be consistent with the ICAO GRF, it will not be usable by flight crews, which may lead to flight cancellations or diversions. This will have a negative economic impact on the aerodrome operators.

— Option 1 (Implementation of ICAO amendments)

This option would bring further harmonisation between EU rules and ICAO SARPs, as well as between EU and US rules.

The following costs as expected for all affected aerodrome operators. These estimates have been provided by RMG members.

Syllabus: modifying the content in line with new updates. Overall, very minor costs are expected.

FTE[30] per ADR
0.05
0.0028
0.01

Training for existing staff to adapt to new procedures. Overall, very low impacts.

FTE
0.05 for medium ADR 0.15-0.20 for large ADR
0.08 one off + 0.08 recurrent per ADR

Training of new staff to adapt to new procedures: Very low/no impacts. Replies indicated either no cost or a one-off cost of 1 day per employee.

Overall, the development of the training syllabus and the delivery of the training are considered to have a very low negative impact. This is supported by considering the following:

— less than 0.3 FTE are required for the training;

— a total cost of circa EUR 5 million based on an average annual salary of EUR 30 000 per employee for each aerodrome under the EASA scope (574 ADRs); and

— the total value of ADR market of EUR 40 520 million.

The estimated cost will be circa 0.01 % of revenue which is considered as low impact.

Therefore, the economic impact of implementing Option 1 will normally be low for the aerodrome operators. However, there would be a negative economic impact on some aerodromes that are affected by prolonged and heavy winter weather conditions and that conduct operations on specially prepared winter runways, as they may encounter flight cancelations or operations with reduced payload or smaller aircraft. To avoid these negative effects, these aerodromes will have to employ resources whose cost will outnumber any economic benefit from unrestrictive operations.

Further reference on economic costs for aerodromes importantly affected is included in the summary of the case study earlier in the text.

As also highlighted in the study, there would be negative economic impacts for airlines who would need to cancel/divert flights in some cases. Indeed:

— assuming the revenue amount of EUR 414 million for an average regional carrier; and

[30] Full Time Equivalent. Assumption: total number of working hours in a year 1 600.

— considering a maximum cost of NOK 32.4 million (circa EUR 3.41 million) according to the worst-case scenario highlighted in the study (scenario P3, airport KKN; taking into consideration revenue loss/gain and operational increase/decrease),

it could be estimated that there would be a high negative impact considering that 0,82 % of the revenue would be affected (EUR 3.41/414 million). Therefore, a high negative cost impact is expected for the affected airlines.

Considering the different impacts shown above, an overall medium negative economic impact is expected.

— Option 2 (Extend ICAO amendments to specially prepared winter runways)

As for Option 1, this option would ensure harmonisation with ICAO, therefore positive impact.

As regards costs, most of the aerodromes affected by this option would also face the very minor costs highlighted. However, the negative impacts for the small set of aerodoromes shown also through the case study would not be experienced.

Therefore, overall, neutral impacts are expected.

	Option 0 *No change to rules*	***Option 1*** *Full adoption of ICAO Annex 14 Amendment 13-B*	***Option 2*** *Adoption of ICAO Annex 14 Amendment 13-B with specific provisions*
Economic	*0/-*	*-3*	*0*

4.6.5. Proportionality issues

— Option 0 (do nothing)

No impacts.

— Option 1 (Implementation of ICAO amendments)

This option would have low negative impacts as a few small aerodromes located in specific geographical areas might experience disruptions in their operations.

— Option 2 (Extend ICAO amendments to specially prepared winter runways)

No impacts.

Request to stakeholders

Stakeholders are invited to provide:

— quantified justification elements on the possible impacts (e.g. economic, social, safety, proportionality) of the options proposed, or alternatively to propose a justified solution to the issue; and

— any other information they may find necessary to bring to the attention of EASA; as a result, the relevant parts of the RIA might be modified on a case-by-case basis.

4.7. Conclusion — comparison of options

For RMT.0703, the following table summarises the impacts of the options considered in this NPA.

	Option 0 *No change to rules*	***Option 1*** *Implementation of all ICAO SARPs and recommendations*	***Option 2*** *Implementation of all ICAO SARPs and selected recommendations*
Safety	*0*	*+4*	*+3*
Social	*0*	*-2*	*+1*
Economic	*0*	*-1*	*0*
Total	*0*	*+1*	*+4*

Option 2 is the preferred solution. Indeed, it would guarantee positive safety benefits but it would also avoid the potential disruptions of Option 1. Only very low costs are expected as shown in the analysis.

For RMT.0704, the following table summarises the impacts of the options considered in this NPA.

	Option 0 *No change to rules*	***Option 1*** *Full adoption of ICAO Annex 14 Amendment 13-B*	***Option 2*** *Adoption of ICAO Annex 14 Amendment 13-B with specific provisions*
Safety	*0*	*+4*	*+4*
Social	*0*	*-3*	*0*
Environment	*0*	*-2*	*0*
Economic	*0/-*	*-3*	*+2/-1*
Proportionality	*0*	*-1*	*+1*
Total	*0*	*-5*	*+6*

Option 2 is the preferred solution. Indeed, it would guarantee the same positive safety benefits as for Option 1 but it would also avoid the potential disruptions of Option 1. Only very low costs are expected as shown in the analysis.

4.8. Monitoring and evaluation

Monitoring is a continuous and systematic process of data collection and analysis about the implementation/application of a rule/activity. It generates factual information for future possible evaluations and impact assessments and helps identifying actual implementation problems.

With respect to the proposal under RMT.0703, EASA would suggest to monitor:

What to monitor	How to monitor	Who should monitor	How often to monitor
Number of serious incidents and accidents related to runway and taxiway incursions caused by vehicles and persons	ECR	EASA	On a recurrent basis
Number of serious incidents and accidents involving collisions of moving aircraft with vehicles and other objects not related to runway or taxiway incursions	ECR	EASA	On a recurrent basis
Number of serious incidents and accidents and related to FOD	ECR	EASA	On a recurrent basis
Number of serious incidents and accidents related to runway confusion	ECR	EASA	On a recurrent basis

With respect to the proposal under RMT.0704, EASA would suggest to monitor:

What to monitor	How to monitor	Who should monitor	How often to monitor
Number of accidents and serious incidents related to the runway surface condition	ECR	EASA	On a recurrent basis
Report from Member States ADR and airline operators concerning the validity of the new method	Surveys, interviews	NAAs	On a recurrent basis

5. Proposed actions to support implementation

EASA is planning to take the following actions to support implementation:

— Dedicated thematic workshops

(Industry, Competent Authority)

— Series of regional thematic events organised

(Industry, Competent Authority)

6. References

6.1. Affected regulations

— 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

6.2. Affected decisions

— 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'

— Executive Director Decision 2017/021/R of 8 December 2017 Issuing Certification Specifications and Guidance Material for Aerodrome Design (CS ADR-DSN) – Issue 4

— Decision 2013/013/R of the Executive Director of the Agency of 17 July 2013 adopting Acceptable Means of Compliance and Guidance Material to Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 'Acceptable Means of Compliance and Guidance Material to the rules of the air'

6.3. Other reference documents

— ICAO Annex 14 to the Convention on International Civil Aviation, Aerodromes, Volume I – Aerodrome Design and Operations, 7th Edition, July 2016

— ICAO Doc 4444, 'Procedures for Air Navigation Services, Air Traffic Management', Sixteenth Edition, 2016.

— ICAO Doc 9981 'Procedures for Air Navigation Services, PANS-Aerodromes', Second Edition, 2016

— ICAO Annex 6 to the Convention on International Civil Aviation, Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes, 10th Edition, July 2016

— ICAO State Letter AN 2/2.1.1-17/22 of 21 April 2017, 'Proposed amendment to Annex 15, new PANS-AIM and consequential amendments to Annexes 3, 4, 6, 9, 10, 11 and 14, PANS-ATM, PANS-OPS, PANS-ABC and PANS-Aerodromes'

— ICAO State Letter AN 4/27 – 18/69 of 10 July 2018, 'Approval of Amendment 2 to the PANS – Aerodromes'

— European Action Plan for the Prevention of Runway Incursions (EAPPRI), Released edition 3.0, November 2017.

— European Action Plan for the Prevention of Runway Excursions (EAPPRE), Released edition 1.0, January 2013

— ICAO Circular 329 – 'Runway Surface Condition Assessment, Measurement and Reporting'

— FAA AC 150/5200-30D, 29/7/2016 — 'Airport Field Condition Assessments and Winter Operations Safety'

— FAA 150/5210-24, 09/30/2010 – 'Airport Foreign Object Debris Management'.

— ANSV – Agenzia Nazionale Per La Sicurezza Del Volo, Safety recommendations for the prevention of runway incursions, 26/09/2014.

— ICAO Doc 10004, Global Aviation Safety Plan, 2017-2019.

— ICAO Runway Safety Programme – Global Runway Safety Action Plan, November 2017.

— ICAO Safety Report 2017

— SR NORW-2011-011 — Report SL 2011/10, Winter Operations, Friction Measurements and Conditions for Friction Predictions, Volume II – Main Report, May 2011

— European Plan for Aviation Safety (EPAS) 2018-2022

