



Notice of Proposed Amendment 2020-10

Regular update of aerodrome rules

RMT.0591

EXECUTIVE SUMMARY

The objective of this Notice of Proposed Amendment (NPA) is to maintain a high level of safety for the aerodrome design and operations and to ensure alignment with Amendment 15 (ICAO State Letters AN/1.2.28-20/35 of 3 April 2020) to ICAO Annex 14, Volume I and Amendment 3 (ICAO State Letter AN 4/27-20/25 of 10 June) to ICAO Doc 9981 'PANS-Aerodromes'. In addition, the NPA addresses findings raised to EASA following the International Civil Aviation Organization (ICAO) Universal Safety Audit Programme (USOAP) and findings from standardisation visits conducted by EASA, especially in the area of aeronautical data related to aerodromes.

This NPA proposes changes to existing organisational and operational requirements of Regulation (EU) No 139/2014 and the related Acceptable Means of Compliance (AMC) and Guidance Material (GM), as well as the introduction of new ones.

In particular, the proposed changes concern the following:

- the implementation of the safety programmes and the establishment of safety committees by the aerodrome operator, by creating a runway safety team and assigning clear responsibilities and tasks;
- the provision of certain aerodrome data by the aerodrome operator, aligning with Commission Implementing Regulation (EU) 2020/469, and transposition of the relevant SARPS in ICAO Annex 14, Volume I, including the introduction of the new methodology for evaluation of the pavement strength (ACR/PCR);
- establishment of provisions regarding disabled aircraft removal and overload operations, to address ICAO USOAP findings to EASA;
- establishment of certain provisions regarding aerodrome works safety and suspension or closure of runway operations in accordance with ICAO Doc 9981 'PANS-Aerodromes';
- provisions for the identification of (a) hot spot(s) at the aerodrome; and
- revision of the rule related to the operation of higher code letter aircraft following the changes to the methodology of the aerodrome reference code.

Furthermore, the NPA proposes changes to the Certification Specifications (CS) of CS-ADR-DSN, stemming mainly from Amendment 15 to ICAO Annex 14 Volume I.

The proposed amendments are expected to enhance safety and improve alignment with ICAO. In addition, the provisions on aerodrome data will improve the quality of information published in the Aeronautical Information Publication (AIP) and the provisions on disabled aircraft removal and overload operations will support the regularity of operations and the provisions related to aerodrome works safety, designation of hot spot(s), and suspension of runway operations will improve runway safety.

Action area:	Regular updates		
Affected rules:	Regulation (EU) No 139/2014, CS-ADR-DSN		
Affected stakeholders:	Aerodrome operators, national competent authorities		
Driver:	Efficiency/proportionality	Rulemaking group:	No
Impact assessment:	None	Rulemaking Procedure:	Standard

• EASA rulemaking process milestones

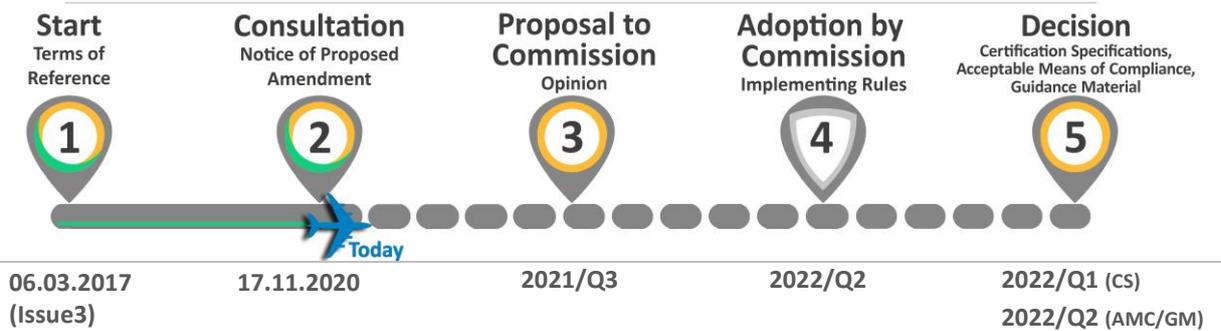


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1. About this NPA

1.1. How this NPA was developed

The European Union Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EU) 2018/1139¹ (the 'Basic Regulation') and the Rulemaking Procedure². This rulemaking activity is included in the [European Plan for Aviation Safety \(EPAS\) 2020-2024](#) under rulemaking task RMT.0591. The text of this NPA has been developed by EASA taking into consideration the input of stakeholders received following the remote thematic consultations. It is hereby submitted to all interested parties³ 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/>⁴.

The deadline for submission of comments is **17 February 2021**

1.3. The next steps

Based on the comments received following the closing of the public commenting period, EASA will:

- develop an opinion that contains the proposed amendments to Regulation (EU) No 139/2014⁵. The opinion will be submitted to the European Commission, which will use it as a technical basis in order to prepare an EU regulation.
- develop a decision that issues the certification specifications (CSs)/guidance material (GM) for the aerodrome design contained in CS-ADR-DSN; and
- develop a decision that issues the related acceptable means of compliance (AMC)/guidance material (GM) to Regulation (EU) No 139/2014.

The comments received on this NPA and the EASA responses to them will be reflected in a comment-response document (CRD). The CRD including a summary of the comments received and the Agency's responses thereto will be published on the EASA website⁶.

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

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

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

⁶ <https://www.easa.europa.eu/document-library/comment-response-documents>



2. In summary — why and what

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

This NPA proposes amendments to Regulation (EU) No 139/2014 and CS-ADR-DSN, as part of the regular update of the aerodrome rules under RMT.0591.

The following five main drivers are at the basis of the proposed amendments:

- (a) the adoption of Amendment 15 (ICAO State Letter AN 4/1.2.28-20/35) to ICAO Annex 14, 'Aerodromes', Volume I Aerodrome Design and Operations;
- (b) the adoption of Amendment 3 (ICAO State Letter AN 4/27-20/25) to ICAO Doc 9981 'PANS-Aerodromes'
- (c) corrective actions following the ICAO USOAP at EASA and standardisation visits to Member States;
- (d) changes related to the exemption of aerodromes with low traffic, qualified entities, and provision of services introduced by the Basic Regulation in Article 2(7), Article 69 and Annex VII respectively; and
- (e) rulemaking proposals and comments received from NAAs and various industry stakeholders, as well as some editorial changes.

Amendment 15 to ICAO Annex 14, 'Aerodromes', Volume I is effective as of 20 July 2020 and will become applicable on 5 November 2020, as well as Amendment 3 to ICAO Doc 9981 'PANS-Aerodromes' which will be applicable on the same day, therefore there is a need to align Regulation (EU) No 139/2014 and CS-ADR-DSN with the latest ICAO provisions stemming from the above-mentioned Amendments. Amongst other changes, Amendment 15 to ICAO Annex 14 Volume I includes the new methodology for reporting the pavement strength that will be applicable as of 28 November 2024, which will have a positive impact on the regularity of operations at aerodromes. Therefore, EASA finds it is beneficial to include the new methodology in this NPA, as it will provide the necessary time to prepare its implementation to meet the ICAO applicability date.

Currently, CS-ADR-DSN does not contain certification specifications for the design of an arresting system; it only contains guidance material with reference to ICAO Doc 9157, Part 1. For this reason, EASA has received several comments from stakeholders who have encountered difficulties in the design and certification process of such systems. The proposed amendment is based on the ICAO developments on this topic.

Amendment 3 to ICAO Doc 9981 'PANS-Aerodromes' contains provisions for the training, inspections of the movement area, work in progress, Foreign Object Debris (FOD) control, wildlife management, apron safety, and runway safety. EASA has already addressed those changes in Opinion 3/2019, apart from work in progress and suspension or closure of runway operations, which are related to runway safety and are therefore addressed in this NPA.

Following the ICAO USOAP audit of EASA, it was identified that specific SARPS of ICAO Annex 14 regarding disabled aircraft removal and overload operations have not been addressed properly. Therefore, there is a need to provide the regulatory provisions for their implementation.



Furthermore, after the publication of Commission Implementing Regulation (EU) 2020/469, where the provision of specific aerodrome data are required, it was considered necessary that the relevant provisions in Chapter 2 of ICAO Annex 14 with regard to aeronautical data should be addressed in the same manner. For this reason, ICAO Standards concerning aeronautical data that are currently included in GM to Regulation (EU) No 139/2014 are transferred at implementing regulation (IR) level.

Additionally, the NPA includes a revision of the IR and the related AMC and GM concerning safety programmes and safety committees, such as Local Runway Safety Team (LRST), by providing clear requirements for the composition and tasks of these committees to ensure their effective implementation and establishing a new requirement for the identification and designation of hot spots at the aerodrome.

Following the publication of Regulation (EU) 2018/1139, some changes were introduced to the exemption of aerodromes with low traffic, qualified entities, and provision of services. Thus, it is necessary to align the requirements of Regulation (EU) No 139/2014 with the relevant requirements of Regulation (EU) 2018/1139 to ensure consistency.

Finally, EASA is including in the NPA four rulemaking proposals which are considered appropriate for implementation following feedback from standardisation and from stakeholders. These rulemaking proposals address the following issues:

- The impact on the higher code letter operation requirements following the changes to the methodology of the aerodrome reference code (ARC). Since the outer main gear wheel span (OMGWS) is referenced directly in the relevant CS and is no longer part of the ARC, it cannot be covered by the code letter referred to in point (a) of ADR.OPS.B.090. This might lead to a situation where an aeroplane might be using the infrastructure or parts of an aerodrome's infrastructure that had not been designed to accommodate that type of aeroplane without a prior approval from the competent authority. To address this issue until the regulatory update is completed and comes into force, EASA has issued [SIB 2020-17](#) to raise awareness and to ensure the safety of aerodrome operations.
- The provision of runway shoulders on 60-m wide runways built in accordance with the previous certification specifications (CS-ADR-DSN Issue 1 to CS-ADR-DSN Issue 3). Following the updates included in CS-ADR-DSN Issue 4 (see [ED Decision 2017/021/R](#)), 60-m wide runways are no longer required by CS ADR-DSN.B.045. Consequently, the design specifications of CS ADR-DSN.B.125 and CS ADR-DSN.B.135 have been updated based on 45-m wide runways. Complying with the current CS ADR-DSN.B.125 and CS ADR-DSN.B.135 could lead to a situation where the aerodrome operator would have either to convert 15 m of the runway into shoulders or to make use of one of the flexibility options provided by Regulation (EU) No 139/2014. The proposed change prevents significant costs for the aerodrome operator and additional administrative burden for both the competent authority and the aerodrome operator.
- The remote de-icing/anti-icing facilities and the specifications concerning the design of taxiing guidance signs, are addressed for clarification purposes.

A detailed explanation is provided in the rationale of the proposed amendment addressing each issue.

EASA has organised a thematic meeting for a pre-NPA consultation of the above-proposed amendments with a group of experts.



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:

- increase the level of safety;
- ensure harmonisation and increase the level of compliance between the aerodrome operational requirements and the relevant SARPs of ICAO Annex 14, 'Aerodromes', Volume I;
- ensure harmonisation between the aerodrome design requirements contained in CS-ADR-DSN and the SARPs of ICAO Annex 14, 'Aerodromes', Volume I;
- ensure consistency between the requirements of Regulation (EU) 2018/1139 and Regulation (EU) No 139/2014; and
- reflect the industry state of the art and best practices.

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

A summary of the main proposed amendments is presented below. For more details, please refer to the rationale provided below each proposed amendment to the IRs, AMC and GM, and CS and GM.

Regulation (EU) No 139/2014

- (a) Changes stemming from Amendment 15 to ICAO Annex 14, 'Aerodromes', Volume I Aerodrome Design and Operations, (ICAO State Letter AN 4/1.2.28-20/35):
 - new methodology for reporting pavement strength.
- (b) Changes stemming from Amendment 3 to ICAO Doc 9981 'PANS-Aerodromes', (ICAO State Letter AN/27-20/25);
 - aerodrome works safety;
 - suspension or closure of runway operations;
- (c) Findings from standardisation visits:
 - aerodrome data.
- (d) Corrective actions following the ICAO USOAP at EASA;
 - overload operations;
 - removal of disabled aircraft.
- (e) Changes related to the exemption of aerodromes with low traffic, qualified entities and provision of services introduced by the Basic Regulation in Article 2(7), Article 69 and Annex VII respectively:
 - revised Article 4 and 5 of Regulation (EU) No 139/2014;
 - removal of guidance material related to qualified entities performing certification tasks;
 - removal of implementing rule and guidance material on provision of services.
- (f) Rulemaking proposals and comments received from NAAs and various stakeholders:



- higher code letter operations.

CS-ADR-DSN

- (a) Changes stemming from Amendment 15 to ICAO Annex 14, 'Aerodromes', Volume I Aerodrome Design and Operations, (ICAO State Letter AN 4/1.2.28-20/35) which have been assessed by EASA as beneficial:
- aeroplanes with folding wing tips;
 - objects on runway strips;
 - standardised nomenclature for taxiways;
 - location of holding bays, runway-holding positions, intermediate holding positions, and road-holding positions;
 - minimum distance from the runway centre line to a holding bay, runway-holding position, or road-holding position;
 - runway guard lights;
 - no-entry bar;
 - information signs;
 - autonomous aircraft detection system; and
 - siting of equipment and installation on operational areas.
- (b) Rulemaking proposals and comments received from NAAs and various stakeholders, as well as some editorial changes:
- inclusion of definitions for effective intensity, lighting system reliability, near-parallel runways, segregated parallel operations, and usability factor;
 - provision of runway shoulders on 60-m wide runways;
 - remote de-icing/ anti-icing facilities; and
 - specifications concerning the design of taxiing guidance signs.

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

The expected benefits and drawbacks of the proposal are summarised below.

The proposed revision of the rule related to safety programmes and safety committees will provide better clarity on the roles and responsibilities and will give the aerodrome operator the necessary power to ensure the participation of all involved stakeholders at local level. This will result in a more effective monitoring of aerodrome operational safety and will ensure that any measures taken are commonly accepted.

The rules related to the provision of the aerodrome data by the aerodrome operator, firstly will enhance the cooperation with AIS providers by setting specific rules and secondly will clarify the role of the aerodrome operator with regard to the origination of specific aerodrome data.

The provisions for disabled aircraft removal and overload operations, although not directly related to safety, will enhance the regularity of operations because they establish certain obligations for the aerodrome operator to ensure, to the extent possible, that a runway is returned to service as soon as



possible in case an aircraft becomes immobilized on the runway, and to protect the pavement from excessive damage when certain aircraft are not appropriate for the pavement strength of the runway.

The provisions for aerodrome works safety and suspension or closure of runway operations impose certain requirements on the aerodrome operator to enhance operational safety during aerodrome works and to ensure that specific measures are in place when runway operations are suspended temporarily or a runway is permanently closed. This will reduce the risk of damage to aircraft and the risk of runway incursions.

The provision concerning the designation of hot spot(s) at the aerodrome and the proper publication in the AIP will minimise the risk of collisions between aircraft, between aircraft and vehicles, and runway incursions.

The new pavement reporting system will provide several benefits for the aerodrome operators such as: optimised usage of their pavements, consistency between pavement design and aircraft admissibility parameters, better pavement management (inspections and maintenance), and improved predictability of pavement life. It will also benefit aircraft operators by allowing optimised operating weights and frequencies.

The standardised taxiway naming convention is expected to reduce confusion regarding navigation on the aerodrome surface, improve awareness of runway crossings, and to ensure that an extra level of awareness is available to aircraft crews and vehicle operators thus reducing the risk of runway incursions and taxiway confusion. Additionally, it is expected to increase efficiency and reduce taxiing fuel burn.

The proposed changes related to runway guard lights and no-entry bars are expected to eliminate ambiguities related to the application of the various visual aids at aerodromes and assist in reducing the risk of runway incursions.

Regarding the arresting systems, the objective is to provide the aerodrome operators, arresting system designers, and competent authorities with a set of certification specification commonly applicable to the design of arresting systems within the Member States. This will ensure harmonisation of the design, the same level of safety, and, in addition, it will facilitate the certification process in accordance with Commission Regulation (EU) No 139/2014.

The proposed amendment to CS ADR-DSN.B.125 on the provision of runway shoulders on 60-m wide runways is proposed to avoid significant costs for the aerodrome operator and reduce additional administrative burden for both the competent authority and the aerodrome operator.

Furthermore, EASA will achieve (and, for certain provisions, increase) compliance with the relevant ICAO SARPS.

3. Proposed amendments and rationale in detail

The text of the amendment is arranged to show deleted, new or amended, and unchanged text as follows:

- deleted text is ~~struck through~~;
- new or amended text is highlighted in **blue**;
- an ellipsis '[...]' indicates that the rest of the text is unchanged.



Wherever necessary, a rationale is provided in *blue italics*.

3.1. Draft regulation (draft EASA opinion)

Cover Regulation of Regulation (EU) No 139/2014

Article 4 Information to the European Union Aviation Safety Agency

~~Within three months after the entry into force of this Regulation the~~ Member States shall inform the European Union Aviation Safety Agency ('the Agency') of the names, locations, ICAO location indicators, ~~airport codes of the aerodromes and~~ the names of aerodrome operators, as well as the number of commercial air transport passengers, commercial air transport aircraft and cargo movements handled each year, of the aerodromes that meet the criteria of point (e) of Article 2(1) ~~to which the provisions~~ of Regulation (EU) ~~No 216/2008~~ 2018/1139 ~~and this Regulation apply.~~

Rationale

Article 4 is proposed to be amended to ensure alignment with the terms used in the Basic Regulation and in the ICAO Annexes.

An accurate list of aerodromes that meet the applicability criteria of point (e) of Article 2(1) of the Basic Regulation is important for planning purposes of the standardisation inspections visits, as well as for rulemaking (impact assessment). EASA has already compiled a database containing the information provided by the Member States in accordance with Article 4, however, the information needs to be updated whenever there is a change to the data (e.g. a new aerodrome in the scope, change of the aerodrome operator, an aerodrome falling out of the scope). The time limit of three months after publication has become superfluous and should be removed.

In addition, it is proposed that the Member States inform EASA on an annual basis of the aerodrome traffic data. Providing such traffic should not add any additional burden since the Member States are already collecting it from the aerodrome operators.

Article 5 Exemptions

- ~~The~~ Member States shall notify the Commission and the Agency about their decision to grant an exemption in accordance with Article 2(7) ~~4(3b)~~ of Regulation (EU) 2018/1139 ~~No 216/2008~~, within one month following the decision being taken. The information transmitted to the Commission and the Agency shall include the Member State's decision containing the reason, the name and ~~list of aerodromes concerned~~, ICAO location indicator, the name of the aerodrome operator, and the number of commercial air transport passengers and cargo movements of the aerodrome concerned ~~of the relevant year~~.
- Member States shall inform the Commission and the Agency about their decision to modify or to revoke an exemption in accordance with Article 2(7) of Regulation (EU) 2018/1139, within one month following the decision being taken.
- ~~The Member State shall on an annual basis examine the traffic figures of an exempted aerodrome. If the traffic figures at such an aerodrome have exceeded those provided for in Article 4(3b) of Regulation (EC) No 216/2008 over the last three consecutive years they shall inform the Agency and revoke the exemption.~~

- ~~3. The Commission may at any time decide not to permit an exemption in the following cases:~~
- ~~(a) the general safety objectives of Regulation (EC) 216/2008 are not met;~~
 - ~~(b) the relevant passenger and cargo traffic figures have been exceeded over the last three consecutive years;~~
 - ~~(c) where the exemption does not comply with any other relevant EU legislation.~~
- ~~4. Where the Commission decided that exemption is not allowed, the Member State concerned shall revoke the exemption.~~

Rationale

Paragraphs 2, 3, and 4 are proposed to be removed since these requirements are already contained in Article 2(7) of the Basic Regulation.

Article 5 is proposed to be kept within Regulation (EU) No 139/2014, as paragraph 1 provides the information that a Member State must notify to the Commission and the Agency following the decision to grant an exemption. Additionally, this paragraph 1 is amended to ensure alignment with the terms used in the Basic Regulation and in the ICAO Annexes.

The Basic Regulation uses the term 'notify' when it relates to the decision of granting an exemption and 'inform' when this decision is modified or revoked. Therefore, a new paragraph 2 is added in line with the terminology used in the Basic Regulation.

ANNEX I — DEFINITIONS FOR TERMS USED IN ANNEXES II TO IV of Regulation (EU) No 139/2014

For the purpose of this Regulation the following definitions shall apply:

[...]

(5a) 'aircraft classification number (ACN)' means the number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category. [Applicable until 27 November 2024];

(5b) 'aircraft classification rating (ACR)' means the number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category. [Applicable as of 28 November 2024];

[...]

(19a) '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.

[...]

(36a) 'Pavement classification number (PCN)' means a number expressing the bearing strength of a pavement for unrestricted operations. [Applicable until 27 November 2024]

(36b) 'Pavement classification rating (PCR)' means a number expressing the bearing strength of a pavement. [Applicable as of 28 November 2024]

[...]

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

- ICAO location indicator,



- conditions to operate (VFR/ IFR, day/ night),
- runway — declared distances,
- runway type(s) and approaches provided,
- aerodrome reference code,
- scope of aircraft operations exceeding the certified design characteristics of the aerodrome with higher aerodrome reference code letter,
- provision of apron management services (yes/no),
- rescue and firefighting level of protection;

[...]

Rationale

The definitions of the ACN/PCN are added because these terms are already used in Annex II and III of Regulation (EU) No 139/2014, as well as the new definitions of the ACR/PCR related to the new pavement reporting system.

Part-ADR.OR of Regulation (EU) No 139/2014

ADR.OR.D.027 Safety programmes and aerodrome safety committees

~~The aerodrome operator shall:~~

- ~~(a) establish, lead and implement programmes to promote safety and the exchange of safety-relevant information; and~~
- ~~(b) encourage organisations operating or providing services at the aerodrome to be involved in such programmes.~~

(a) As part of its management system, the aerodrome operator shall establish, lead, and implement programmes to promote and enhance safety, including runway safety, and the exchange of safety relevant information with all relevant organisations operating or providing services at the aerodrome. The aerodrome operator shall regularly review the effectiveness of its safety programmes.

(b) As part of the safety programmes of point (a), the aerodrome operator shall:

- (1) establish, lead, and be responsible for the functioning of a local runway safety team and other aerodrome safety committees;
- (2) require all relevant organisations operating or providing services at the aerodrome to participate in the local runway safety team and other aerodrome safety committees through their nominated representatives who possess adequate and suitable operational expertise, and current and direct involvement in runway operations.

(c) The aerodrome operator shall ensure that:

- (1) the local runway safety team and the other aerodrome safety committees meet at regular intervals;
- (2) their proposals and actions are recorded in an action plan and followed up to ensure timely implementation; and
- (3) the competent authority is invited to such meetings.

(d) The local runway safety team and the other aerodrome safety committees shall:



- (1) support the identification and multidisciplinary review of local safety issues, especially with regard to runway safety;
- (2) propose possible mitigating measures and relevant action plans to be implemented by the organisations concerned with a view to enhance safety; and
- (3) consider the need to develop regular local safety awareness campaigns and joint training programmes for the personnel of all relevant organisations.

The aerodrome operator shall ensure the implementation of the action plans.

- (e) The aerodrome operator shall establish and implement procedures to ensure the implementation of points (a) to (d).

Rationale

ADR.OPS.D.027 is revised because currently it does not ensure at least the establishment of a local runway safety team and other aerodrome safety committees under the lead of the aerodrome operator, nor does it give the power to the aerodrome operator to require the participation of the various organisations providing services at the aerodrome. Furthermore, the revised rule establishes the objectives of the local runway safety team and other safety committees.

Part-ADR.OPS of Regulation (EU) No 139/2014

~~ADR.OPS.A.005 Aerodrome data~~

The aerodrome operator shall as appropriate:

- ~~(a) determine, document and maintain data relevant to the aerodrome and available services;~~
- ~~(b) provide data relevant to the aerodrome and available services to the users and the relevant air traffic services and aeronautical information services providers.~~

ADR.OPS.A.015 Coordination between aerodrome operators and providers of aeronautical information services

- (a) To ensure that aeronautical information services providers obtain information to enable them to provide up-to-date pre-flight information and to meet the need for in-flight information, the aerodrome operator shall make arrangements to report to the relevant aeronautical information service providers, with a minimum of delay, the following:
 - (1) information on the aerodrome conditions, disabled aircraft removal, rescue and firefighting and visual approach slope indicator systems;
 - (2) the operational status of associated facilities, services and navigational aids ~~at the aerodrome~~ under their responsibility;
 - (3) any other information considered to be of operational significance.
- (b) Before introducing changes to the air navigation system, the aerodrome operator shall take due account of the time needed by the relevant aeronautical information services for the preparation, production, and issue of relevant material for promulgation. To ensure timely provision of the information to aeronautical information services, close coordination between the aerodrome operator and the relevant aeronautical information services is required.
- (c) Of particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems that qualify to be notified by the aeronautical information



regulation (AIRAC) system, as specified in AIS.TR.505 of Commission Implementing Regulation (EU) 2020/469. The predetermined, internationally agreed AIRAC effective dates shall be observed by the aerodrome operator when submitting the raw information/data to the aeronautical information services provider.

- (d) The aerodrome operator shall provide raw aeronautical information/data to the aeronautical information services provider, taking into account accuracy and integrity requirements that are necessary to meet the needs of the end-user of aeronautical data.

ADR.OPS.A.070 Aerodrome reference point

- (a) The aerodrome operator shall establish an aerodrome reference point for the aerodrome.
- (b) The aerodrome reference point shall be located near the initial or planned geometric centre of the aerodrome and shall normally remain where first established.
- (c) The aerodrome operator shall measure and report to the aeronautical information services the position of the aerodrome reference point in degrees, minutes, and seconds.

ADR.OPS.A.075 Aerodrome and runway elevations

- (a) The aerodrome operator shall measure the aerodrome elevation and geoid undulation at the aerodrome elevation position to the accuracy of one-half metre and report to the aeronautical information services.
- (b) For non-precision approaches, the elevation and geoid undulation of each threshold, the elevation of the runway end, and any significant high and low intermediate points along the runway shall be measured to the accuracy of one-half metre and reported to the aeronautical information services.
- (c) For precision approach runway, the elevation and geoid undulation of the threshold, the elevation of the runway end, and the highest elevation of the touchdown zone shall be measured to the accuracy of one-quarter metre and reported to the aeronautical information services.

ADR.OPS.A.080 Aerodrome reference temperature

The aerodrome operator shall determine and report to the aeronautical information services the aerodrome reference temperature in degrees Celsius.

ADR.OPS.A.085 Aerodrome dimensions and related information

- (a) The aerodrome operator shall measure or describe, as appropriate, the following data for each facility provided on the aerodrome:
 - (1) runway:
 - (i) true bearing to one-hundredth of a degree;
 - (ii) designation number;
 - (iii) length, width, displaced threshold location to the nearest metre;



- (iv) slope;
 - (v) surface type;
 - (vi) type of runway; and
 - (vii) for a precision approach runway category I, the existence of an obstacle-free zone when provided
- (2) strip, runway end safety area, stopway:
- (i) length, width to the nearest metre;
 - (ii) surface type; and
 - (iii) arresting system, when provided:
 - (A) location (which runway end); and
 - (B) description
- (3) taxiway:
- (i) designation;
 - (ii) width; and
 - (iii) surface type
- (4) apron:
- (i) surface type; and
 - (ii) aircraft stands;
- (5) the boundaries of the air traffic control service;
- (6) clearway:
- (i) length to the nearest metre; and
 - (ii) ground profile
- (7) visual aids for approach procedures, marking and lighting of runways, taxiways and aprons, other visual guidance and control aids on taxiways and aprons, including taxi-holding positions and stop bars, and location and type of visual docking guidance systems;
- (8) location and radio frequency of any VHF Omnidirectional radio range (VOR) aerodrome checkpoint;
- (9) location and designation of standard taxi-routes, when established; and
- (10) distances to the nearest metre of localizer and glide path elements comprising an instrument landing system (ILS) or azimuth and elevation antenna of a microwave landing system (MLS) or a ground-based augmentation system (GBAS) in relation to the associated runway extremities.

- (b) The aerodrome operator shall measure and report to the aeronautical information services the geographical coordinates of each threshold in degrees, minutes, seconds, and hundredths of seconds.
- (c) The aerodrome operator shall measure and report to the aeronautical information services the geographical coordinates of appropriate taxiway centreline points in degrees, minutes, seconds, and hundredths of seconds.
- (d) The aerodrome operator shall measure and report to the aeronautical information services the geographical coordinates for each aircraft stand in degrees, minutes, seconds, and hundredths of seconds.
- (e) The aerodrome operator shall measure and report to the aeronautical information services the geographical coordinates of obstacles in Area 2 (the part within the aerodrome boundary) and in Area 3 in degrees, minutes, seconds, and tenths of seconds. In addition, the top elevation, type, marking and lighting, if any, of obstacles shall be reported to the aeronautical information services. Areas 2 and 3 and the obstacle collection surfaces for these areas shall be established in accordance with ADR.OPS.A.0125 and ADR.OPS.A.135.

ADR.OPS.A.090 Strength of pavements

- (a) The aerodrome operator shall determine the bearing strength of a pavement and report to the aeronautical information services.
- (b) Until 27 November 2024:
 - (1) The bearing strength of a pavement intended for aircraft of apron (ramp) mass greater than 5 700 kg shall be made available using the aircraft classification number – pavement classification number (ACN-PCN) method by reporting all of the following information:
 - (i) the pavement classification number (PCN);
 - (ii) pavement type for ACN-PCN determination;
 - (iii) subgrade strength category;
 - (iv) maximum allowable tyre pressure category or maximum allowable tyre pressure value; and
 - (v) evaluation method.
 - (2) The pavement classification number (PCN) reported shall indicate that an aircraft with an aircraft classification number (ACN) equal to or less than the reported PCN can operate on the pavement subject to any limitation on the tyre pressure, or aircraft all-up mass for specified aircraft type(s).
 - (3) For the purpose of determining the ACN, the behaviour of a pavement shall be classified as equivalent to a rigid or flexible construction.
 - (4) Information on pavement type for ACN-PCN determination, subgrade strength category, maximum allowable tyre pressure category, and evaluation method shall be reported using the following codes:



Pavement type for ACN-PCN determination	Code
Rigid pavement	R
Flexible pavement	F

Subgrade strength category	Code
<i>High strength</i> : characterised by $K = 150 \text{ MN/m}^3$ and representing all K values above 120 MN/m^3 for rigid pavements, and by CBR = 15 and representing all CBR values above 13 for flexible pavements.	A
<i>Medium strength</i> : characterised by $K = 80 \text{ MN/m}^3$ and representing a range in K of 60 to 120 MN/m^3 for rigid pavements, and by CBR = 10 and representing a range in CBR of 8 to 13 for flexible pavements.	B
<i>Low strength</i> : characterised by $K = 40 \text{ MN/m}^3$ and representing a range in K of 25 to 60 MN/m^3 for rigid pavements, and by CBR = 6 and representing a range in CBR of 4 to 8 for flexible pavements.	C
<i>Ultra low strength</i> : characterised by $K = 20 \text{ MN/m}^3$ and representing all K values below 25 MN/m^3 for rigid pavements, and by CBR = 3 and representing all CBR values below 4 for flexible pavements.	D

Maximum allowable tyre pressure	Code
<i>Unlimited</i> : no pressure limit	W
<i>High</i> : pressure limited to 1.75 MPa	X
<i>Medium</i> : pressure limited to 1.25 MPa	Y
<i>Low</i> : pressure limited to 0.50 MPa	Z

Evaluation method	Code
<i>Technical evaluation</i> : representing a specific study of the pavement characteristics and application of pavement behaviour technology.	T



Using aircraft experience: representing a knowledge of the specific type and mass of aircraft satisfactorily being supported under regular use.	U
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(c) As of 28 November 2024:

- (1) The bearing strength of a pavement intended for aircraft of apron (ramp) mass greater than 5 700 kg shall be made available using the aircraft classification rating – pavement classification rating (ACR-PCR) method by reporting all of the following information:
 - (i) the pavement classification rating (PCR) and numerical value;
 - (ii) pavement type for ACR-PCR determination;
 - (iii) subgrade strength category;
 - (iv) maximum allowable tyre pressure category or maximum allowable tyre pressure value; and
 - (v) evaluation method.
- (2) The pavement classification rating (PCR) reported shall indicate that an aircraft with an aircraft classification rating (ACR) equal to or less than the reported PCR can operate on the pavement subject to any limitation on the tyre pressure, or aircraft all-up mass for specified aircraft type(s).
- (3) For the purpose of determining the ACR, the behaviour of a pavement shall be classified as equivalent to a rigid or flexible construction.
- (4) Information on pavement type for ACR-PCR determination, subgrade strength category, maximum allowable tyre pressure category and evaluation method shall be reported using the following codes:

Pavement type for ACR-PCR determination	Code
Rigid pavement	R
Flexible pavement	F

Subgrade strength category	Code
High strength: characterized by E=200 MPa, and representing all E values equal to or above 150 MPa for rigid and flexible pavements.	A
Medium strength: characterized by E=120 MPa and representing a range in E values equal to or above 100 MPa and strictly less than 150 MPa, for rigid and flexible pavements.	B

<i>Low strength</i> : characterized by E=80 MPa and representing a range in E values equal to or above 60 MPa and strictly less than 100 MPa, for rigid and flexible pavements.	C
<i>Ultra low strength</i> : characterized by E=50 MPa and representing all E values strictly less than 60 MPa, for rigid and flexible pavements.	D

Maximum allowable tyre pressure	Code
<i>Unlimited</i> : no pressure limit	W
<i>High</i> : pressure limited to 1.75 MPa	X
<i>Medium</i> : pressure limited to 1.25 MPa	Y
<i>Low</i> : pressure limited to 0.50 MPa	Z

Evaluation method	Code
<i>Technical evaluation</i> : representing a specific study of the pavement characteristics and the types of aircraft which the pavement is intended to serve	T
<i>Using aircraft experience</i> : representing a knowledge of the specific type and mass of aircraft satisfactorily being supported under regular use.	U

(d) The bearing strength of a pavement intended for aircraft of apron (ramp) mass equal to or less than 5 700 kg shall be made available by reporting the following information:

- (1) maximum allowable aircraft mass; and
- (2) maximum allowable tyre pressure.

ADR.OPS.A.095 Pre-flight altimeter check location

- (a) The aerodrome operator shall establish and report to the aeronautical information services one or more flight altimeter check locations for the aerodrome.
- (b) The elevation of a pre-flight altimeter check location shall be given as the average elevation, rounded to the nearest metre or foot, of the area on which it is located. The elevation of any portion of a pre-flight altimeter check location shall be within 3 m (10 ft) of the average elevation for that location.



ADR.OPS.A.100 Declared distances

- (a) The aerodrome operator shall provide the following distances to the aeronautical information services for each runway on the aerodrome:
- (1) take-off run available (TORA);
 - (2) take-off distance available (TODA);
 - (3) accelerate-stop distance available (ASDA); and
 - (4) landing distance available (LDA).
- (b) The declared distances shall be calculated to the nearest metre;
- (c) The take-off run available (TORA), take-off distance available (TODA), accelerate stop distance available (ASDA), and landing distance available (LDA) shall be normally calculated according to the following:
- (1) Where a runway is not provided with a stopway or a clearway and the threshold is located at the extremity of the runway, the declared distances in point (a) shall be equal to the length of the runway;

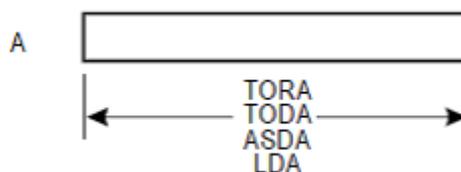


Figure 1

- (2) When a runway is provided with a clearway (CWY), then the TODA will include the length of the clearway.

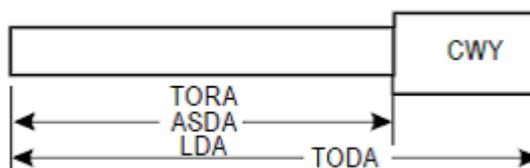


Figure 2

- (3) Where a runway is provided with a stopway (SWY), then the ASDA shall include the length of the stopway.

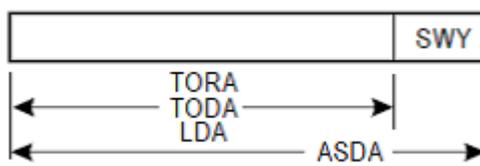


Figure 3

- (4) Where a runway has a displaced threshold, then the LDA shall be reduced by the distance the threshold is displaced. A displaced threshold shall affect only the LDA for approaches made to that threshold; all declared distances for operations in the reciprocal direction shall be unaffected.

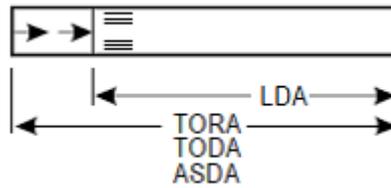


Figure 4

- (5) Where a runway is provided with more than one of the clearway, stopway, or having a displaced threshold, then more than one of the declared distances shall be modified. The modification shall follow the same principle as in points (b)(1) –(b)(4)

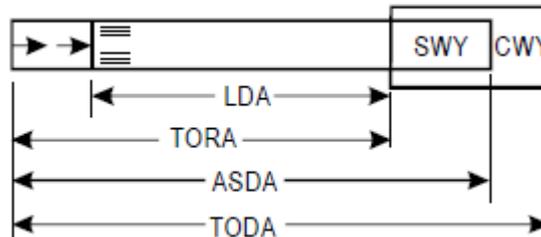


Figure 5

- (6) When intersection take-offs are performed, the datum line from which the reduced runway declared distances for take-off are determined, shall be defined by the intersection of the downwind edge as shown in the figure below:

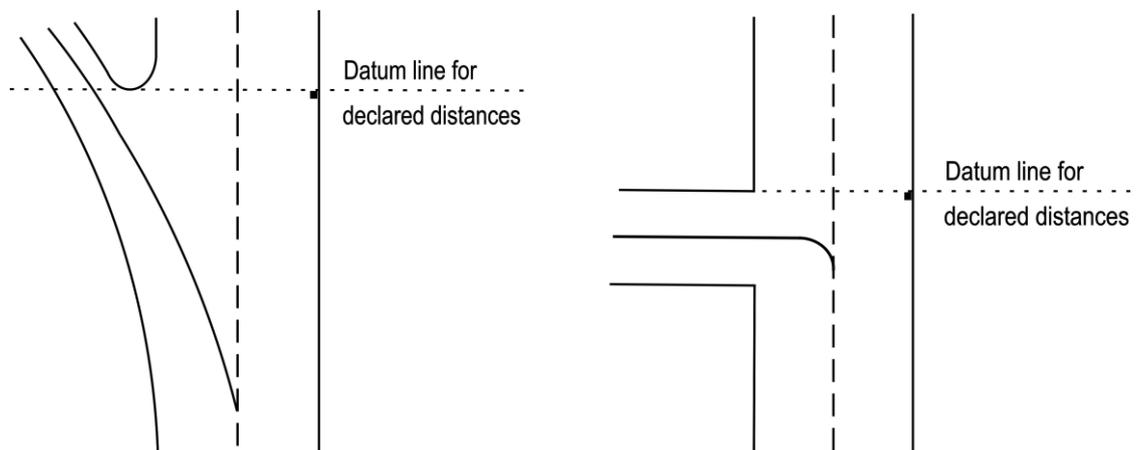


Figure 6

- (d) The length of the runway shall be measured from the start of the runway pavement or where a transverse stripe marking is provided to indicate threshold displacement, at the inner edge of the transverse stripe across the runway.

ADR.OPS.A.105 Condition of the movement area and related facilities

- (a) The aerodrome operator shall provide information on the condition of the movement area and the operational status of related facilities to the appropriate aeronautical information services units, and similar information of operational significance to the air traffic services units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be kept up to date and changes in conditions shall be reported without delay.

- (b) The aerodrome operator shall monitor the condition of the movement area and the operational status of related facilities, and shall report on matters of operational significance affecting aircraft and aerodrome operations to take appropriate action, particularly in respect of the following:
- (i) construction or maintenance work;
 - (ii) rough or broken surfaces on a runway, a taxiway or an apron;
 - (iii) other temporary hazards, including parked aircraft;
 - (iv) failure or irregular operation of part or all of the aerodrome visual aids; and
 - (v) failure of the normal or secondary power supply.

ADR.OPS.A.110 Disabled aircraft removal

- (a) The aerodrome operator shall make available, on request, to aircraft operators, the contact details of the office of the aerodrome coordinator of operations for the removal of an aircraft disabled on or adjacent to the movement area.
- (b) The aerodrome operator shall make available information concerning the capability to remove an aircraft disabled on or adjacent to the movement area.

ADR.OPS.A.115 Information on rescue and firefighting services

- (a) The aerodrome operator shall make available to the aeronautical information services information concerning the level of protection provided at the aerodrome for aircraft rescue and firefighting.
- (b) The level of protection normally available at the aerodrome shall be expressed in terms of the category of the rescue and firefighting services as established in accordance with ADR.OPS.B.010 and the types and amounts of extinguishing agents normally available at the aerodrome.
- (c) Changes in the level of protection normally available at the aerodrome for rescue and firefighting shall be notified to the appropriate air traffic services units and aeronautical information services units to enable those units to provide the necessary information to arriving and departing aircraft. When such a change has been corrected, the above units shall be advised accordingly.
- (d) A change shall be expressed in terms of the new category of the rescue and firefighting service available at the aerodrome.

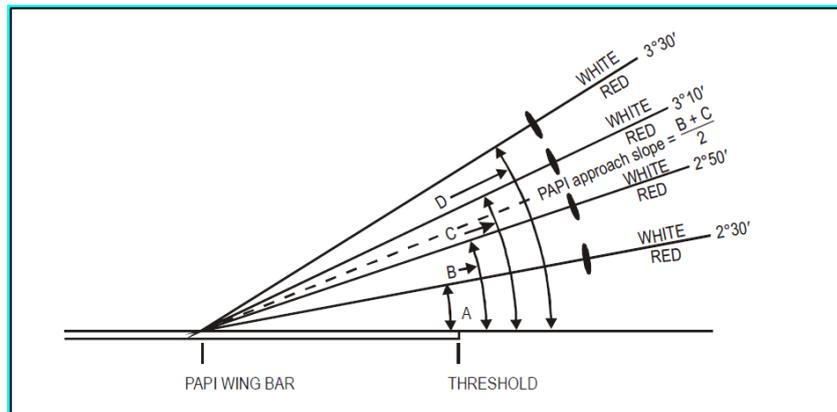
ADR.OPS.A.120 Visual approach slope indicator systems

The aerodrome operator shall make available to the aeronautical information services the following information concerning a visual approach slope indicator system installation:

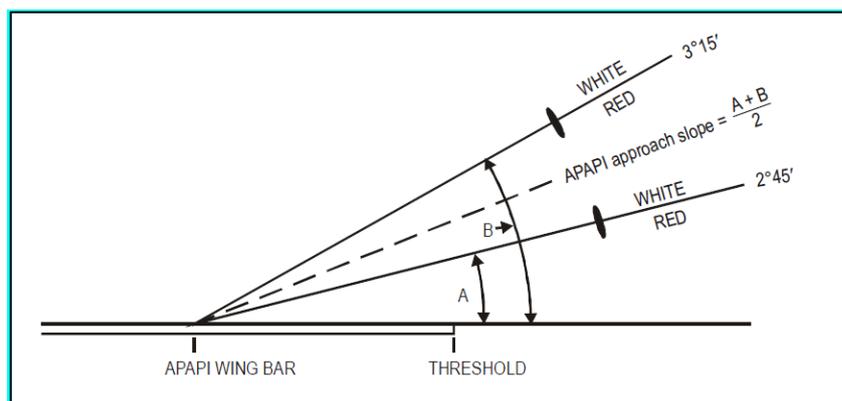
- (a) associated runway designation number;
- (b) type of system. For a PAPI or APAPI installation, the side of the runway on which the lights are installed, i.e. left or right;



- (c) where the axis of the system is not parallel to the runway centre line, the angle of displacement and the direction of displacement, i.e. left or right, shall be indicated;
- (d) nominal approach slope angle(s). For a PAPI and an APAPI this shall be angle $(B + C) \div 2$ and $(A + B) \div 2$, respectively as in the following figures:



A – 3° PAPI illustrated



B – 3° APAPI illustrated

- (e) minimum eye height(s) over the threshold of the on-slope signal(s). For a PAPI this shall be the setting angle of the third unit from the runway minus 2', i.e. angle B minus 2', and for an APAPI this shall be the setting angle of the unit farther from the runway minus 2', i.e. angle A minus 2'.

Rationale

Aerodrome data is required for pre-flight and in-flight information to ensure the safe operation of aircraft. It is therefore important that the data relevant to the aerodrome needs to be provided with the required accuracy and integrity. Commission Implementing Regulation (EU) 2020/469 contains requirements for AIS providers concerning the publication of the data relevant to the aerodrome. These are included in the aeronautical data catalogue in the above-mentioned regulation, and Opinion 3/2019 on Runway Safety contains data quality requirements for the origination of data by the aerodrome operator. Nevertheless, Regulation (EU) No 139/2014 does not contain specific requirements on which data is originated by the aerodrome operator and all the technical requirements, which are necessary to comply with the data quality requirements, are included in GM.

ADR.OPS.A.015 is amended to align point (a)(2) with ICAO Annex 14 Standard 2.13.1.(b) concerning the responsibility of the aerodrome operator to provide information on the operational status of associated facilities, services and navigation aids by extending to their area of responsibility and not limited to the aerodrome, for example approach lighting system which may be located outside the aerodrome. Furthermore, it aligns with Commission Implementing Regulation (EU) 2020/469 with regard to the compliance with the AIRAC effective dates when submitting raw information/data to aeronautical services.

ADR OPS.A.085 introduces the ACR-PCR method, which will be applicable as of 28 November 2024 and will replace the ACN-PCN method, which is currently in use. The new system will be no longer based on a 'critical aircraft' but will consider all aircraft, which are intended to serve on a given pavement with their real offset from pavement centreline. By doing so, the reported PCR will address, in a very accurate manner, the amount of damage that each aircraft produces within a mix, as a function of their operating weight, full landing gear geometry, individual tyre load and pressure. The new pavement reporting system will provide several benefits to the aerodrome operators: optimised usage of their pavements, consistency between pavement design and aircraft admissibility parameters, better pavement management (inspections and maintenance), and improved predictability of pavement life. It will also benefit aircraft operators by allowing optimised operating weights and frequencies. By adopting the layered elastic analysis (LEA) within the pavement rating system, the subgrade strength categories have to be designated with the modulus of elasticity (E modulus). The CBR for flexible pavement and the k-value (modulus of subgrade reaction) for rigid pavement are no longer applicable. However, the four subgrade strength categories will still be designated with the same letters.

ADR.OPS.B.001 Provision of services

~~The services under Subpart B of this Annex shall be provided at the aerodrome by the aerodrome operator directly or indirectly.~~

Rationale

ADR.OPS.B.001 is deleted, because the content is already included in Annex VII of Regulation (EU) 2020/1139.

ADR.OPS.B.011 Removal of disabled aircraft

- (a) The aerodrome operator shall establish a plan for the removal of an aircraft disabled on, or adjacent to, the movement area, and a coordinator designated to implement the plan.
- (b) The disabled aircraft removal plan shall include at least the following:
 - (1) the contact details of the office of the aerodrome coordinator of operations for the removal of an aircraft disabled on or adjacent to the movement area;
 - (2) responsibilities, actions, and lines of communication of each involved organisation;
 - (3) a list of equipment and a list of personnel at, or in the vicinity of, the aerodrome which are available for such purpose;
 - (4) any arrangements for the rapid receipt of aircraft recovery equipment kits available from other aerodromes.



Rationale

During the ICAO USOAP to EASA it was identified that there was no regulatory requirement for the removal of disabled aircraft, in accordance with recommendation contained in Chapter 9 of Annex 14. Although the plan for the removal of disabled aircraft is not a safety critical issue, the absence of any arrangements has an impact on the regularity of operations at the aerodrome. The proposed rule does not oblige the aerodrome operator to have aircraft removal equipment in place and available at the aerodrome but it ensures that a coordination mechanism is in place and access to resources and equipment is ensured.

ADR.OPS.B.070 Aerodrome works safety

- ~~(a) The aerodrome operator shall establish and implement procedures to ensure that:~~
- ~~(1) aircraft safety is not affected by aerodrome works; and~~
 - ~~(2) aerodrome works safety is not affected by aerodrome operational activities.~~
- (a) The aerodrome operator shall establish and implement a process for managing the aerodrome operational safety during works on the movement area.
- (b) The process shall establish and document the responsibilities for:
- (1) the authorisation of the works;
 - (2) the implementation of any proposed change to operational facilities;
 - (3) the date and time when the facilities will be withdrawn or changed from normal operations;
 - (4) the methods by which such changes will be promulgated;
 - (5) the oversight and control of the work in progress; and
 - (6) the compliance with all relevant movement area safety rules.
- (c) The process for managing the aerodrome operational safety during works should contain the following elements:
- (1) a works planning procedure;
 - (2) a procedure for a safety assessment of the planned changes to the operations or systems;
 - (3) a works authorisation procedure;
 - (4) a procedure for the promulgation of information related to the works;
 - (5) a procedure for worksite establishment and return to aircraft operations; and
 - (6) a procedure for monitoring, oversight, and control of the works.
- (d) Where reduced runway length operations are required due to works, the aerodrome operator shall develop and implement a procedure for such operation.

Rationale

ADR.OPS.B.070 contains very generic requirements concerning safety during the execution of works and does not define responsibilities for areas which are important for the safe execution of the aerodrome works nor specifies the basic elements that needs to be included in the process for



managing the aerodrome operational safety during works. The revised rule is based on Chapter 4 of Doc 9981 'PANS-Aerodromes'.

ADR.OPS.B.090 Use of the aerodrome by ~~higher code letter~~ aircraft exceeding the certified design characteristics of the aerodrome

- (a) Except for aircraft emergency situations, an aerodrome operator may, subject to prior approval by the Competent Authority, permit the use of the aerodrome or parts thereof by aircraft ~~with a higher~~ exceeding the ~~code letter~~ and/or outer main gear wheel span of ~~than the aerodrome design characteristics~~ the certified design characteristics of the aerodrome. ~~specified in the terms of the certificate.~~
- (b) The aerodrome operator shall, for aircraft referred to in point (a), assess the impact of the applicable aircraft characteristics referred to in point (c) on the aerodrome infrastructure, its facilities, equipment, and operation, and vice versa.
- (c) The following aircraft characteristics shall be assessed, as applicable:
- (1) wingspan;
 - (2) outer main gear wheel span;
 - (3) wheel base;
 - (4) fuselage length;
 - (5) fuselage width;
 - (6) fuselage height;
 - (7) nose characteristics;
 - (8) tail height;
 - (9) wing tip vertical clearance;
 - (10) cockpit view;
 - (11) distance from the pilot's eye position to the nose landing gear;
 - (12) main landing gear layout;
 - (13) gear steering system;
 - (14) maximum aeroplane mass;
 - (15a) landing gear geometry, tyre pressure and aircraft classification number (ACN) values [Applicable until 27 November 2024];
 - (15b) landing gear geometry, tyre pressure and aircraft classification rating (ACR) values [Applicable as of 28 November 2024];
 - (16) engine characteristics;
 - (17) flight performance;
 - (18) maximum passenger- and fuel-carrying capacity.
- (~~b~~d) In showing compliance with points (a) to (c), the provisions of [ADR.OR.B.040](#) shall apply.

Rationale



The previous issues of CS-ADR-DSN specified the ARC code letter to contain two parameters: the wing span (WS) and the outer main gear wheel span (OMGWS) of the affected aeroplane design.

Following the adoption of the new ARC methodology by the International Civil Aviation Organisation, EASA published CS-ADR-DSN Issue 4, on the determination of the ARC code letter by selecting the WS only of the aeroplanes for which the facility is intended.

According to point (a) of ADR.OPS.B.090, a prior approval is required from the competent authority for the use of the aerodrome or parts of it by an aeroplane with a higher code letter than the aerodrome design characteristics specified in the terms of the certificate.

Since the OMGWS is referenced directly in the relevant CS and it is no longer a part of the ARC, this parameter cannot be covered by the code letter referred to in point (a) of ADR.OPS.B.090, and therefore it is not checked when assessing a potential higher code letter operation. This might lead to a situation where, although the code letter of the aeroplane is identical to the aerodrome's code letter included in the terms of the certificate, the OMGWS of the aeroplane could exceed the certified aerodrome design characteristics. In this case, an aeroplane might use the infrastructure or parts of an aerodrome's infrastructure which had not been designed to accommodate that type of aeroplane without a prior approval from the competent authority. Please refer to [SIB 2020-17](#) for a detailed explanation related to the impact of the ARC changes on ADR.OPS.B.090.

Since the term 'higher code letter' is no longer appropriate, as explained above, it is proposed to be replaced by 'exceeding the certified design characteristics of the aerodrome' in all occurrences.

The OMGWS parameter is proposed to be added in paragraph (a).

Paragraph (c) contains the aircraft characteristics that needs to be assessed against the aerodrome design characteristics. Although not all the aircraft characteristics may be applicable depending on the case, the list is exhaustive and ensures that during the assessment all the aircraft characteristics have been taken into account.

ADR.OPS.B.095 Designation of hot spot(s)

- (a) To identify locations where there is a history or potential risk of collisions or runway incursions, the aerodrome operator shall designate, whenever necessary, a location or several locations on the movement area of the aerodrome as hot spot(s).
- (b) Once hot spots have been identified, the aerodrome operator shall implement strategies to remove the hazard and if this is not immediately possible, provide the information for publication in the Aeronautical Information Publication (AIP), in accordance with point (c).
- (c) The hot spot(s) shall be charted, at least in one of the following charts:
 - (1) Aerodrome/Heliport Chart – ICAO; or
 - (2) Aerodrome Ground Movement Chart – ICAO, if provided; or
 - (3) Aircraft Parking/Docking Chart – ICAO, if provided.

Rationale

Hot spots are, by definition, locations where there is a history or potential risk of collisions or runway incursions. It is therefore important that these locations are identified by the aerodrome operator and the risk is mitigated. Where immediate measures are not possible, their location must be known to the pilots and the drivers through their publication in the relevant aerodrome charts to raise their awareness.

ADR.OPS.B.100 Suspension or closure of runway operations

- (a) The aerodrome operator shall establish and implement, in cooperation with air traffic services, procedures for the temporary suspension of runway operations or planned runway closures.
- (b) The procedures shall contain the following:
- (1) roles and responsibilities of the aerodrome operator, the air traffic services and other involved organisations, as appropriate to the situation;
 - (2) access of personnel to the closed runway;
 - (3) safety measures in accordance with ADR.OPS.B.070;
 - (4) publication of a NOTAM in accordance with ADR.OPS.A.057 except when the suspension is expected to be of short duration;
 - (5) actions before recommencement of runway operations.

Rationale

According to ICAO Doc 9981 'PANS-Aerodromes' one of the safety risks related to runway safety is the suspension or closure of runway operations. The issue is not addressed in Regulation (EU) No 139/2014 and, considering the fact that there are incidents and accidents that took place on closed runways, it is appropriate to propose a rule to address this issue. The proposed text is based on ICAO Doc 9981 'PANS-Aerodromes' Chapter 8 on runway safety.

ADR.OPS.C.011 Overload operations

Whenever the aerodrome is expected to be used regularly by aircraft that may damage the pavements, the aerodrome operator shall establish criteria for overload operations.

Rationale

The implementing rule addresses an ICAO USOAP finding to EASA with regard to the absence of criteria to regulate overload operations. The proposed rule is based on ICAO Annex 14 Recommendation 2.6.7.

3.2. Draft certification specifications (draft EASA decision)

List of abbreviations

(used in CS-ADR-DSN)

ACN	Aircraft classification number
[...]	
[...]	
PCN	Pavement classification number
[...]	

CS ADR-DSN.A.002 Definitions

[...]

~~'Aircraft classification number (ACN)' means the number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category.~~

[...]



‘Effective intensity’ means that the effective intensity of a flashing light is equal to the intensity of a fixed light of the same colour which will produce the same visual range under identical conditions of observation.

[...]

‘Isolated Aircraft Parking Position’ means an area suitable for the parking of an aircraft which is known or suspected to be the subject of unlawful interference, or for other reasons needs isolation from normal aerodrome activities.

[...]

‘Lighting system reliability’ means the probability that the complete installation operates within the specified tolerances and that the system is operationally usable.

[...]

‘Near-parallel runways’ means non-intersecting runways whose extended centre lines have an angle of convergence/divergence of 15 degrees or less.

[...]

~~‘Pavement classification number (PCN)’ means a number expressing the bearing strength of a pavement for unrestricted operations.~~

[...]

‘Segregated parallel operations’ means simultaneous operations on parallel or near-parallel instrument runways in which one runway is used exclusively for approaches and the other runway is used exclusively for departures.

[...]

‘Usability factor’ means the percentage of time during which the use of a runway or system of runways is not restricted because of the crosswind component.

Rationale

The ACN-PCN (and future ACR/PCR) method is meant solely for the publication of pavement strength data in the Aeronautical Information Publications (AIPs) and it is not intended for the design or evaluation of pavements. All references to the ACN/PCN are removed from CS-ADR-DSN and the guidance material is updated with a reference to the corresponding implementing rule, ADR.OPS.A.090, containing the method for reporting the bearing strength of the pavement.

Furthermore, the definitions for effective intensity, lighting system reliability, near-parallel runways, segregated parallel operations and usability factor are added since these terms are already used in CS-ADR-DSN.

GM1 ADR-DSN.A.001 Definitions

Crosswind component is the surface wind component at right angles to the runway centre line.

Rationale

The guidance material transposes the note to the definition of usability factor of ICAO Annex 14, Volume I.



GM1 ADR-DSN.A.005 Aerodrome reference code (ARC)

[...]

- (g) In the case of an aeroplane equipped with folding wing tips, its reference code letter may change as a result of the folding/extending of the wing tips. Consideration will be given to the wingspan configuration and resultant operations of the aeroplane at an aerodrome.

Further information concerning aeroplanes with folding wing tips, physical characteristics and the concept of normal and non-normal operations can be found in the manufacturer's aircraft characteristics for airport planning manual.

Rationale

A commercial aeroplane equipped with a folding wing tip (FWT) system is planned to be introduced in service. The guidance material is proposed to be amended to address this type of aeroplane.

GM1 ADR-DSN.B.070 Sight distance for slopes of runways

- (a) Runway longitudinal slopes and slopes changes are so designed that the pilot in the aircraft has an unobstructed line of sight over all or as much of the runway as possible, thereby enabling him to see aircraft or vehicles on the runway, and to be able to manoeuvre and take avoiding action.
- (b) Consideration will have to be given to providing an unobstructed line of sight over the entire length of a single runway where a full-length parallel taxiway is not available. Where an aerodrome has intersecting runways, additional criteria on the line of sight of the intersection area needs to be considered for operational safety. Additional guidance is given in ICAO Doc 9157, Aerodrome Design Manual, Part 1, Runways.

Rationale

The guidance material transposes the note to Recommendation 3.1.17 of ICAO Annex 14, Volume I.

GM1 ADR-DSN.B.085 Runway strength

- (a) Additional information on the bearing strength, the design and evaluation of pavements is given in ICAO Doc 9157, Aerodrome Design Manual, Part 3, Pavements.

- (b) The method for reporting the bearing strength of the pavement is available in ADR.OPS.A.090.

~~Pavement forming part of the movement area needs to be of sufficient strength to allow aircraft to operate without risk of damage either to the pavement or to the aircraft. Pavements subject to overload conditions should deteriorate at an increasing rate depending upon the degree of overload. To control this, it is necessary to classify both pavement and aircraft under a system whereby the load-bearing capacity of the pavement and the loads imposed by the aircraft can be compared. The method used is the Aircraft Classification Number – Pavement Classification Number (ACN/PCN) method. The ACN/PCN method has been developed by ICAO as an international method of reporting the bearing strength of pavements.~~

- ~~(b) All pavements forming part of the movement area should be of adequate bearing strength for the types of aircraft expected to use the aerodrome. All pavements should be regularly examined by a suitably qualified person. Any pavements which have been subjected to overload conditions should be closely monitored by suitably qualified staff for a period of several weeks or until it is clear that no rapid deterioration of the pavement has been triggered.~~

~~(c) Reporting pavement bearing strength:~~

- ~~(1) The ACN/PCN method of classifying the bearing strength of pavements considers the load imposed on the pavement by the aircraft. In this respect, the load rating of the aircraft is most significantly affected by the subgrade support strength of the pavement. ACNs are, therefore, numbers giving a relative load rating of the aircraft on pavements for certain specified subgrade strengths. ACN values for most aeroplanes have been calculated by ICAO and are published in Aeronautical Information Publications. The PCN is also a number which represents the load bearing strength of the pavement in terms of the highest ACN which can be accepted on the pavement for unrestricted use.~~
- ~~(2) A PCN can also be identified and reported without a technical evaluation of the pavement by means of an assessment of the results of aircraft using the pavement. Providing the type and subgrade support strength of the pavement are known, the ACN of the most demanding aircraft successfully using the pavement can be reported as the PCN.~~
- ~~(3) A PCN is reported in a five part format. Apart from the numerical value, notification is also required of the pavement type (rigid or flexible) and the subgrade support category. Additionally, provision is made for the aerodrome operator to limit the maximum allowable tire pressure. A final indication is whether the assessment has been made by a technical evaluation or from past experience of aircraft using the pavement.~~

Rationale

The ACN-PCN (and future ACR/PCR) method is meant solely for the publication of pavement strength data in the Aeronautical Information Publications (AIPs) and it is not intended for the design or evaluation of pavements. All references to the ACN/PCN are removed from CS-ADR-DSN and the guidance material is updated with a reference to the corresponding implementing rule, ADR.OPS.A.090, containing the method for reporting the bearing strength of the pavement.

GM1 ADR-DSN.B.095 Runway turn pads

[...]

- (b) Such areas may also be useful if provided along a runway to reduce taxiing time and distance for aeroplanes which may not require the full length of the runway.
- (c) Additional guidance on the design of runway turn pads is given in ICAO Doc 9157, Aerodrome Design Manual, Part 1, Runways.

Rationale

Note 1 to Recommendation 3.3.2 of ICAO Annex 14, Volume I is included in the guidance material.

CS ADR-DSN.B.115 Width of shoulders for runway turn pads

The runway turn pads should be provided with shoulders of such width as is necessary to prevent surface erosion by the jet blast of the most demanding ~~aircraft~~ **aeroplane** for which the turn pad is intended and any possible foreign object damage to the aeroplane engines.

Rationale

The term 'aircraft' is replaced by 'aeroplane' for consistency with CS ADR-DSN.B.095.

GM1 ADR-DSN.B.115 Width of shoulders for runway turn pads

As a minimum, the width of the shoulders would need to cover the outer engine of the most demanding ~~aircraft~~ **airplane** and thus may be wider than the associated runway shoulders.

Rationale

The term 'aircraft' is replaced by 'airplane' for consistency with CS ADR-DSN.B.095.

CS ADR-DSN.B.125 Runway shoulders

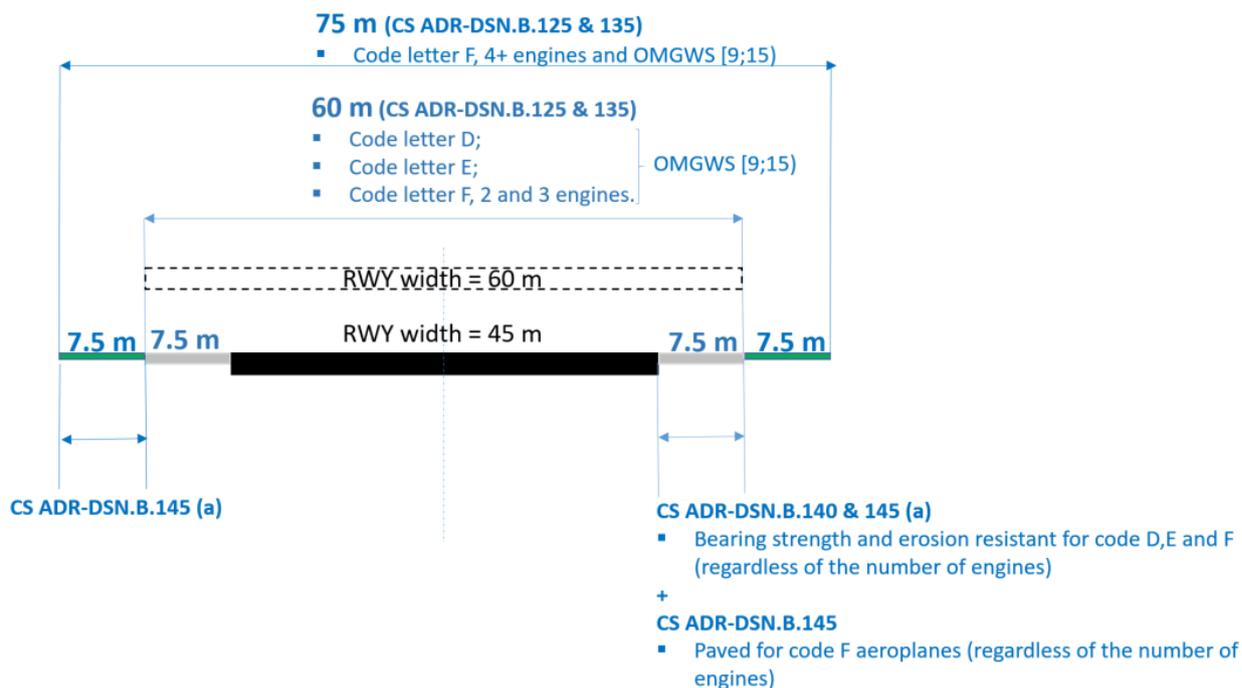
- (a) The safety objective of a runway shoulder is that it should be so constructed as to mitigate any hazard to an aircraft running off the runway or stopway or to avoid the ingestion of loose stones or other objects by turbine engines.
- (b) Runway shoulders should be provided for a runway where the code letter is D, E or F, for aeroplanes with an OMGWS from 9 m up to but not including 15 m.
- (c) Runway shoulders need not be provided where the runway width is 60 m, for aeroplanes with an OMGWS from 9 m up to but not including 15 m and code letter:
 - (a) D, E; or
 - (b) F with two or three engines.
- (d) Where the runway width is 60 m, for aeroplanes with an OMGWS from 9 m up to but not including 15 m and code letter F with four (or more) engines, only the portion of runway shoulders between the runway edge up to a distance as prescribed in paragraph (c) of CS ADR-DSN.B.135 should be provided.

Rationale

Following the updates included in CS-ADR-DSN Issue 4 (see [ED Decision 2017/021/R](#)), 60-m wide runways are no longer required by CS ADR-DSN.B.045. Consequently, the design specifications of CS ADR-DSN.B.125 and CS ADR-DSN.B.135 have been updated based on 45-m wide runways. A comparison between the current requirements for the runway shoulders and a 60-m wide runway is illustrated below.



CS Issue 4



However, when applying CS ADR-DSN.B.125, CS ADR-DSN.B.135, CS ADR-DSN.B.140 and CS ADR-DSN.B.145 of CS-ADR-DSN Issue 4 to existing 60-m wide runways there is an inconsistency in the sense that:

- (1) paragraph (a) and (b) of CS ADR-DSN.B.135 require an overall width of the runway and its shoulder of 60 m for code D, E, or F with two- or three-engined aeroplanes, while the width of the runway is already 60 m (please note the definitions of 'shoulder' and 'runway' provided in CS ADR-DSN.A.002). Additionally, the bearing strength and the paved shoulders for code letter F required by CS ADR-DSN.B.140 and CS ADR-DSN.B.145 are already covered by the runway's bearing strength and paved surface;
- (2) paragraph (c) of CS ADR-DSN.B.135 requires an overall width of the runway and its shoulder of 75 m for code F with four- (or more) engined aeroplanes. This is similar to the first case above, with the difference that the 7.5 m shoulders on each side of the runway have to be provided in accordance with CS ADR-DSN.B.145 (a).

Additionally, in accordance with the previous (CS-ADR-DSN Issue 1 to Issue 3) certification specifications of CS ADR-DSN.B.125, runway shoulders did not have to be provided on 60-m wide runways where the code letter was D or E.

CS ADR-DSN.B.125 is proposed to be amended accordingly.

GM1 ADR-DSN.B.150 Runway strip to be provided

- (a) A runway strip extends laterally to a specified distance from the runway centre line, longitudinally before the threshold, and beyond the runway end. It provides an area clear of objects that may endanger aeroplanes. Any equipment or installation required for air navigation or for aircraft safety purposes and is located in this object-free area should be frangible and mounted as low as possible. The term 'aircraft safety purposes' refers to the installation of arresting systems which are frangible and intended to enhance safety in the event of an aircraft overrun.

[...]

Rationale

The term 'aircraft safety purposes' was introduced by ICAO in Annex 14, Volume I (ICAO State Letter AN 4/1.1.52-11/41) to allow the installation of arresting systems. Additional guidance is proposed to be introduced in paragraph (a) to clarify the intent of the term.

CS ADR-DSN.B.165 Objects on runway strips

[...]

- (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 any part of a runway strip of a precision approach runway delineated by the lower edges of the inner transitional surfaces defined in Chapter H and Chapter J.:
- ~~(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.~~

[...]

Rationale

The certification specification is proposed to be amended to clarify the areas where no fixed objects should be sited, taking into account the function of the inner transitional surface (see GM1 ADR-DSN.H.455(a)). Additionally, the proposed amendment reflects the reduction in Table J-1 of CS ADR-DSN.J.480 of the OFZ (obstacle free zone) width for code F from 155 m to 140 m following the publication of CS-ADR-DSN Issue 4 (see [ED Decision 2017/021/R](#)). CS ADR-DSN.B.165 is applicable to precision approach runways only.

GM1 ADR-DSN.B.165 Objects on runway strips

[...]

- (f) The term 'aircraft safety purposes' refers to the installation of arresting systems which are frangible and intended to enhance safety in the event of an aircraft overrun.

Rationale

The term 'aircraft safety purposes' was introduced by ICAO in Annex 14, Volume I (ICAO State Letter AN 4/1.1.52-11/41) to allow the installation of arresting systems. Additional guidance is proposed to be introduced in paragraph (f) to clarify the intent of the term.

GM1 ADR-DSN.B.175 Grading of runway strips

[...]

- (b) Where the areas in paragraph (a) above have paved surface, they should be able to withstand the occasional passage of the critical aeroplane for runway pavement design.



~~(c) The area adjacent to the end of a runway may be referred to as a blast pad.~~

- (cd) Additional guidance on grading is given in ICAO Doc 9157, Aerodrome Design Manual Part 1, Runways.
- (de) The area adjacent to the end of a runway provided to reduce the erosive effects of jet blast and propeller wash may be referred to as a blast pad.
- (ef) Guidance on protection against aeroplane engine blast is given in ICAO Doc 9157, Aerodrome Design Manual, Part 2.

Rationale

Paragraph (c) is proposed to be removed since it provides the same guidance material as paragraph (e).

CS ADR-DSN.B.200 Stopways

[...]

- (c) Slopes on stopways:

Slopes and changes in slope on a stopway, and the transition from a runway to a stopway, should comply with the specifications in [CS ADR-DSN.B.060](#) to [CS ADR-DSN.B.080](#) for the runway with which the stopway is associated except that:

- (1) the limitation in [CS ADR-DSN.B.060](#)(cb) of a 0.8 % slope for the first and last quarter of the length of a runway need not be applied to the stopway; and
- (2) at the junction of the stopway and runway and along the stopway the maximum rate of slope change may be 0.3 % per 30 m (minimum radius of curvature of 10 000 m) for a runway where the code number is 3 or 4.

[...]

Rationale

The reference is corrected to the limitations of the runway longitudinal slope.

GM1 ADR-DSN.B.200 Stopways

- (a) The transition from one slope to another should be accomplished by a curved surface with a rate of change not exceeding:
 - (1) 0.3 % per 30 m (minimum radius of curvature of 10 000 m) where the code number is 3 or 4; and
 - (2) 0.4 % per 30 m (minimum radius of curvature of 7 500 m) where the code number is 1 or 2.
- (b) The friction characteristics of an unpaved stopway should not be substantially less than that of the runway with which the stopway is associated.
- (c) The economy of a stopway can be entirely lost if, after each usage, it should be regraded and compacted. Therefore, it should be designed to withstand at least a certain number of loadings of the aeroplane which the stopway is intended to serve without inducing structural damage to the aeroplane.



- (c) Notwithstanding that a stopway may have a paved surface, it is not intended that **PCN Figures bearing strength data** need to be developed for a stopway (see ADR.OPS.A.090). **Further guidance is given in ICAO Doc 4444, PANS-OPS.**

Rationale

The ACN-PCN (and future ACR/PCR) method is meant solely for the publication of pavement strength data in the Aeronautical Information Publications (AIPs) and it is not intended for the design or evaluation of pavements. All references to the ACN/PCN are removed from CS-ADR-DSN and the guidance material is updated with a reference to the corresponding implementing rule, ADR.OPS.A.090, containing the method for reporting the bearing strength of the pavement.

GM1 ADR-DSN.C.210 Runway end safety areas (RESA)

[...]

- (b) Assessment of runway end safety areas

[...]

- (2) Combined with this, measures may be considered that would reduce the severity of the consequences should an event occur. Wherever practicable, aerodrome operators should seek to optimise the RESA. This may be achieved through a combination of:

[...]

- (v) installing suitably positioned and designed arresting systems (see CS ADR-DSN.C.236 and CS ADR-DSN.C.237), to supplement or as an alternative to a RESA where an equivalent level of safety is demonstrated;

[...]

[...]

- ~~(c) Arresting systems on runway end safety areas~~

~~(1) In recent years, recognising the difficulties associated with achieving a standard runway end safety area (RESA) at all aerodromes, research programmes have been undertaken on the use of various materials for arresting systems. Furthermore, research programmes have been undertaken to evaluate and develop arrestor systems using engineered materials. This research was driven by the recognition that many runways where natural obstacles, local development, and/or environmental constraints inhibit the provision of RESA and lead to limited dimension of RESA. Additionally, there had been accidents at some aerodromes where the ability to stop an overrunning aeroplane within the RESA would have prevented major damage to aeroplane and/or injuries to passengers.~~

~~(2) The research programmes, as well as evaluation of actual aeroplane overruns into arresting system, have demonstrated that the performance of some arresting systems can be predictable and effective in arresting aeroplane overruns.~~

~~(3) Arresting system designs should be supported by a validated design method that can predict the performance of the system. The design method should be derived from field or laboratory tests. Testing may be based either on passage of an actual aircraft or an equivalent single wheel load through a test bed. The design should consider multiple aircraft parameters, including but not limited to allowable aircraft gear loads, gear configuration, tire contact pressure, aircraft centre of gravity, and aircraft speed. The model should calculate imposed aircraft gear loads, g-forces on aircraft occupants,~~

~~deceleration rates, and stopping distances within the arresting system. Any rebound of the crushed material that may lessen its effectiveness, should also be considered.~~

- ~~(4) Demonstrated performance of an arresting system can be achieved by a validated design method which can predict the performance of the system. The design and performance should be based on the type of aeroplane anticipated to use the associated runway that imposes the greatest demand upon the arresting system. The design of an arresting system should be based on a critical (or design) aircraft which is defined as aircraft using the associated runway that imposes the greatest demand upon the arresting system. This is usually but not always, the heaviest/largest aircraft that regularly uses the runway. Arresting system performance is dependent not only on aircraft weight but allowable aeroplane gear loads, gear configuration, tire contact pressure, aeroplane centre of gravity and aeroplane speed. Accommodating undershoots should also be addressed. All configurations should be considered in optimising the arresting system design. The aerodrome operator and arresting system manufacturer should consult regarding the selection of the design aeroplane that should optimise the arresting system for a particular aerodrome. Additionally, the design should allow the safe operation of fully loaded rescue and fire fighting vehicles, including their ingress and egress.~~
- ~~(5) Additional information is given in ICAO Doc 9157, Aerodrome Design Manual, Part 1, Runways.~~

[...]

Rationale

Paragraph (c) of the guidance material is proposed to be removed in line with the new proposal for the aircraft arresting systems.

CS ADR-DSN.C.236 Aircraft arresting systems

- (a) Characteristics: Where provided in accordance with paragraph (b) of CS ADR-DSN.C.215, an aircraft arresting system should:
- (1) be supported by a design method that can predict the performance of the system validated through laboratory or field tests;
 - (2) decelerate an aircraft overrunning the runway by exerting predictable forces on the landing gear without causing major structural damage to the aircraft or imposing excessive forces on its occupants;
 - (3) be a passive system requiring no external means to initiate/ trigger its operation to arrest an aircraft;
 - (4) be constructed and located not to be damaged by jet blast or projected debris during normal aircraft operations;
 - (5) use materials which would not generate nor worsen fire hazards to an incoming aircraft. The materials should be non-sparking, non-flammable, not promote combustion and not emit toxic or malodorous fumes in a fire environment after installation, according to sectorial regulations;
 - (6) be compatible with the installation of approach lighting systems, the radio altimeter operating area and with the meteorological conditions and aerodrome environment;
 - (7) together with its surroundings, allow ice and snow removal and prevent water accumulation;



- (8) have enough mechanical property to avoid damage resulting from regular pedestrian traffic for maintenance;
 - (9) enable the access, movement and egress of the RFFS vehicles without impeding their activities during an emergency;
 - (10) be designed for repair to a usable condition (conforming to the original specifications);
 - (11) not increase the potential for damage and control capabilities of an aircraft in case of an undershoot more than the risk associated with an undershoot in a non-paved RESA;
 - (12) not be regarded as an obstacle in the runway strip or in the runway end safety area for clearing and grading requirements;
 - (13) not impede crew and passenger evacuation nor hinder disabled aircraft removal procedures;
 - (14) not cause visual or electromagnetic interference with any air navigation aids nor have reflecting surfaces that could cause dazzling;
 - (15) not increase wildlife hazard.
- (c) An aircraft arresting system should not be considered to meet the definition of a stopway as provided in CS ADR-DSN.A.002.
- (d) An aircraft arresting system should have an established maintenance programme as defined in the relevant Part-Ops.

Rationale

Paragraph (b) of CS ADR-DSN.C.215 provides the possibility of installing an arresting system where the length of the RESA in accordance with paragraph (a) of the same CS cannot be met. However, CS-ADR-DSN does not contain certification specifications for the design of such a system; it only contains guidance material with reference to the ICAO Doc 9157, Part 1 (which refers further to the FAA advisory circulars). For this reason, EASA has received several comments from stakeholders who have encountered difficulties when faced with the task of the design and certification.

The following approach is proposed: certification specifications and guidance material for the design of arresting systems in general and certification specifications and guidance material particularised for the engineered materials arresting systems (EMAS). The proposed amendment is based on the ICAO developments on this topic.

The objective is to provide the aerodrome operators, the arresting system designers, and the competent authorities with a set of certification specification commonly applicable to the design of arresting systems within the Member States. This will ensure the harmonisation of the design, same level of safety and in addition, it will facilitate the certification process in accordance with Commission Regulation (EU) No 139/2014.

GM1 ADR-DSN.C.236 Aircraft arresting systems

- (a) The certification specifications and the related guidance material are meant for civil aircraft arresting systems.
- (b) The compatibility of the aircraft arresting system with the specific meteorological and aerodrome conditions is ensured by the use of materials which:
 - (1) are water-resistant to the extent that the presence of water does not affect system performance;



- (2) do not attract, or are physically vulnerable to vermin, birds, wildlife or other creatures to the greatest extent possible;
- (3) do not support unintended plant growth with proper application of herbicides;
- (4) exhibit constant strength and density characteristics during all climatic conditions within a temperature range appropriate for the locale;
- (5) are resistant to deterioration as a result of:
 - (i) salt;
 - (ii) aircraft and runway de-icing and anti-icing fluids and solids;
 - (iii) aircraft fuels, hydraulic fluids, and lubricating oils;
 - (iv) ultra violet;
 - (v) water;
 - (vi) freezing/thawing;
 - (vii) blowing sand and snow;
 - (viii) hail;
 - (viii) paint;
 - (ix) herbicides.

(c) Undershoot

An aircraft arresting system is not intended to reduce the risk of damage to an aeroplane undershooting the runway. However, the presence of an aircraft arresting system should not increase the potential for damage in case of undershoot more than the risk associated with an undershoot in a non-paved RESA.

The compliance with this requirement could be justified through experience of real cases of undershoot in an aircraft arresting system, flight simulator tests, other type of studies, or a combination of the three.

- (d) An aircraft arresting system is a passive system which does not require any specific action or knowledge by the flight crew. However, a basic knowledge of the systems by the crews is considered advantageous to prevent undesired evasive manoeuvres that could cause the aircraft to avoid entering the bed or system. Preferably the arresting system should be entered straight ahead. The use of wheel brakes and or thrust reversers should be unrestricted in the arresting system. Additionally, the availability of an aircraft arresting systems cannot be used for flight planning purposes, i.e. it cannot be included in the declared distances.

(e) Mechanical property:

An aircraft arresting system is not intended to support vehicular traffic for maintenance or normal operating purposes.

The arresting system needs to be capable of supporting regular pedestrian traffic for the purposes of its own maintenance and co-located air navigation aids without causing any damage to its surface.

Light equipment for snow removal can be used in accordance with the arresting system manufacturer's specification on ground pressure to avoid any damage to the surface.

Rationale

See the rationale provided for CS ADR-DSN.C.236.



CS ADR-DSN.C.237 Engineered Materials Arresting Systems (EMAS)

- (a) An EMAS is a type of aircraft arresting system (see CS ADR-DSN.C.236), consisting of high energy absorbing materials of specific strength, which will reliably and predictably crush under the weight of an aircraft.
- (b) Location:
- (1) An EMAS should be located beyond the end of the runway or stopway, if provided, at enough setback distance to avoid damage due to jet blast and undershoots.
- (c) Characteristics:
- (1) The functional length of an EMAS should be designed based on the operating conditions of the associated runway.
- (2) The functional width of an EMAS should not be less than the runway width.
- (3) The centreline of an EMAS should be located with the extended centreline of the runway.
- (4) An EMAS should be designed to decelerate the design airplane at exit speeds of 70 knots at both MTOW and 80 % MLW without imposing loads that exceed the aircraft's design limits, causing major structural damage to the aircraft or imposing excessive forces on its occupants.
- (5) When there is insufficient space available for the design on an EMAS in accordance with paragraph (c)(4) above, an EMAS should be designed to achieve the maximum arresting performance of the critical aeroplane within the available space at an exit speed not lower than 40 knots.
- (6) The design method for EMAS should factor in no reverse thrust of the aeroplane and a 0.25 braking friction coefficient for the runway and length of pavement in the runway end safety area prior to the arrestor bed (setback).
- (7) The design method for the EMAS should factor in no reverse thrust of the aeroplane and no braking friction coefficient (0.00) within the EMAS arrestor bed itself, unless the minimum actual braking friction coefficient that can be achieved as an aeroplane passes through the EMAS arrestor bed material can be demonstrated.
- (8) Slopes or steps should be provided to allow the entrance of the RFF vehicles from the front and sides and to facilitate crew and passenger evacuation.
- (9) On both sides of an EMAS, the requirements for RESA according CS ADR-DSN.C.210 to CS ADR-DSN.C.235 should be applied.
- (10) Service roads should be set up for maintenance and emergency access. The width of the service roads should allow access and egress of RFFS vehicles. Service roads should be graded to avoid water accumulation. The strength of the service roads pavement should be capable of supporting the passage of fully loaded RFFS vehicles.
- (11) An EMAS should be provided with yellow chevrons in accordance with CS ADR-DSN.R.865.

Rationale

See the rationale provided for CS ADR-DSN.C.236.

GM1 ADR-DSN.C.237 Engineered Materials Arresting Systems (EMAS)

- (a) Engineered materials



- (1) The materials are tailored to specific mechanical properties and are referred to as engineered materials.
 - (2) The engineered materials have to meet a force - deformation profile within limits which have been shown to assure uniform characteristics, and therefore, predictable response to an aircraft entering the arresting system.
 - (3) The engineered materials will crush under the landing gears of the aeroplane when it engages the EMAS. The crushing is an irreversible or partly irreversible process and the arresting performance of the system is proportional to the amount of energy that is dissipated.
- (b) Setback distance
- (1) The setback distance is defined as the distance between the runway or stopway end and the beginning of the EMAS.
 - (2) The setback distance will vary depending on the available area and the EMAS design.
 - (3) The calculation of the setback distance should balance the risk objectives of:
 - (i) providing enough area for arresting purposes;
 - (ii) providing enough separation to protect the aircraft arresting system from jet blast;
 - (iii) providing separation from the threshold to reduce the probability of undershoot in the aircraft arresting system; and
 - (iv) decreasing the probability of aircraft overruns passing by one side of the arresting system due to lateral dispersion.

The safety assessment should determine the relevance of each risk objective, taking into account the operating particularities of the associated runway, including uses of the runway, types of approach, weather conditions, fleet, incidents and accidents and any other particularity related with runway safety.
 - (4) To reduce the probability of an aircraft undershooting in an EMAS, it is recommended to provide a minimum setback distance of at least 60 m from the threshold of the opposite runway. However, this separation may be reduced if after a safety assessment determines that it is the best alternative for both overrun and undershoot protection.
 - (5) Where the area available is longer than required for installation of a standard EMAS designed to stop the design aircraft at an exit speed of 70 knots, the EMAS should be placed as far from the runway end as practicable. Such placement decreases the possibility of damage to the system from short overruns or undershoots and results in a more economical system by considering the deceleration capabilities of the existing runway safety area.
- (c) An EMAS normally includes steps and/or slopes at its end and both sides that may be considered not functional for arresting purposes. When possible, the functional width of the EMAS is to be maintained the same throughout the whole length of the system.
- (d) Exit speed is defined as the speed of the nose gear of the aeroplane as it passes the physical end of the runway or stopway, if provided.
- (e) The critical aircraft is defined as that aircraft regularly using the associated runway that imposes the greatest demand upon the EMAS.
- (f) Design aircraft list refers to the combination of aircraft types which are/will be operating regularly on the runway.



The critical aircraft is usually, but not always, the heaviest/largest aircraft that regularly uses the runway. The performance of an EMAS is dependent not only on aeroplane weight, but also landing gear configuration, tyre pressure, and aircraft centre of gravity. In general, the operational maximum take-off weight (operational MTOW) is used for the critical aircraft. However, there may be instances where less than the MTOW will require a longer EMAS. All configurations should be considered in optimising the EMAS design. To the extent practicable, however, the EMAS design should consider both the aeroplane that imposes the greatest demand upon the EMAS and the range of aircraft expected to operate regularly on the runway. In some instances, a composite of design aircraft may be preferable to optimising the EMAS for a specific runway than a single critical aircraft. Other factors unique to a particular aerodrome, such as available RESA and air cargo operations, should also be considered in the final design.

(g) Testing

Testing is to be based either on passage of an actual aircraft or a single wheel bearing an equivalent load through a test bed. The design will need to consider multiple aircraft parameters, including but not limited to allowable aircraft gear loads, gear configuration, tyre contact pressure, aircraft weight, aircraft centre of gravity and aircraft speed.

Rationale

See the rationale provided for CS ADR-DSN.C.236.

GM1 ADR-DSN.D.240 Taxiways general

[...]

- (k) CS ADR-DSN.N.785 provides the certification specifications for a standardised scheme for the nomenclature of taxiways to improve situational awareness and as a part of an effective runway incursion prevention measure.
- (l) Additional guidance on layout and standardised nomenclature of taxiways is given in ICAO Doc 9157, Aerodrome Design Manual, Part 2, Taxiways, Aprons and Holding Bays.

Rationale

The guidance material is proposed to be amended to include a reference to the new standardised scheme for the nomenclature of taxiways.

GM1 ADR-DSN.D.285 Strength of taxiways

~~Information regarding pavement bearing strength, including the ACN/PCN classification system may be found in GM1 ADR-DSN.B.085.~~

- (a) Due consideration being given to the fact that a taxiway should be subjected to a greater density of traffic and as a result of slow moving and stationary aeroplanes, to higher stresses than the runway it serves.
- (b) The method for reporting the bearing strength of the pavement is available in ADR.OPS.A.090.
- (c) Additional information on the bearing strength, the design and evaluation of pavements is given in ICAO Doc 9157, Aerodrome Design Manual, Part 3, Pavements.

Rationale

The ACN-PCN (and future ACR/PCR) method is meant solely for the publication of pavement strength data in the Aeronautical Information Publications (AIPs) and it is not intended for the design or evaluation of pavements. All references to the ACN/PCN are removed from CS-ADR-DSN and the



guidance material is updated with a reference to the corresponding implementing rule, ADR.OPS.A.090, containing the method for reporting the bearing strength of the pavement.

CS ADR-DSN.D.340 Location of holding bays, runway-holding positions, intermediate holding positions, and road-holding positions

[...]

- (a) The distance between a holding bay, runway-holding position established at a taxiway/runway intersection or road-holding position and the centre line of a runway should be in accordance with Table D-2 and such that a holding aircraft or vehicle should not interfere with the operation of radio navigation aids **or penetrate the inner transitional surface**.

[...]

Type of runway	Code number ^d			
	1	2	3	4
Non-instrument	30 m	40 m	75 m	75 m
Non-precision approach	40 m	40 m	75 m	75 m
Precision approach Category I	60 m ^b	60 m ^b	90 m ^{a,b}	90 m ^{a,b,c}
Precision approach Categories II and III	—	—	90 m ^{a,b}	90 m ^{a,b,c}
Take-off runway	30 m	40 m	75 m	75 m

a. If a holding bay, runway-holding position, or road-holding position is at a lower elevation compared to the threshold, the distance may be decreased 5 m for every metre the bay or holding position is lower than the threshold, contingent upon not infringing the inner transitional surface.

b. This distance may need to be increased to avoid interference with radio navigation aids, particularly the glide path and localiser facilities (see [CS ADR-DSN.D.340](#)).

Note 1: The distance of 90 m for code number 3 or 4 is based on an aircraft with a tail height of 20 m, a distance from the nose to the highest part of the tail of 52.7 m and a nose height of 10 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle-free zone and not accountable for the calculation of OCA/H.

Note 2: The distance of 60 m for code number 2 is based on an aircraft with a tail height of 8 m, a distance from the nose to the highest part of the tail of 24.6 m and a nose height of 5.2 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle-free zone.

c. Where the code letter is F, this distance should be **at least 100** ~~107.5~~ m.

*Note: The distance of **100** ~~107.5~~ m for code number 4 where the code letter is F is based on an aircraft with a tail height of 24 m, a distance from the nose to the highest part of the tail of 62.2 m and a nose height of 10 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle-free zone.*

d. Elevation of taxiway should be taken into account for possible increase of the distances indicated in this table.

Table D-2. Minimum distance from the runway centre line to a holding bay, runway-holding position, or road-holding position

Rationale

The certification specification is proposed to be amended, taking into account the function of the inner transitional surface (see [GM1 ADR-DSN.H.455\(a\)](#)).



In Table D-2 Footnote c. and its Note are proposed to be amended to reflect the reduction in Table J-1 of the OFZ width for code F from 155 m to 140 m following the publication of CS-ADR-DSN Issue 4 (see [ED Decision 2017/021/R](#)). Please note that according to Footnote e. of Table J-1, the width of the OFZ for code letter F aeroplanes needs to be increased to 140 m irrespective of the type of avionics they are equipped with.

The current value of 107.5 m is based on an OFZ half-width of $155 \text{ m} \div 2 = 77.5 \text{ m}$ plus a buffer of 30 m which satisfy the obstacle clearance requirements. Following the reduction introduced by CS-ADR-DSN Issue 4 from 155 m to 140 m, applying the same geometric principle, provides an OFZ half-width of 70 m plus 30 m buffer, resulting in a value of 100 m. GM1 ADR-DSN.D.340 (see below) is proposed to be amended accordingly.

The three Notes in Table D-2 are significant examples of the possible calculation of the minimum distances. CS ADR-DSN.D.340 is applicable to any runway, including to precision approach runways.

GM1 ADR-DSN.D.340 Location of holding bays, runway-holding positions, intermediate holding positions, and road-holding positions

[...]

- (f) If a holding bay, runway-holding position or road-holding position for a precision approach runway code number 4 is at a greater elevation compared to the threshold, the distance ~~of 90 m or 107.5 m, as appropriate~~, specified in Table D-2 could be further increased 5 m for every metre the bay or position is higher than the threshold.

GM1 ADR-DSN.E.360 Slopes on aprons

[...]

- (b) Slopes on apron have the same purpose as other pavement slopes, meaning to prevent the accumulation of water (or possible fluid contaminant) on the surface and to facilitate rapid drainage of surface water (or possible fluid contaminant). Nevertheless, the design of the apron, especially for the parts containing **aeroplane** ~~airplane~~ stands, should specifically take into account the impact of the slopes on the **aeroplane** ~~airplane~~ during its braking at the stand and during its start for departure (with push-back or with its own engines). The aims are, on the one hand, to avoid that an **aeroplane** ~~airplane~~ passes its stop point and goes on the apron service road or to the closest building and on the other hand, to save fuel and optimise the manoeuvrability of the **aeroplane** ~~airplane~~ or of the push-back device.

Rationale

The term 'airplane' is replaced by 'aeroplane' for consistency throughout CS-ADR-DSN.

CS ADR-DSN.G.380 Location

- (a) De-icing/anti-icing facilities should be provided either at aircraft stands or at specified remote areas.



- (b) The **remote** de-icing/anti-icing facilities should be located to be clear of the obstacle limitation surfaces, ~~to~~ not cause interference to the radio navigation aids and be clearly visible from the air traffic control tower for clearing the treated aeroplane.

Rationale

The term 'remote' is added for clarity and harmonisation with the corresponding SARP of ICAO Annex 14, Volume I.

GM1 ADR-DSN.G.380 Location

[...]

- (e) The **remote** de-icing/anti-icing facilities should be so located as to provide for an expeditious traffic flow, perhaps with a bypass configuration, and not require unusual taxiing manoeuvre into and out of the pads.

GM1 ADR-DSN.G.400 Clearance distances on a de-icing/anti-icing pad

- (a) The separation criteria should take into account the need for individual de-icing/anti-icing pads to provide sufficient manoeuvring area around the **aeroplane** ~~airplane~~ to allow simultaneous treatment by two or more mobile de-icing/anti-icing vehicles and sufficient non-overlapping space for a vehicle safety zone between adjacent de-icing pads and for other de-icing/anti-icing pads.

[...]

Rationale

The term 'airplane' is replaced by 'aeroplane' for consistency throughout CS-ADR-DSN.

CS ADR-DSN.L.555 Taxiway centre line marking

[...]

- (b) Characteristics:

[...]

- (4) Where taxiway centre line marking is provided in accordance with (a)(2) above, the marking should be located on the centre line of the designated taxiway.

[...]

[...]

Rationale

Editorial correction.

CS ADR-DSN.L.570 Enhanced taxiway centre line marking

[...]



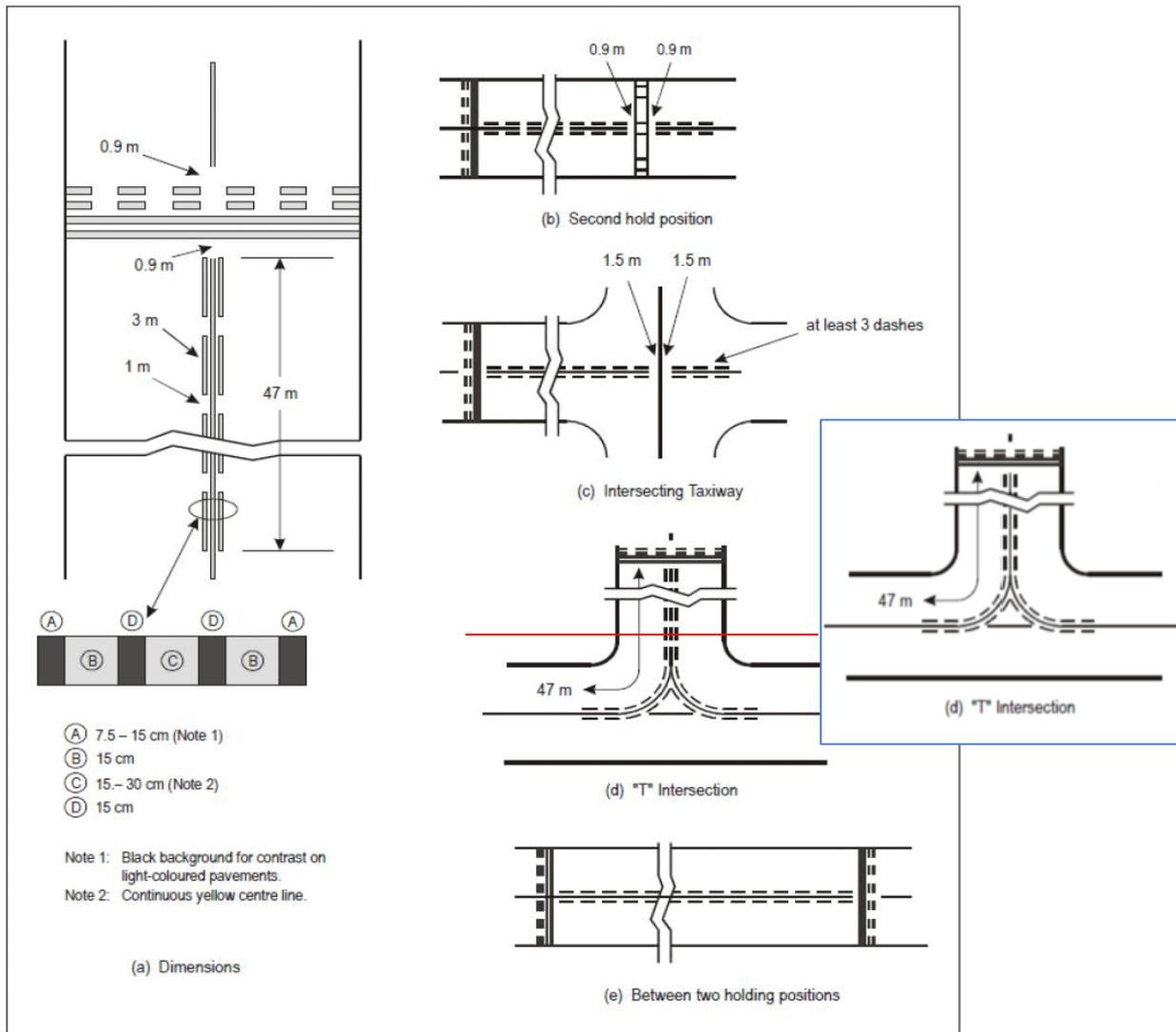


Figure L-6. Enhanced taxiway centre line marking

Rationale

The taxiway centre line in Figure L-6 (d) is displayed as dashed, when it should be continuous. Figure L-6 (d) is amended accordingly.

CS ADR-DSN.L.610 Information marking

[...]

(b) Characteristics:

[...]

(3) The character height, spacing, and the form and proportions of the inscription should be as for mandatory instruction markings.

~~(4) The spacing of characters for information marking should be as specified in Table N-3(c).~~

Rationale

Paragraph (b)(3) is amended for clarity.

CS ADR-DSN.M.650 Approach slope and elevation setting of light units for PAPI and APAPI

[...]

Eye-to-wheel height of aeroplane in the approach configuration ^a	Desired wheel clearance (metres) ^{b, c}	Minimum wheel clearance (metres) ^d
(1)	(2)	(3)
up to but not including 3 m	6	3 ^e
3 m up to but not including 5 m	9	4
5 m up to but not including 8 m	9	5
8 m up to but not including 14 m	9	6

a. In selecting the eye-to-wheel height group, only aeroplanes meant to use the system on a regular basis should be considered. The most demanding amongst such aircrafts should determine the eye-to-wheel height group.

b. Where practicable, the desired wheel clearances shown in column (2) should be provided.

c. The wheel clearances in column (2) should be reduced to no less than those in column (3) where a safety assessment indicates that such reduced wheel clearances are acceptable.

d. When a reduced wheel clearance is provided at a displaced threshold, it should be ensured that the corresponding desired wheel clearance specified in column (2) should be available when an aeroplane at the top end of the eye-to-wheel height group chosen overflies the extremity of the runway.

e. This wheel clearance should be reduced to 1.5 m on runways used mainly by light-weight non-turbo-jet aeroplanes.

Table M-1. Wheel clearance over threshold for PAPI and APAPI

Rationale

Table M-1 moved from CS ADR-DSN.M.655 to CS ADR-DSN.M.650 for better readability as it is related to CS ADR-DSN.M.645 and CS ADR-DSN.M.650.

CS ADR-DSN.M.655 Obstacle protection surface for PAPI and APAPI

[...]

Eye-to-wheel height of aeroplane in the approach configuration ^a	Desired wheel clearance (metres) ^{b, c}	Minimum wheel clearance (metres) ^d
(1)	(2)	(3)
up to but not including 3 m	6	3 ^e
3 m up to but not including 5 m	9	4
5 m up to but not including 8 m	9	5
8 m up to but not including 14 m	9	6

a. In selecting the eye-to-wheel height group, only aeroplanes meant to use the system on a regular basis should be considered. The most demanding amongst such aircrafts should determine the eye-to-wheel height group.

b. Where practicable, the desired wheel clearances shown in column (2) should be provided.

c. The wheel clearances in column (2) should be reduced to no less than those in column (3) where a safety assessment indicates that such reduced wheel clearances are acceptable.

d. When a reduced wheel clearance is provided at a displaced threshold, it should be ensured that the corresponding desired wheel clearance specified in column (2) should be available when an aeroplane at the top end of the eye-to-wheel height group chosen overflies the extremity of the runway.



Eye-to-wheel height of aeroplane in the approach configuration ^a	Desired wheel clearance (metres) ^{b,c}	Minimum wheel clearance (metres) ^d
(1)	(2)	(3)
e. — This wheel clearance should be reduced to 1.5 m on runways used mainly by light weight non-turbo-jet aeroplanes.		

Table M-1. Wheel clearance over threshold for PAPI and APAPI

Surface dimensions	Runway type/code number							
	Non-instrument				Instrument			
	Code number				Code number			
	1	2	3	4	1	2	3	4
Length of inner edge	60 m	80 m	150 m	150 m	150 m	150 m	300 m	300 m
Distance from the visual approach slope indicator system ²	D ₁ +30 m	D ₁ +60 m	D ₁ +60 m	D ₁ +60 m	D ₁ +60 m	D ₁ +60 m	D ₁ +60 m	D ₁ +60 m
Divergence (each side)	10 %	10 %	10 %	10 %	15 %	15 %	15 %	15 %
Total length	7 500 m	7 500 m	15 000 m	15 000 m	7 500 m	7 500 m	15 000 m	15 000 m
Slope								
a) PAPI ¹	—	A-0.57°						
b) APAPI ¹	A-0.9°	A-0.9°	—	—	A-0.9°	A-0.9°	—	—

¹ Angles as indicated in Figure M-5.

² D₁ is the distance of the visual approach slope indicator system from threshold prior to any displacement to remedy object penetration of the obstacle protection surface (refer to Figure M-4). The start of the obstacle protection surface is fixed to the visual approach slope indicator system location, such that displacement of the PAPI results in an equal displacement of the start of the obstacle protection surface.

Table M-2. Dimensions and slopes of the obstacle protection surface

Rationale

Table M-1 moved from CS ADR-DSN.M.655 to CS ADR-DSN.M.650 for better readability as it is related to CS ADR-DSN.M.645 and CS ADR-DSN.M.650. 'Slope' is added in Table M-2 for clarity.

CS ADR-DSN.M.710 Taxiway centre line lights

- (a) The safety objective of taxiway centre line lights is to provide guidance for the safe taxi of aircraft on the areas described in paragraph (b) a taxiway in reduced visibility conditions and at night.

[...]

Rationale

The areas and the conditions when taxiway centre line lights need to be provided are provided in paragraph (b) of the same CS.



CS ADR-DSN.M.715 Taxiway centre line lights on taxiways, runways, rapid exit taxiways, or on other exit taxiways

- (a) The safety objective of taxiway centre line lights is to provide guidance for the safe taxi of aircraft on **the areas described in paragraph (b)** ~~a taxiway de-icing/anti-icing facility, and apron in reduced visibility conditions and at night.~~

[...]

Rationale

The areas and the conditions when taxiway centre line lights need to be provided are provided in paragraph (b) of the same CS.

CS ADR-DSN.M.745 Runway guard lights

- (a) ~~The purpose of r~~Runway guard lights ~~is to~~ warn pilots and drivers of vehicles, when ~~they are~~ operating on taxiways, that they are about to enter an ~~active~~ runway. There are two standard configurations of runway guard lights as illustrated in Figure M-12.
- (b) Applicability:
- (1) Runway guard lights, Configuration A, should be provided at each taxiway/runway intersection associated with a runway intended for use in:
 - (i) runway visual range conditions less than a value of 550 m where a stop bar is not installed; and
 - (ii) runway visual range conditions of values between 550 m and 1 200 m where the traffic density is heavy.
 - (2) As part of runway incursion prevention measures, runway guard lights, Configuration A or B, should be provided at each taxiway/runway intersection where runway incursion hot spots have been identified, and used under all weather conditions during day and night.
 - (3) Configuration B runway guard lights should not be collocated with a stop bar.
 - (4) Where more than one runway-holding positions exist at a runway/taxiway intersection, only the set of runway guard lights associated with the operational runway-holding position should be illuminated.**
- (c) Location:
- (1) Runway guard lights, Configuration A, should be located at each side of the taxiway **on the holding side of the runway-holding position marking** ~~and at the same distance as the runway-holding position marking.~~
 - (2) Runway guard lights, Configuration B, should be located across the taxiway **on the holding side of the runway-holding position marking** ~~and at the same distance as the runway-holding position marking.~~
- (d) Characteristics:
- (1) Runway guard lights, Configuration A, should consist of two pairs of yellow lights.
 - (2) Runway guard lights, Configuration B, should consist of yellow lights spaced at intervals of 3 m across the taxiway.



- (3) The light beam should be unidirectional and should show yellow in the direction of approach to aligned so as to be visible to the pilot of an aeroplane taxiing to the runway-holding position.

[...]

Rationale

Paragraph (a) is proposed to be amended to draw the attention to the importance of the use of runway guard lights (RGL) as an effective runway incursion prevention programme.

Paragraph (b)(4) is proposed to be amended to address the risk of runway incursions caused by RGL illuminated beyond the operational holding position and it also maintains consistency with the design specifications for stop bars.

The location of runway guard lights in paragraph (c) is proposed to be amended for harmonisation purposes by associating them with the holding side of the runway-holding position marking.

For consistency, paragraph (b)(4) is proposed to be amended in line with the certification specifications for stop bars.

GM1 ADR-DSN.M.745 Runway guard lights

- (a) Runway incursions may take place in all visibility or weather conditions. The use of runway guard lights at runway-holding positions can form part of effective runway incursion prevention measures.

~~Some other device or design, e.g. specially designed optics, may be used in lieu of the visor.~~

- (b) Where taxiways are substantially wider than those specified in CS ADR-DSN.D.245, such as wide-throat taxiways, the lights in Configuration A located at each of the sides are likely to be missed by pilots and may be necessary to be supplemented by a row of lights (inset) located across the taxiway (Configuration B).

- (c) Higher light intensities may be required to maintain ground movement at a certain speed in low visibilities.

- (d) The optimum flash rate is dependent on the rise and fall times of the lamps used. Runway guard lights, Configuration A, installed on 6.6 ampere series circuits have been found to look best when operated at 45 to 50 flashes per minute per lamp. Runway guard lights, Configuration B, installed on 6.6 ampere series circuits have been found to look best when operated at 30 to 32 flashes per minute per lamp.

- (e) Where there is a need to enhance the contrast between the on- and off-state of runway guard lights, Configuration A, intended for use during the day, a visor of sufficient size to prevent sunlight from entering the lens without interfering with the function of the fixture should be located above each lamp. Some other device or design, e.g. specially designed optics, may be used in lieu of the visor.

- (f) Active runway is to consider any runway or runways currently being used for take-off or landing. When multiple runways are used, they are all considered active runways.

- (g) Additional guidance on runway guard lights is given in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids.

Rationale



Paragraph (a) is proposed to be amended to draw the attention to the importance of the use of runway guard lights (RGL) as an effective runway incursion prevention programme. The current guidance material of paragraph (a) is moved to paragraph (f) as it relates to this topic.

Where deemed necessary, runway guard lights Configuration A may be supplemented by runway guard Configuration B. A new paragraph (b) is proposed to be inserted to provide additional guidance.

A reference for additional guidance on the runway guard lights is added in paragraph (g).

CS ADR-DSN.M.771 No-entry bar

- (a) Applicability: A no-entry bar should be provided across a taxiway which is intended to be used as an exit only taxiway. The purpose of a no-entry bar is to assist in preventing inadvertent access of traffic to that taxiway.
- (b) Location:
- (1) A no-entry bar should be located across the taxiway at the end of an exit only taxiway where it is desired to prevent traffic from entering the taxiway in the wrong direction.
 - (2) A no-entry bar should be collocated with a no-entry sign and/or a no-entry marking.
- (c) Characteristics:
- (1) A no-entry bar should consist of unidirectional lights spaced at uniform intervals of no more than 3 m showing red in the intended direction(s) of approach to the runway.
 - (2) ~~The lighting circuit should be so designed that:~~
 - ~~(i) no-entry bars are switchable selectively or in groups;~~
 - ~~(ii) when a no-entry bar is illuminated, any taxiway centre line lights installed beyond the no-entry bar, when viewed towards the runway, should be extinguished for a distance of at least 90 m; and~~
 - ~~(iii) when a no-entry bar is illuminated, any stop bar installed between the no-entry bar and the runway should be extinguished.~~

Taxiway centre line lights installed beyond the no-entry bar, looking in the direction of the runway, should not be visible when viewed from the taxiway.
 - (3) The intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications in [CS ADR-DSN.U.940](#), Figures U-16 to U-20, as appropriate.
 - (4) No-entry bar lights chromaticity should be in accordance with the specifications in [CS ADR-DSN.U.930](#) and Figure U-1A or U-1B, as appropriate.

Rationale

Paragraph (b)(2) is proposed to be amended by collocating a no-entry bar to enhance no-entry marking or signs conspicuity.

No-entry bars are used on exit only taxiways and consequently there is no reason to have a stop-bar beyond them. Looking in the direction of the runway, the taxiway centre line should not be visible. Additionally, the no-entry bars should not be switchable in operational situations. The only situation where switching might be useful is for maintenance purposes. Therefore, paragraph (c)(2) is proposed to be amended in this line.



GM1 ADR-DSN.M.771 No-entry bar

- ~~(a) A no-entry bar is intended to be controlled either manually or automatically by air traffic services.~~
- (a~~b~~) Runway incursions may take place in all visibility or weather conditions. The **use** provision of no-entry bars ~~at taxiway/runway intersections and their use at night and in all visibility conditions~~ can form part of effective runway incursion prevention measures.
- (b~~c~~) Where necessary to enhance conspicuity, extra lights should be installed uniformly.
- (c~~d~~) A pair of elevated lights should be added to each end of the no-entry bar where the in-pavement no-entry bar lights might be obscured from a pilot's view, for example, by snow or rain, or where a pilot may be required to stop the aircraft in a position so close to the lights that they are blocked from view by the structure of the aircraft.
- (d~~e~~) Where no-entry bars are specified as components of an advanced surface movement guidance and control system and where, from an operational point of view, higher intensities are required to maintain ground movements at a certain speed in very low visibilities or in bright daytime conditions, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications in [CS ADR-DSN.U.940](#), Figures U-21, U-22 or U-23, as appropriate.
- (e~~f~~) High-intensity no-entry bars are typically used only in case of an absolute necessity and following a safety assessment.
- (f~~g~~) Where a wide beam fixture is required, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications in [CS ADR-DSN.U.940](#), Figures U-21 or U-23, as appropriate.
- (g~~h~~) Care is required in the design of the electrical system to ensure that all of the lights of a no-entry bar will not fail at the same time. No-entry bar lights should be supplied with power on a separate circuit to other runway lighting so that they may be used when other lighting is switched off.

Rationale

A no-entry bar should not be controlled by ATC under normal operations, as their aim is to forbid the entry on an exit-only taxiway. No-entry bars should not be switchable in operational situations. The only situation where switching might be useful is for maintenance purposes. Therefore, paragraph (a) is proposed to be deleted.

The first and second sentence are seen to be contradictory. Although the first sentence specifies that runway incursions can occur in all weather or visibility conditions, the second sentence is about the use of no-entry bars at night.

Paragraph (b) is proposed to be amended to clarify that no-entry bars can be used during day/ night operations and low visibility operations.

CS ADR-DSN.N.775 General

[...]

- (c) Characteristics:

[...]

- ~~(4) The inscriptions on a sign should be in accordance with the provisions of Figures N-2A to N-2H and N-3.~~



- (45) Signs should be illuminated when intended for use:
- (i) in runway visual range conditions less than a value of 800 m; or
 - (ii) at night in association with instrument runways; or
 - (iii) at night in association with non-instrument runways where the code number is 3 or 4.
- (56) Signs should be retroreflective and/or illuminated when intended for use at night in association with non-instrument runways where the code number is 1 or 2.
- (67) Where variable pre-determined information is required, a variable sign should be provided.
- (i) A variable message sign should show a blank face when not in use.
 - (ii) In case of failure, a variable message sign should not provide information that could lead to unsafe action from a pilot or a vehicle driver.
 - (iii) The time interval to change from one message to another on a variable message sign should be as short as practicable and should not exceed 5 seconds.
- (7) The taxiing guidance signs should be in accordance with the specifications of paragraphs (c)(8) to (c)(21).
- (8) The location distance for taxiing guidance signs including runway exit signs should conform to Table N-1.

Runway code number	Sign height (mm)			Perpendicular distance from defined taxiway pavement edge to near side of sign	Perpendicular distance from defined runway pavement edge to near side of sign
	Legend	Face (min)	Installed (max)		
1 or 2	200	400	700	5–11 m	3–10 m
1 or 2	300	600	900	5–11 m	3–10 m
3 or 4	300	600	900	11–21 m	8–15 m
3 or 4	400	800	1 100	11–21 m	8–15 m

Table N-1. Location distances for taxiing guidance signs including runway exit signs

- (98) Inscription heights should conform to the Table N-2.

Runway code number	Minimum character height		
	Mandatory instruction sign	Information sign	
		Runway exit and runway vacated signs	Other signs
1 or 2	300 mm	300 mm	200 mm
3 or 4	400 mm	400 mm	300 mm

Table N-2. Minimum character height

- (109) Where a taxiway location sign is installed in conjunction with a runway designation sign (see [CS ADR-DSN.N.785\(b\)\(9\)](#)), the character size should be that specified for mandatory instruction signs.
- (11) The arrow and stroke dimensions should be as follows:

- (i) Arrow ~~dimensions should be as follows:~~

Legend height	Stroke
200 mm	32 mm
300 mm	48 mm

400 mm	64 mm
--------	-------

- (ii) Stroke ~~width for single letter should be as follows:~~

Legend height	Stroke
200 mm	32 mm
300 mm	48 mm
400 mm	64 mm

- (12~~9~~) Sign luminance should be as follows:

- (i) Where operations are conducted in runway visual range conditions less than a value of 800 m, average sign luminance should be at least:

Red	30 cd/m ²
Yellow	150 cd/m ²
White	300 cd/m ²

- (ii) Where operations are conducted in accordance with [CS ADR-DSN.N.775\(c\)\(5\)\(ii\) and \(c\)\(6\)](#), average sign luminance should be at least:

Red	10 cd/m ²
Yellow	50 cd/m ²
White	100 cd/m ²

Note: In runway visual range conditions less than a value of 400 m, there will be some degradation in the performance of signs.

- (13~~1~~) The luminance ratio between red and white elements of a mandatory instruction sign should be between 1:5 and 1:10.
- (14~~2~~) The average luminance of the sign is calculated by establishing grid points as shown in Figure N-1, and using the luminance values measured at all grid points located within the rectangle representing the sign.
- (14~~3~~) The average value is the arithmetic average of the luminance values measured at all considered grid points.
- (15~~4~~) The ratio between luminance values of adjacent grid points should not exceed 1.5:1. For areas on the sign face where the grid spacing is 7.5 cm, the ratio between luminance values of adjacent grid points should not exceed 1.25:1. The ratio between the maximum and minimum luminance value over the whole sign face should not exceed 5:1.
- (16~~5~~) The forms of characters, i.e. letters, numbers, arrows, and symbols should conform to those shown in Figures N-2A to N-2H. The width of characters and the space between individual characters should be determined as indicated in Table N-3.
- (17~~6~~) The face height of signs should be as follows:

Legend height	Face height (min)
200 mm	400 mm
300 mm	600 mm
400 mm	800 mm

- (18~~7~~) The face width of signs should be determined using Figure N-3 except that, where a mandatory instruction sign is provided on one side of a taxiway only, the face width should not be less than:

- (i) 1.94 m where the code number is 3 or 4; and



- (ii) 1.46 m where the code number is 1 or 2.
- (198) Borders:
- (i) The black vertical delineator between adjacent direction signs should have a width of approximately 0.7 of the stroke width.
- (ii) The yellow border on a stand-alone location sign should be approximately 0.5 stroke width.
- (2019) The colours of signs should be in accordance with the appropriate specifications in CHAPTER U — Colours for aeronautical ground lights, markings, signs and panels.
- (210) ~~If instruction or information during a certain period of time, and/or there is a need to display variable pre-determined information, a variable information sign should be provided.~~
- ~~(i) — A variable message sign should show a blank face when not in use.~~
- ~~(ii) — In case of failure, a variable message sign should not provide information that could lead to unsafe action from a pilot or a vehicle driver.~~
- ~~(iii) — The time interval to change from one message to another on a variable message sign should be as short as practicable and should not exceed 5 seconds.~~

If the runway threshold is displaced from the extremity of the runway, a sign showing the designation of the runway may be provided for aeroplanes taking off.

[...]

e) Width of numeral			
Code No. Numeral	Numeral height (mm)		
	200	300	400
Width (mm)			
1	50	74	98
2	137	205	274
3	137	205	274
4	149	224	298
5	137	205	274
6	137	205	274
7	137	205	274
8	137	205	274
9	137	205	274
0	143	214	286

[...]

Table N-3. Letter and numeral width and space between letters or numerals

Rationale

The certification specifications for the inscription height, as well as the form, width and space of characters are already provided in separate paragraphs. Therefore, paragraph (c)(4) is proposed to be removed.

The new paragraph (c)(7) is provided for clarity.

The specifications related to the variable signs provided in paragraph (c)(21) are removed as identical specifications are already included in (c)(7) of the same CS.



Table N-3 e) provides the dimensions for the numerals. The heading of Table N-3 e) is corrected accordingly.

GM1 ADR-DSN.N.775 General

- (a) Signs may need to be orientated to improve readability.
- ~~(b) If the runway threshold is displaced from the extremity of the runway, a sign showing the designation of the runway may be provided for aeroplanes taking off.~~
- (b~~e~~) Guidance on signs is contained in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids, Chapter 11.
- (c~~d~~) Guidance on frangibility is contained in ICAO Doc 9157, Aerodrome Design Manual, Part 6, Frangibility.
- (d~~e~~) Guidance on measuring the average luminance of a sign is contained in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids.

Rationale

Paragraph (b) is removed as it duplicates CS ADR-DSN.N.775(c)(20).

CS ADR-DSN.N.785 Information signs

[...]

- (c) Characteristics:

[..]

- (11) A taxiway should be identified by a designator that is used only once on an aerodrome and comprising a single letter, two letters, or a combination of a letter or letters followed by a number.
- (12) When designating taxiways:
 - (i) ~~the use of the letters I, O, or X, should not be used and the use of words such as 'inner' and 'outer' should be avoided wherever possible,~~ to avoid confusion with the numerals 1, 0, and the closed marking;
 - (ii) the use of words such as 'inner' and 'outer' should be avoided wherever possible.
- (13) The use of numbers alone on the manoeuvring area should be reserved for the designation of runways.
- (15) Apron stand designators should not be the same as taxiway designators.

[...]

Rationale

Providing the same taxiway designator for more than one taxiway at an aerodrome may lead to less clarity in the taxi clearances given by the ATC and to loss of situational awareness for pilots and vehicle drivers. Paragraph (c)(11) is proposed to be amended accordingly.

Paragraph (c)(12) is proposed to be amended, in particular to avoid the confusion of a taxiway designated with the letter X with a closed marking.



To avoid confusion with other designators, apron stands should have a designator that is different from taxiway designators at the aerodrome. This is of particular importance when stands are assigned with a letter and number combination. New paragraph (c)(15) is proposed to be added in this regard.

GM1 ADR-DSN.P.825 Taxiway edge markers

- (a) At small aerodromes, taxiway edge markers may be used, in lieu of taxiway edge lights, to delineate the edges of taxiways, particularly at night. Additional guidance is given in (ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids, ~~Chapter 2, paragraph 2.4.1~~).
- (b) On a straight section of a taxiway, taxiway edge markers should be spaced at uniform longitudinal intervals of not more than 60 m. On a curve the markers should be spaced at intervals less than 60 m so that a clear indication of the curve is provided. The markers should be located as near as practicable to the edges of the taxiway, or outside the edges at a distance of not more than 3 m. Additional guidance is given in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids, ~~Chapter 2, paragraph 2.4.2~~.
- (c) The markers commonly used are cylindrical in shape. Ideally, the design of the marker should be such that when installed properly, no portion should exceed 35 cm total height above the mounting surface. However, where significant snow heights are possible, markers exceeding 35 cm in height may be used but their total height should be sufficiently low to preserve clearance for propellers, and for the engine pods of jet aircraft. Additional guidance is given in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids, ~~Chapter 2, paragraph 2.4.4~~.
- (d) A taxiway edge marker should be lightweight and frangible. One type of marker meeting these requirements is detailed in Figure GM-P-1. The post is made up of flexible PVC and its colour is blue. The sleeve which is retro-reflective, is also blue. Note that the area of the marked surface is 150 cm². Additional guidance is given in ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids, ~~Chapter 2, paragraph 2.4.5~~.

Rationale

The reference is updated for consistency throughout CS-ADR-DSN.

GM1 ADR-DSN.Q.840 Objects to be marked and/or lighted within the lateral boundaries of the obstacle limitation surfaces

[...]

- (d) An autonomous aircraft detection system may be installed on or near an obstacle (or group of obstacles such as wind farms) within or outside the lateral boundaries of the obstacle limitation surfaces. This system is designed to operate the lighting only when it detects an aircraft approaching the obstacle, to reduce light exposure to local residents. Additional guidance on the design and installation of an autonomous aircraft detection system is available in the ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids.

The inclusion of this guidance is not intended to imply that such a system has to be provided.

Rationale

An aircraft detection system is a mean to reduce light pollution by operating the obstacle lighting only when required. A new paragraph (d) is proposed to be added to make reference to such a system.



CS ADR-DSN.Q.845 Marking of fixed objects

[...]

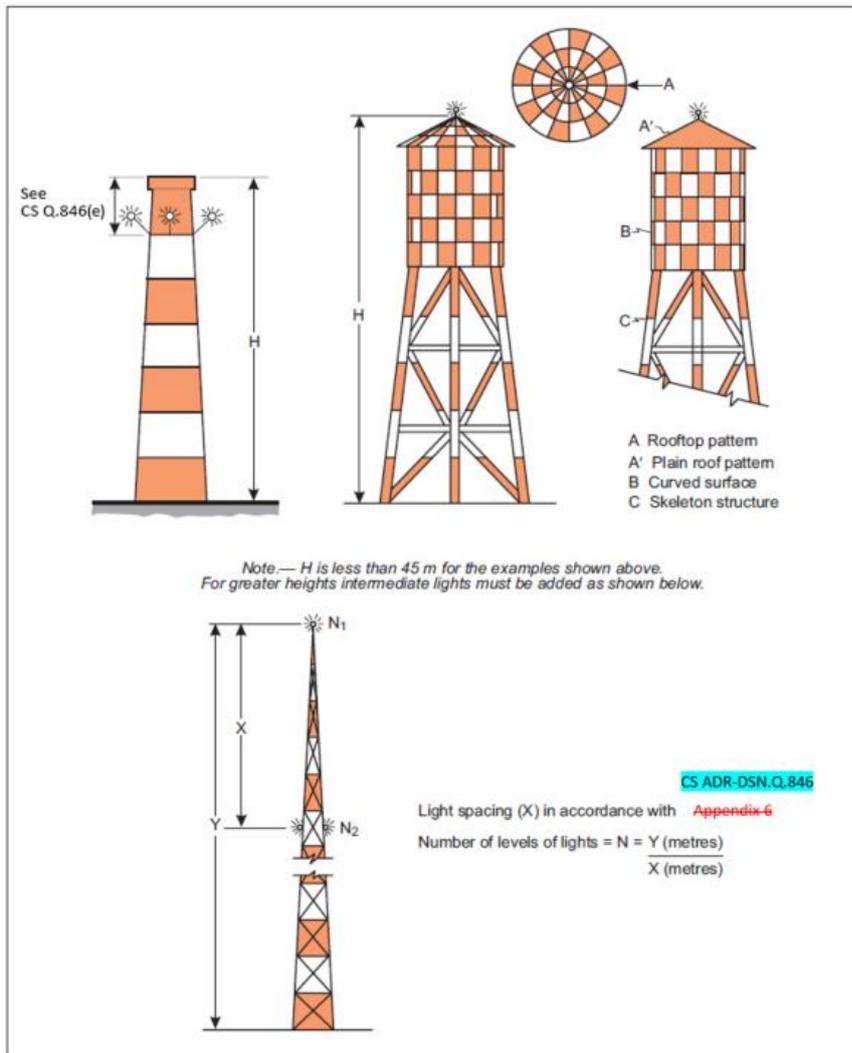


Figure Q-2. Examples of marking and lighting of tall structures

Rationale

The reference in Figure Q-2 is corrected.

CS ADR-DSN.Q.852 Marking and lighting of overhead wires, cables, supporting towers, etc.

[...]

Benchmark intensity	Minimum requirements					Recommendations				
	Vertical elevation angle (b)			Vertical beam spread (c)		Vertical elevation angle (b)			Vertical beam spread (c)	
	0°		-1°	Minimum beam spread	Intensity (a)	0°		-1°	-10°	Maximum beam spread
Minimum average intensity (a)	Minimum intensity (a)	Minimum intensity (a)	Maximum intensity (a)			Maximum intensity (a)	Maximum intensity (a)			
200 000	200 000	150 000	75 000	3°	75 000	250 000	112 500	7 500	7°	75 000
100 000	100 000	75 000	37 500	3°	37 500	125 000	56 250	3 750	7°	37 500
20 000	20 000	15 000	7 500	3°	7 500	25 000	11 250	750	N/A	N/A
2 000	2 000	1 500	750	3°	750	2 500	1 125	75	N/A	N/A

Note: This table does not include recommended horizontal beam spreads. [CS ADR-DSN.Q.846\(c\)](#) requires 360° coverage around an obstacle. Therefore, the number of lights needed to meet this requirement will depend on the horizontal beam spreads of each light as well as the shape of the obstacle. Thus, with narrower beam spreads, more lights will be required.

- (a) 360° horizontal. All intensities are expressed in Candela. For flashing lights, the intensity is read into effective intensity, as determined in accordance with ICAO Doc 9157, Aerodrome Design Manual, Part 4, Visual Aids.
- (b) Elevation vertical angles are referenced to the horizontal when the light unit is levelled.
- (c) Beam spread is defined as the angle between the horizontal plan and the directions for which the intensity exceeds that mentioned in the 'intensity' column.

Note: an extended beam spread may be necessary under specific configuration and justified by an **safety assessment aeronautical study**.

Table Q-3. Light distribution for medium- and high-intensity obstacle lights according to benchmark intensities of Table Q-1

Rationale

In Table Q-3, the term 'aeronautical study' is replaced by 'safety assessment' for consistency.



CS ADR-DSN.R.855 Closed runways and taxiways, or parts thereof

~~(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.~~

~~(e) — In addition to closed markings, when the runway, or taxiway, or portion thereof closed is intercepted by a usable runway or taxiway which is used at night, unserviceability lights should be placed across the entrance to the closed area at intervals not exceeding 3 m (see CS ADR-DSN.R.870(c)(2)).~~

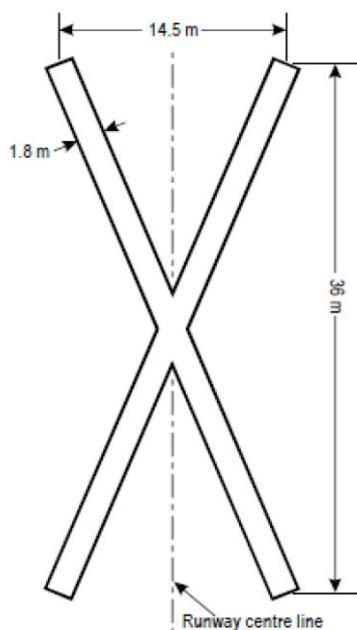


Illustration a) Closed runway marking

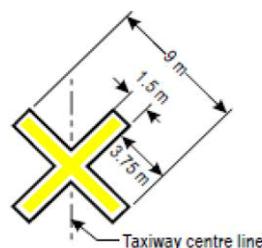


Illustration b) Closed taxiway marking

Figure R-1. Runway and taxiway closed markings

Rationale

Points (a), (b), (d) and (e) are transferred to AMC1 ADR.OPS.B.070(c)(5) because they are considered operational.

CS ADR-DSN.R.870 Unserviceable areas

~~(a) — Applicability of unserviceability markers and lights:~~

~~Unserviceability markers should be displayed wherever any portion of a taxiway, apron, or holding bay is declared unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely. On a movement area used at night, unserviceability lights should be used.~~

~~(b) — Location: Unserviceability markers and lights should be placed at intervals sufficiently close so as to delineate the unserviceable area.~~

(ca) Characteristics:

- (1) Unserviceability markers should consist of conspicuous upstanding devices such as flags, cones, or marker boards.
- (2) An unserviceability light should consist of a red fixed light. The light should have intensity sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general level of illumination against which it would normally be viewed. In no case should the intensity be less than 10 cd of red light.
- (3) An unserviceability cone should be at least 0.5 m in height and red, orange, or yellow, or any one of these colours in combination with white.
- (4) An unserviceability flag should be at least 0.5 m square and red, orange, or yellow, or any one of these colours in combination with white.
- (5) An unserviceability marker board should be at least 0.5 m in height and 0.9 m in length, with alternate red and white, or orange and white vertical stripes.

Rationale

Points (a) and (b) are transferred to AMC1.ADR.OPS.B.070(c)(5), because they are considered as operational.

GM1 ADR-DSN.R.870 Unserviceable areas

~~(a) — Unserviceability markers and lights are used for such purposes as warning pilots of a hole in a taxiway, or apron pavement, or outlining a portion of pavement, such as on an apron, that is under repair. They are not suitable for use when a portion of a runway becomes unserviceable, nor on a taxiway when a major portion of the width becomes unserviceable. In such instances, the runway or taxiway is normally closed.~~

~~(b) — The spacing required for marking and lights should take into account visibility conditions, geometric configurations of the area, potential height differences of terrain so that the limits of unserviceable area is readily visible to pilot.~~

~~(c) — Where a temporarily unserviceable area exists, it may be marked with fixed red lights. These lights mark the most potentially dangerous extremities of the area.~~

~~(d) — A minimum of four such lights may be used, except where the area is triangular in shape, in which case a minimum of three lights may be used.~~

~~(e) — The number of lights may be increased when the area is large or of unusual configuration. At least one light should be installed for each 7.5 m of peripheral distance of the area.~~

~~(f) — If the lights are directional, they should be orientated so that as far as possible, their beams are aligned in the direction from which aircraft or vehicles should approach.~~



~~(g) — Where aircraft or vehicles should normally approach from several directions, consideration should be given to adding extra lights or using omnidirectional lights to show the area from these directions.~~

~~(h) — Unserviceable area lights should be~~ **are** frangible. Their height ~~should be~~ **is** sufficiently low to preserve clearance for propellers and for engine pods of jet aircraft.

Rationale

The GM is revised because its content is considered operational and is transferred to AMC3 ADR.OPS.B070(c)(5).

CS ADR-DSN.T.915 Siting of equipment and installations on operational areas

[...]

(e) Any equipment or installation required for air navigation or for aircraft safety purposes, which should be located on or near a strip of a precision approach runway Category I, II, or III and which:

~~(1) — is situated on that portion of the strip within 77.5 m of the runway centre line where the code number is 4 and the code letter is F; or~~

~~(1)~~ **(1)** is situated within 240 m from the end of the strip and within:

- (i) 60 m of the extended runway centre line where the code number is 3 or 4; or
- (ii) 45 m of the extended runway centre line where the code number is 1 or 2; or

~~(2)~~ **(2)** penetrates the inner approach surface, the inner transitional surface, or the balked landing surface;

should be frangible and mounted as low as possible.

[...]

Rationale

Paragraph (a)(1) is proposed to be removed to align with the changes to the OFZ dimensions for code letter F aircraft.

GM1 ADR-DSN.T.915 Siting of equipment and installations on operational areas

a) The design of light fixtures and their supporting structures, light units of visual approach slope indicators, signs and markers is specified in [CS ADR-DSN.M.615](#), [CS ADR-DSN.M.640](#), [CS ADR-DSN.N.775](#), and Book 1 Chapter P respectively.

(b) Guidance on siting of equipment and installations on operational areas is given in ICAO Doc 9157, Aerodrome Design Manuals, Part 2, Taxiways, Aprons and Holding Bays and Part 6, Frangibility.

(c) Guidance on the frangible design of visual and non-visual aids for navigation is given in the ICAO Doc 9157, Aerodrome Design Manual, Part 5, Electrical Systems.

(d) Requirements for obstacle limitation surfaces are specified in Book 1, Chapter J.

(f) The term 'aircraft safety purposes' refers to the installation of arresting systems which are frangible and intended to enhance safety in the event of an aircraft overrun.



Rationale

The term 'aircraft safety purposes' was introduced by ICAO in Annex 14, Volume I (ICAO State Letter AN 4/1.1.52-11/41) to allow the installation of arresting systems. Additional guidance is proposed to be introduced in paragraph (f) to clarify the intent of the term.

CS ADR-DSN.U.935 Colours for markings, signs and panels

[...]

- (c) The chromaticities and luminance factors of ordinary colours, colours of retroreflective materials, and colours of internally illuminated (~~internally illuminated~~) signs and panels should be determined under the following standard conditions:

Rationale

In paragraph (c) the duplication is removed.

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

AMC and GM to Regulation (EU) No 139/2014

GM1 to Annex I — DEFINITIONS FOR TERMS USED IN ANNEXES II TO IV

(5a) Aircraft classification number (ACN)

The aircraft classification number is calculated with respect to the centre of gravity (CG) position which yields the critical loading on the critical gear. Normally the aft-most CG position appropriate to the maximum gross apron (ramp) mass is used to calculate the ACN. In exceptional cases the forward-most CG position may result in the nose gear loading being more critical. [Applicable until 27 November 2024]

(5b) Aircraft classification rating (ACR)

The aircraft classification rating is calculated with respect to the centre of gravity (CG) position which yields the critical loading on the critical gear. Normally the aft-most CG position appropriate to the maximum gross apron (ramp) mass is used to calculate the ACR. In exceptional cases the forward-most CG position may result in the nose gear loading being more critical. [Applicable as of 28 November 2024]

Rationale

Guidance material is provided related to the calculation of the ACN and ACR.

AMC and GM to Part-ADR.AR

GM1-ADR.AR.B.010 Allocation of tasks to qualified entities

CERTIFICATION TASKS

~~The tasks that may be performed by qualified entities on behalf of the Competent Authority may include any tasks related to the initial certification and continuing oversight of aerodromes and aerodrome operators, as well as declared providers of apron management services, with the exclusion of the issuance of certificates or approvals.~~

Rationale



GM1 ADR.AR.B.010 is removed in line with Article 69 of the Basic Regulation.

GM1 ADR.AR.C.035(d) Issuance of certificates

SCOPE OF AIRCRAFT OPERATIONS EXCEEDING THE CERTIFIED DESIGN CHARACTERISTICS OF THE AERODROME WITH A HIGHER AERODROME REFERENCE CODE LETTER

Any restrictions or mitigation measures for the use of aircraft type/s at the aerodrome should only be mentioned in the aerodrome manual. Notably any limitations arising from the assessment to be undertaken for the use of the aerodrome by aircraft exceeding the certified design characteristics of the aerodrome higher code letter aircraft according to [ADR.OPS.B.090](#) should be included there.

Rationale

See the rationale provided for [ADR.OPS.B.090](#).

GM1 ADR.AR.C.035(e) Issuance of certificates

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 :	
Runway — declared distances ⁴ :	
Types of approaches ⁵ :	
Aerodrome reference code ⁶ :	
Scope of aircraft operations exceeding the certified design characteristics of the aerodrome with a higher aerodrome reference code letter ⁷ :	
Provision of apron management services ⁸ :	
Rescue and firefighting level of protection ⁹ :	
Other ¹⁰	

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: ASDA, LDA, TODA, TORA in metres for each direction of each runway, including intersection take-off if applicable.

- 5 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 To be specified: Aerodrome Reference Code (Code number/Code letter).
- 7 To be specified: the approved type of aeroplanes that exceed the code letter and/or outer main gear wheel span of the certified design characteristics of the aerodrome with a higher code letter than indicated in point 7 above.
- 8 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 To be specified: the rescue and firefighting level of protection as per Annex IV ([Part-ADR.OPS](#)) of this Regulation.
- 10 To be specified: any other information that the Competent Authority finds necessary to include.

Rationale

See the rationale provided for [ADR.OPS.B.090](#).

AMC and GM to Part ADR.OR

GM1 ADR.OR.B.040(a);(b) Changes

CHANGES REQUIRING PRIOR APPROVAL

[...]

- (h) Operation of aircraft that exceed the certified design characteristics of the aerodrome with higher code letter as required by [ADR.OPS.B.090\(a\)](#) Use of the aerodrome by higher code letter aircraft.

[...]

Rationale

See the rationale provided for [ADR.OPS.B.090](#).

~~AMC1 ADR.OR.D.027 Safety programmes~~

~~SAFETY PROGRAMMES — AERODROME SAFETY COMMITTEES~~

- ~~(a) — The aerodrome operator should:~~



- ~~(1) — organise, coordinate and implement programmes to promote safety at the aerodrome. Such programmes should include, but are not limited to:~~
- ~~(i) — runway safety, including runway incursion and excursion prevention;~~
 - ~~(ii) — apron safety; and~~
 - ~~(iii) — FOD prevention;~~
- ~~(2) — coordinate and promote the exchange of information, and the joint investigation of occurrences, serious incidents, and accidents.~~
- ~~(b) — The aerodrome operator should establish, coordinate, and lead local aerodrome safety committees, and a Local Runway Safety Team, dealing with runway safety, apron safety, and the safety of the operations at the aerodrome in general. All relevant organisations operating or providing services at the aerodrome should participate to such aerodrome safety committees and the Local Runway Safety Team.~~

~~The local aerodrome safety committees and the Local Runway Safety Team should convene regularly, identify and review local safety issues, and examine possible solutions, and need for action. Minutes of such meetings should be kept. Procedures relevant to the functioning of local aerodrome safety committees and the Local Runway Safety Team should be included in the aerodrome manual.~~

Rationale

The AMC is deleted because the content is transferred to the revised implementing rule ADR.OR.D.027.

AMC1 ADR.OR.D.027(a);(b)(2) Safety programmes and aerodrome safety committees

COMPOSITION OF THE LOCAL RUNWAY SAFETY TEAM

Participation should include representatives with direct involvement in runway operations at the aerodrome, including, but not limited to:

- (a) aerodrome operations;
- (b) aerodrome engineering and maintenance;
- (c) air traffic services;
- (d) aircraft operators that operate at the aerodrome;
- (e) aerodrome rescue and firefighting services;
- (f) drivers having access on the manoeuvring area.
- (g) organisation(s) responsible for the provision of AMS, if established.

Rationale

The Local Runway Safety Team (LRST) is important to support the aerodrome operator to enhance runway safety. Currently, the composition of the LRST is only a GM, therefore the participation of some key organisations is not ensured. For this reason, the content of GM2 ADR.OR.D.027 with regard to the composition of the LRST is transferred to an AMC.

AMC2 ADR.OR.D.027(a);(b)(2) Safety programmes and aerodrome safety committees

AERODROME SAFETY COMMITTEES



- (a) The aerodrome operator should establish (a) Manoeuvring area/Apron Safety Committees;
- (b) Participation should include, but not limited to representatives of:
 - (1) aerodrome users active in flight operations;
 - (2) groundhandling service providers;
 - (3) aerodrome rescue and firefighting services;
 - (4) aerodrome operations;
 - (5) aerodrome wildlife management;
 - (6) aerodrome maintenance;
 - (7) air traffic services provider(s); and
 - (8) organisation(s) responsible for the provision of AMS, if established.

Rationale

The Manoeuvring Area/Apron Safety Committee is an important tool for the aerodrome operator to enhance operational safety. The composition of the Committee is currently contained in a GM, therefore, the participation of some key organisations is not ensured. For this reason, the content of GM1 ADR.OR.D.027 concerning the composition of the Manoeuvring Area/Apron Safety Committee is transferred to an AMC.

AMC1 ADR.OR.D.027(d)(1);(d)(2) Safety programmes and aerodrome safety committees

TASKS OF THE LOCAL RUNWAY SAFETY TEAM

- (a) The local runway safety team should support the aerodrome operator to reduce the safety risk of issues related to runway safety, including but not limited to the following:
 - (1) runway incursion;
 - (2) runway excursion;
 - (3) runway confusion;
 - (4) suspension or closure of runway operations; and
 - (5) infringements of the lower airspace inside the aerodrome or in the vicinity of the aerodrome perimeter by unauthorised UAS.
- (b) The local runway safety team should support the aerodrome operator to assess the need for the establishment of hot spots at the aerodrome and the review of the relevant entries of the aeronautical information publication (AIP) for accuracy.
- (c) The local runway safety team should:
 - (1) monitor the number, type, and the severity of runway safety occurrences;
 - (2) support the aerodrome operator to disseminate safety recommendations delivered from accident and incident investigations as well as other relevant lessons learnt e.g. from operational experience and best risk mitigation practices; and
 - (3) ensure sharing of good practices to prevent runway safety events;
- (d) The local runway safety team should assist the aerodrome operator:
 - (1) in verifying that the communications between air traffic controllers or other air traffic services personnel, pilots, and vehicle drivers are satisfactory, or if any improvements are required.
 - (2) to assess on a regular basis in different weather and light conditions whether at all runway entrances visual aids are adequate, correctly located, and understandable by all



parties concerned, with no possible ambiguity of their meaning or identify potential aerodrome design issues.

- (e) The local runway team should provide advice to the aerodrome operator, prior to the implementation of changes to the aerodrome movement area, new practices, and procedures to identify any potential for runway safety events.

Rationale

The tasks of the LRST are currently described in GM2 ADR.OR.D.027, however, this does not ensure that all these tasks are taken into consideration. The option to define the tasks at rule level is not appropriate considering the consultative role of the LRST and to allow some flexibility for the implementation.

AMC2 ADR.OR.D.027(d)(1);(d)(2) Safety programmes and aerodrome safety committees

TASKS OF THE AERODROME SAFETY COMMITTEES

The tasks of the Manoeuvring area/Apron Safety Committee(s) should be:

- (a) to receive and evaluate reports on operational safety issues;
- (b) to receive reports and statistical information on accidents and incidents, and propose solutions;
- (c) to advise on manoeuvring area/apron safety issues such as:
 - (1) promotion of apron safety discipline;
 - (2) FOD prevention;
 - (3) developing measures for safe operations;
 - (4) considering actions to resolve manoeuvring area/apron safety problems;
 - (5) apron equipment issues;
 - (6) adherence to airside driving rules;
 - (7) new and/or updated safety instructions;
 - (8) methods to develop and promote apron safety awareness initiatives;
 - (9) snow and ice control issues;
 - (10) proposed aerodrome works;
 - (11) proposed changes/developments to the movement area;
 - (12) standard operating procedures, etc.

Rationale

The tasks of the Manoeuvring Area/Apron Safety Committee are currently described in GM1 ADR.OR.D.027, however, this does not ensure that all these tasks are taken into consideration. The option to define the tasks at rule level is not appropriate considering the consultative role of the Manoeuvring Area/Apron Safety Committee and to allow some flexibility for the implementation.

~~GM1 ADR.OR.D.027 Safety programmes~~

~~AERODROME SAFETY COMMITTEES~~

- ~~(a) Manoeuvring area/Apron Safety Committee~~
- ~~(1) The aerodrome operator should establish (a) Manoeuvring area/Apron Safety Committee(s);~~



- ~~(2) — The Manoeuvring area/Apron Safety Committee(s) should have an advisory role to the aerodrome operator;~~
- ~~(b) — Management of Manoeuvring area /Apron Safety Committee(s)~~
- ~~(1) — The Manoeuvring area /Apron Safety Committee(s) should be chaired by an aerodrome operator's official, responsible for aerodrome operations; and~~
- ~~(2) — The aerodrome operator's safety manager should act as the secretary of the Committee(s).~~
- ~~(c) — Composition of Manoeuvring area /Apron Safety Committee(s)~~
- ~~—— Participation should include, but not limited to representatives of:~~
- ~~(1) — aerodrome users active in flight operations;~~
- ~~(2) — aircraft ground handling services providers;~~
- ~~(3) — aerodrome rescue and firefighting services;~~
- ~~(4) — aerodrome operations;~~
- ~~(5) — aerodrome wildlife management;~~
- ~~(6) — aerodrome maintenance; and~~
- ~~(7) — air navigation service provider(s).~~
- ~~(d) — Tasks~~
- ~~The tasks of the Manoeuvring area /Apron Safety Committee(s) should be:~~
- ~~(1) — to receive and evaluate reports on operational safety issues;~~
- ~~(2) — to receive reports and statistical information on accidents and incidents, and propose solutions;~~
- ~~(3) — to advise on manoeuvring area/apron safety issues such as:~~
- ~~(i) — promotion of apron safety discipline;~~
- ~~(ii) — FOD prevention;~~
- ~~(iii) — developing measures for safe operations;~~
- ~~(iv) — considering actions to resolve manoeuvring area/apron safety problems;~~
- ~~(v) — apron equipment issues;~~
- ~~(vi) — adherence to vehicle traffic issues;~~
- ~~(vii) — new and/or updated safety instructions;~~
- ~~(viii) — personal protective clothing/equipment issues;~~
- ~~(ix) — methods to develop and promote apron safety awareness initiatives;~~
- ~~(x) — snow and ice clearance issues;~~
- ~~(xi) — proposed aerodrome works;~~
- ~~(xii) — proposed changes/developments to the movement area;~~
- ~~(xiii) — standard operating procedures, etc.~~

Rationale



The GM is deleted and the content is transferred to AMC2 ADR.OR.D.027(a);(b)(2) and AMC2 ADR.OR.D.027(d)(1);(d)(2).

~~GM2 ADR.OR.D.027 Safety programmes~~

~~LOCAL RUNWAY SAFETY TEAM~~

~~(a) Context~~

~~As part of its runway safety programme, the aerodrome operator should establish and lead a Local Runway Safety Team and act on local runway safety issues, including runway incursion (including runway confusion) and excursion prevention.~~

~~A runway incursion is defined as ‘Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft’⁷.~~

~~A runway excursion occurs when ‘An aircraft veers off or overruns the runway surface during either take-off or landing’.~~

~~(b) Local Runway Safety Team composition~~

~~Participation should include representatives from all interested parties with direct involvement in runway operations at the aerodrome, including, but is not limited, to:~~

- ~~(1) aerodrome operations;~~
- ~~(2) aerodrome engineering and maintenance;~~
- ~~(3) air navigation service providers;~~
- ~~(4) aircraft operators that operate of the aerodrome;~~
- ~~(5) aerodrome rescue and firefighting services;~~
- ~~(6) drivers having access on the manoeuvring area.~~

~~(c) Role~~

~~The role of the Local Runway Safety Team should be to advise the appropriate management on potential runway safety issues, and to recommend mitigating measures.~~

~~(d) Tasks~~

~~The Local Runway Safety Team may have the following tasks:~~

- ~~(1) identification of potential runway safety issues, including the need for establishment of hot spots or other problem areas at the aerodrome and the review of the relevant entries of the AIP for accuracy;~~
- ~~(2) developing and running local awareness campaigns, at suitable periods, including at the start of a busy season or before an unusual event, that focus on local issues, for example, producing and distributing local hot spot maps, or other guidance material considered as necessary; local awareness campaigns should be periodically refreshed to maintain interest and operational awareness of the relevant personnel;~~
- ~~(3) monitoring the number, type and, the severity of runway incursions; disseminating safety recommendations delivered from accident and incident investigation findings as well as~~

⁷ The ‘protected area of a surface designated for the landing and take-off of aircraft’ is to be interpreted as the physical surface of a runway, from the centreline to the holding point appropriate to the type of runway. Where operations are being conducted during low visibility operations this should be the holding point appropriate to the procedures in force. The ‘protected surface’ includes the ILS glide-path and localiser critical areas at all times, and the ILS sensitive areas during low visibility procedures.

- ~~other relevant lessons learned e.g. from operational experience and best risk mitigation practices; sharing good practices to prevent runway incursions or excursions;~~
- ~~(4) assisting in verifying that communications between air traffic controllers, or other Air Traffic Services personnel, pilots, and vehicle drivers are satisfactory, or if any improvements could be suggested;~~
- ~~(5) making observations on a regular basis in different weather and light conditions to assess whether all runway entrances and visual aids are adequate, correctly located and understandable by all parties concerned, with no possible ambiguity of their meaning, or identify potential aerodrome design issues;~~
- ~~(6) understanding the operating difficulties of personnel working in other areas, and recommending areas for improvement; when reviewing operating procedures it is necessary to ensure that the procedures employed by different companies at the aerodrome are integrated and effective, so as to minimise the risk of runway incursions. Care should be taken when examining existing or proposed runway capacity enhancing procedures or noise abatement schemes involving runway preferential systems;~~
- ~~(7) development of joint, initial and recurrent, training programmes and familiarisation on runway incursion and excursion prevention, for all relevant personnel (vehicle drivers and other personnel operating on the manoeuvring area, pilots, Air Traffic Services personnel); this may include visits to the manoeuvring area to increase awareness of the aerodrome layout, markings, signs, position of anemometers etc., where this is considered necessary;~~
- ~~(8) providing advice prior to the implementation of changes to the aerodrome, practices and procedures to identify potential for runway incursion or excursion; and~~
- ~~(9) assessing the effectiveness of implemented operational solutions periodically.~~

Rationale

The GM is deleted and the content is transferred to AMC1 ADR.OR.D.027(a);(b)(2) and AMC1 ADR.OR.D.027(d)(1);(d)(2).

AMC2 ADR.OR.D.027 Safety programmes

HOT SPOTS

~~Once hot spots have been identified at an aerodrome, suitable strategies should be implemented to remove the hazard and, when this is not immediately possible, to manage and mitigate the risk, including the publication of HOT SPOT charts in the Aeronautical Information Publication.~~

Rationale

The AMC is deleted and content is transferred to ADR.OPS.B.095. Refer to the rationale of ADR.OPS.B.095.

GM3 ADR.OR.D.027 Safety programmes

HOT SPOTS

~~A hot spot is defined as ‘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.’~~

~~Strategies to manage and mitigate the risk from hot spots, depending on the case, may include, but are not limited to:~~



- ~~(a) — awareness campaigns;~~
- ~~(b) — additional visual aids (signs, markings, and lighting);~~
- ~~(c) — establishment of alternative routings;~~
- ~~(d) — introducing changes to the design of parts of the aerodrome; and~~
- ~~(e) — the mitigation of blind spots in the aerodrome control tower.~~

~~Aerodrome charts showing hot spots should be produced locally, checked regularly for accuracy, revised as needed, distributed locally, and published in the AIP. The criteria used to establish and chart a hot spot are contained in the PANS-ATM (Chapter 7) and Annex 4 — Aeronautical Charts (Chapters 13, 14 and 15).~~

~~Examples of how hot spots are shown on charts are provided in Figures 1, 2, and 3 below.~~



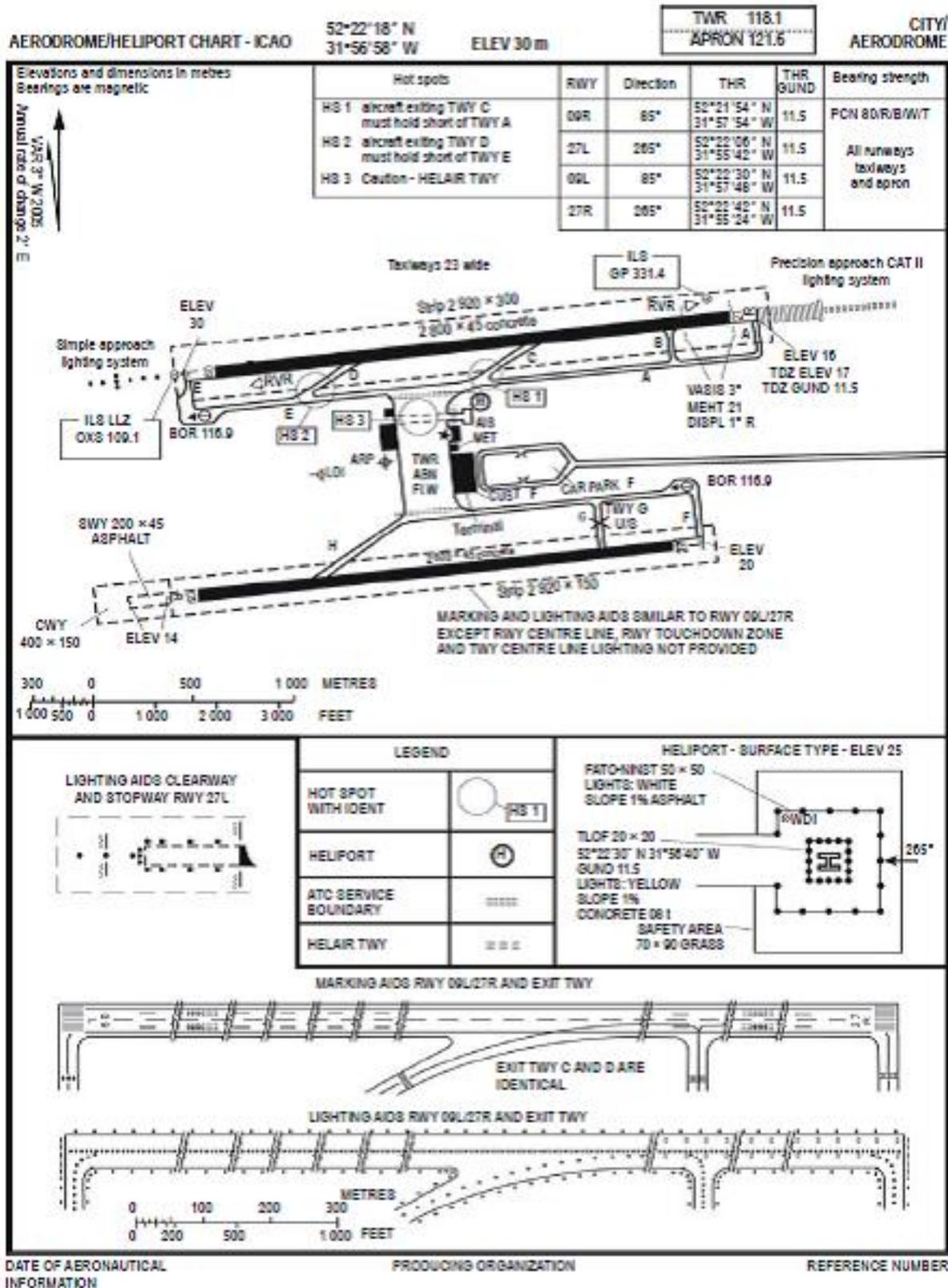


Figure 1



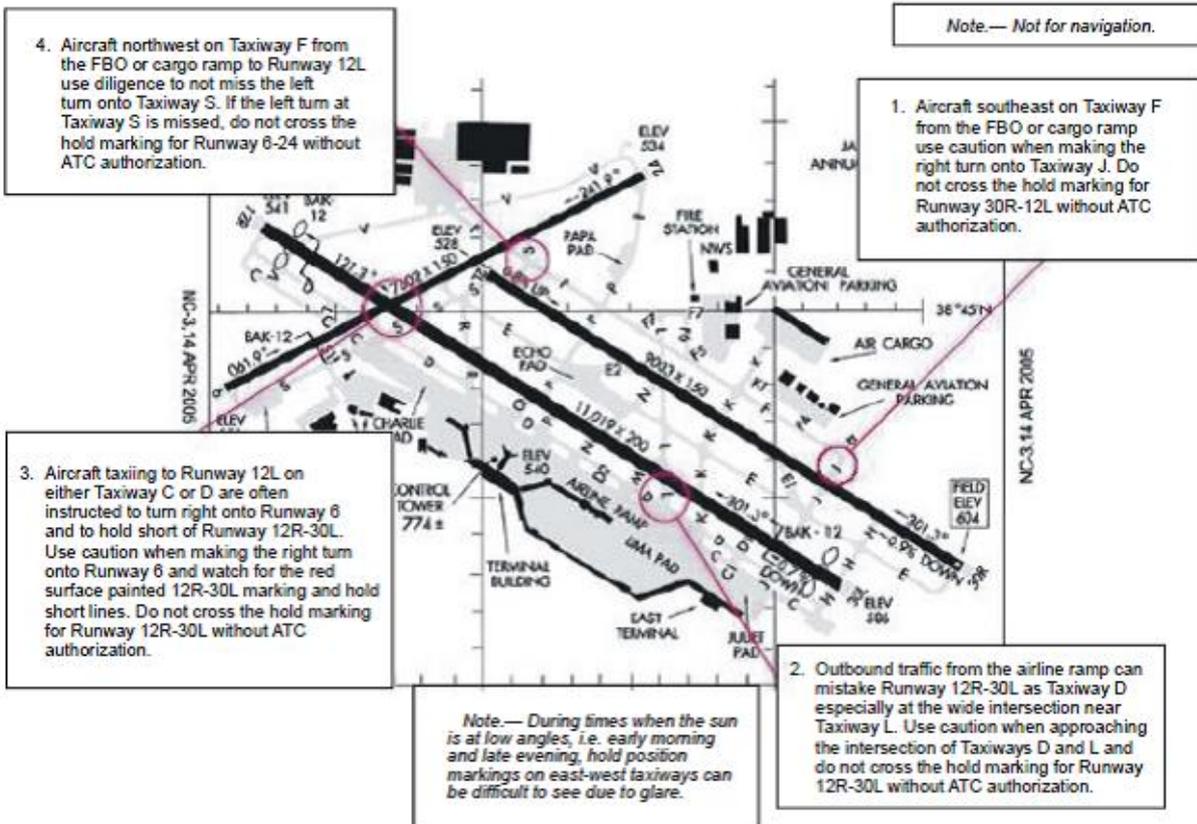


Figure-2

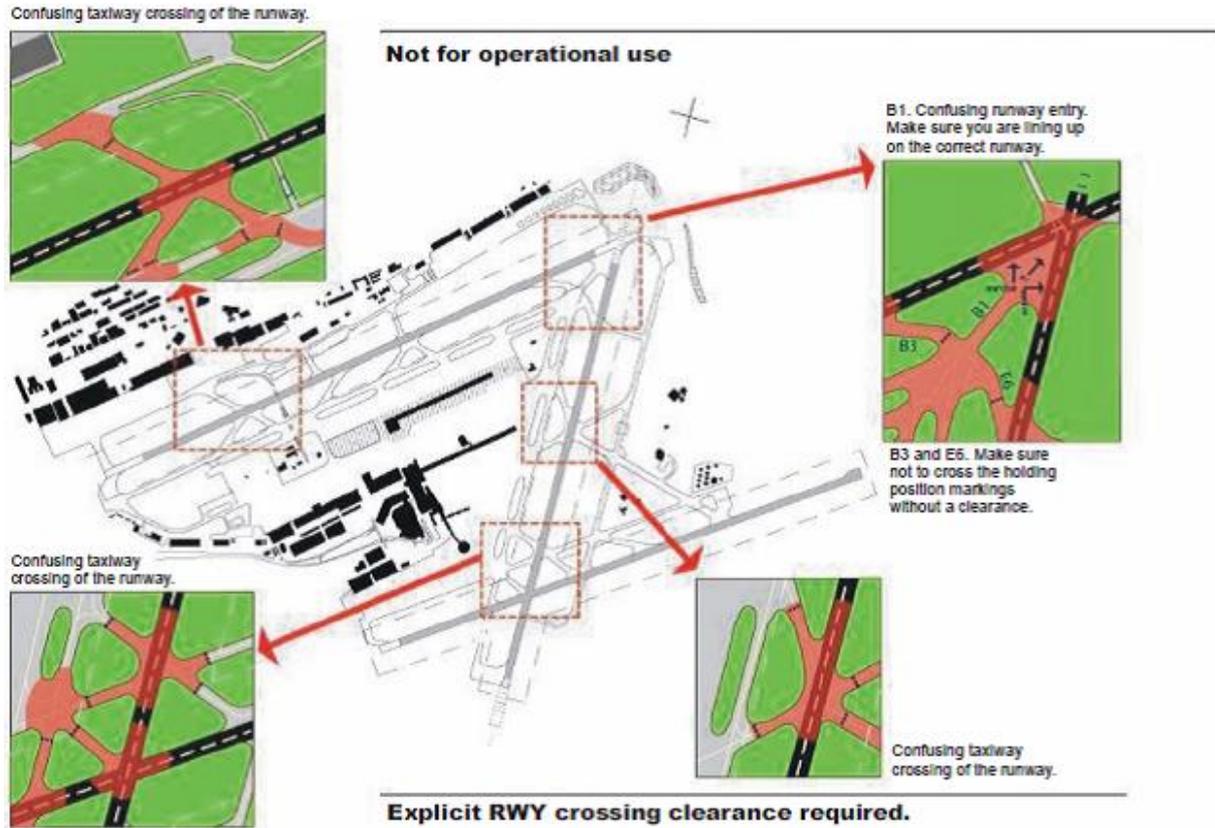


Figure 3

Rationale

The content of the GM is split to GM1 ADR.OPS.B.095(b) and GM1 ADR.OPS.B.09(c) under ADR.OPS.B.095.

AMC3 ADR.OR.E.005 Aerodrome manual

AERODROME MANUAL

- (a) The aerodrome manual should have the following structure, and include, at least, the following information; if an item is not applicable, the indication ‘Not applicable’ or ‘Intentionally blank’ should be inserted, along with the relevant reason:

[...]

- E. PART E — PARTICULARS OF OPERATING PROCEDURES OF THE AERODROME, ITS EQUIPMENT, AND SAFETY MEASURES

[...]

- 28. Procedures for the operation of aircraft that exceed the certified design characteristics of the aerodrome with higher code letter at the aerodrome, including taxiing routes.

[...]

[...]

Rationale

See the rationale provided for ADR.OPS.B.090.



AMC and GM to Part-ADR.OPS

AMC1 ADR.OPS.A.005 Aerodrome data

- ~~(a) — Data relevant to the aerodrome and available services should include, but may not be limited to, items in the following list:~~
- ~~(1) — aerodrome reference point;~~
 - ~~(2) — aerodrome and runway elevations;~~
 - ~~(3) — aerodrome reference temperature;~~
 - ~~(4) — aerodrome dimensions and related information;~~
 - ~~(5) — strength of pavements;~~
 - ~~(6) — pre-flight altimeter check location;~~
 - ~~(7) — declared distances;~~
 - ~~(8) — condition of the movement area and related facilities;~~
 - ~~(9) — disabled aircraft removal;~~
 - ~~(10) — rescue and firefighting; and~~
 - ~~(11) — visual approach slope indicator systems.~~
- ~~(b) — The aerodrome operator should measure and report to the aeronautical information services obstacles and terrain data in Area 3, and in Area 2 (the part within the aerodrome boundary) in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation, type, marking and lighting (if any) of obstacles should be reported to the aeronautical information services.~~
- ~~(c) — Electronic obstacle data for all obstacles in Area 2 (the part within the aerodrome boundary) that are assessed as being a hazard to air navigation should be provided.~~
- ~~(d) — Electronic terrain and obstacle data should be provided for:~~
- ~~(1) — Area 2a, for those that penetrate the relevant obstacle data collection surface;~~
 - ~~(2) — penetrations of the take-off flight path area obstacle identification surfaces; and~~
 - ~~(3) — penetrations of the aerodrome obstacle limitation surfaces.~~
- ~~(e) — Electronic terrain and obstacle data should be provided for Area 4 for terrain and obstacles that penetrate the relevant obstacle data collection surface, for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.~~
- ~~(f) — The aerodrome operator should establish arrangements with the Air Traffic Services providers and the Competent Authority for the provision of obstacles and terrain data outside of the aerodrome boundary.~~

Rationale

The AMC is deleted because the content is transferred to the new proposed implementing rules in Part-ADR.OPS.A (refer also to the rationale of the changes in the relevant implementing rules).



~~GM1-ADR.OPS.A.005-Aerodrome data~~

~~AERODROME REFERENCE POINT~~

- ~~(a) The aerodrome reference point should be located near the initial or planned geometric centre of the aerodrome and normally should remain where first established.~~
- ~~(b) The aerodrome reference point should be measured and reported to the aeronautical information services in degrees, minutes, and seconds.~~

~~AERODROME AND RUNWAY ELEVATIONS~~

~~The following should be measured and reported to the aeronautical information services:~~

- ~~(a) The aerodrome elevation and geoid undulation at the aerodrome elevation position to the accuracy of one-half metre or foot;~~
- ~~(b) For non-precision approaches, the elevation and geoid undulation of each threshold, the elevation of the runway end and any significant high and low intermediate points along the runway, to the accuracy of one-half metre or foot;~~
- ~~(c) For precision approach runway, the elevation and geoid undulation of the threshold, the elevation of the runway end and the highest elevation of the touchdown zone, to the accuracy of one-quarter metre or foot.~~

~~AERODROME REFERENCE TEMPERATURE~~

- ~~(a) The aerodrome reference temperature should be determined in degrees Celsius.~~
- ~~(b) The aerodrome reference temperature should be the monthly mean of the daily maximum temperatures for the hottest month of the year (the hottest month being that which has the highest monthly mean temperature), averaged over a period of five (5) years.~~

~~AERODROME DIMENSIONS AND RELATED INFORMATION~~

~~The following data are measured or described, as appropriate, for each facility provided on the aerodrome:~~

- ~~(a) Runway
 - ~~(1) true bearing to one-hundredth of a degree;~~
 - ~~(2) designation number;~~
 - ~~(3) length;~~
 - ~~(4) width;~~
 - ~~(5) displaced threshold location to the nearest metre or foot;~~
 - ~~(6) longitudinal slope;~~
 - ~~(7) surface type;~~
 - ~~(8) type of runway; and~~
 - ~~(9) for a precision approach runway category I, the existence of an obstacle free zone when provided.~~~~
- ~~(b) Strip/Runway End Safety Area/Stopway
 - ~~(1) Length, width to the nearest metre or foot;~~
 - ~~(2) Surface type; and~~
 - ~~(3) Arresting system—location (which runway end) and description.~~~~



- ~~(c) Taxiway
 - ~~(1) Designation;~~
 - ~~(2) Width; and~~
 - ~~(3) Surface type.~~~~
- ~~(d) Apron
 - ~~(1) Surface type; and~~
 - ~~(2) Aircraft stands.~~~~
- ~~(e) The boundaries of the air traffic control service;~~
- ~~(f) Clearway
 - ~~(1) length to the nearest metre or foot; and~~
 - ~~(2) ground profile.~~~~
- ~~(g) Visual aids for approach procedures, marking and lighting of runways, taxiways and aprons, other visual guidance and control aids on taxiways and aprons, including runway holding positions, intermediate holding positions and stopbars, and location and type of visual docking guidance systems;~~
- ~~(h) Location and radio frequency of any VOR aerodrome checkpoint;~~
- ~~(i) Location and designation of standard taxi routes;~~
- ~~(j) Distances to the nearest metre or foot of localiser and glide path elements comprising an instrument landing system (ILS) or azimuth and elevation antenna of a microwave landing system (MLS) in relation to the associated runway extremities;~~
- ~~(k) The geographical coordinates of:
 - ~~(1) each threshold;~~
 - ~~(2) appropriate taxiway centre line points; and~~
 - ~~(3) each aircraft stand;~~are measured and reported to the aeronautical information services in degrees, minutes, seconds and hundredths of seconds.~~

STRENGTH OF PAVEMENTS

- ~~(a) The bearing strength of a pavement intended for aircraft of apron (ramp) mass greater than 5 700 kg should be made available using the aircraft classification — pavement classification number (ACN-PCN) method, by reporting all of the following information:
 - ~~(1) the pavement classification number (PCN);~~
 - ~~(2) pavement type for ACN-PCN determination;~~
 - ~~(3) subgrade strength category;~~
 - ~~(4) maximum allowable tire pressure category or maximum allowable tire pressure value; and~~
 - ~~(5) evaluation method.~~~~
- ~~(b) For the purposes of determining the ACN, the behaviour of a pavement should be classified as equivalent to a rigid or flexible construction;~~



- (c) ~~Information on pavement type for ACN-PCN determination, subgrade strength category, maximum allowable tire pressure category and evaluation method, should be reported using the following codes:~~
- (1) ~~Pavement type for ACN-PCN determination:~~
 - (i) ~~Rigid pavement: Code R;~~
 - (ii) ~~Flexible pavement: Code F;~~
 - (2) ~~Subgrade strength category:~~
 - (i) ~~High strength: characterised by $K = 150 \text{ MN/m}^2$ and representing all K values above 120 MN/m^2 for rigid pavements, and by $\text{CBR} = 15$ and representing all CBR values above 13 for flexible pavements — Code A;~~
 - (ii) ~~Medium strength: characterised by $K = 80 \text{ MN/m}^2$ and representing a range in K of 60 to 120 MN/m^2 for rigid pavements, and by $\text{CBR} = 10$ and representing a range in CBR of 8 to 13 for flexible pavements — Code B;~~
 - (iii) ~~Low strength: characterised by $K = 40 \text{ MN/m}^2$ and representing a range in K of 25 to 60 MN/m^2 for rigid pavements, and by $\text{CBR} = 6$ and representing a range in CBR of 4 to 8 for flexible pavements — Code C;~~
 - (iv) ~~Ultra low strength: characterised by $K = 20 \text{ MN/m}^2$ and representing all K values below 25 MN/m^2 for rigid pavements, and by $\text{CBR} = 3$ and representing all CBR values below 4 for flexible pavements — Code D;~~
 - (3) ~~Maximum allowable tire pressure category:~~
 - (i) ~~Unlimited: no pressure limit — Code W;~~
 - (ii) ~~High: pressure limited to 1.75 MPa — Code X;~~
 - (iii) ~~Medium: pressure limited to 1.25 MPa — Code Y;~~
 - (iv) ~~Low: pressure limited to 0.50 MPa — Code Z;~~
 - (4) ~~Evaluation method:~~
 - (i) ~~Technical evaluation: representing a specific study of the pavement characteristics and application of pavement behaviour technology — Code T;~~
 - (ii) ~~Using aircraft experience: representing a knowledge of the specific type and mass of aircraft satisfactorily being supported under regular use — Code U;~~
- (d) ~~The bearing strength of a pavement intended for aircraft of apron (ramp) mass equal to or less than 5 700 kg, should be reported by reporting the following information:~~
- (1) ~~maximum allowable aircraft mass; and~~
 - (2) ~~maximum allowable tire pressure.~~

PRE-FLIGHT ALTIMETER CHECK LOCATION

- (a) ~~One or more pre-flight altimeter check locations should be established.~~
- (b) ~~The elevation of a pre-flight altimeter check location should be given as the average elevation, rounded to the nearest metre or foot, of the area on which it is located. The elevation of any portion of a pre-flight altimeter check location should be within 3 m (10 ft) of the average elevation for that location.~~
- (c) ~~Pre-flight check location could be located on an apron. Locating a pre-flight altimeter check location on an apron enables an altimeter check to be made prior to obtaining taxi clearance~~

and eliminates the need for stopping for that purpose after leaving the apron. Normally an entire apron could serve as a satisfactory altimeter check location.

DECLARED DISTANCES

(a) The following distances should be calculated to the nearest metre or foot for a runway and reported to the aeronautical information services and Air Traffic Services:

- (1) Take-off run available (TORA);
- (2) Take-off distance available (TODA);
- (3) Accelerate stop distance available (ASDA); and
- (4) Landing distance available (LDA).

(b) The take-off run available (TORA), take-off distance available (TODA), accelerate stop distance available (ASDA) and landing distance available (LDA) should be calculated according to the following (all declared distances are illustrated for operations from left to right):

- (1) Where a runway is not provided with a stopway or a clearway and the threshold is located at the extremity of the runway, the four declared distances should normally be equal to the length of the runway

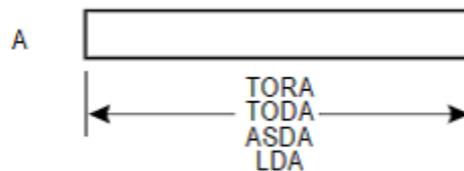


Figure 1

- (2) When a runway is provided with a clearway (CWY), then the TODA will include the length of clearway.

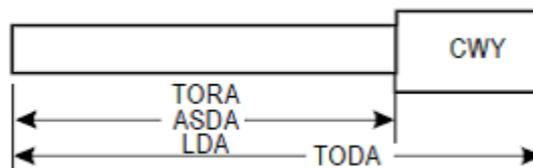


Figure 2

- (3) Where a runway is provided with a stopway (SWY), then the ASDA will include the length of stopway.

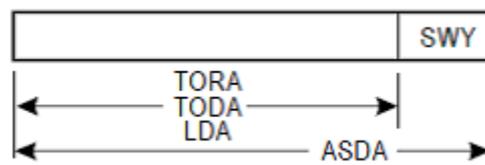


Figure 3

- (4) Where a runway has a displaced threshold, then the LDA will be reduced by the distance the threshold is displaced. A displaced threshold affects only the LDA for approaches made to that threshold; all declared distances for operations in the reciprocal direction are unaffected.

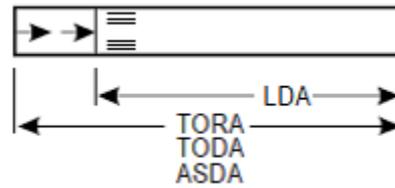


Figure 4

(5) Where a runway is provided with more than one of the clearway, stopway, or having a displaced threshold, then more than one of the declared distances will be modified. The modification will follow the same principle as in (1)–(4)

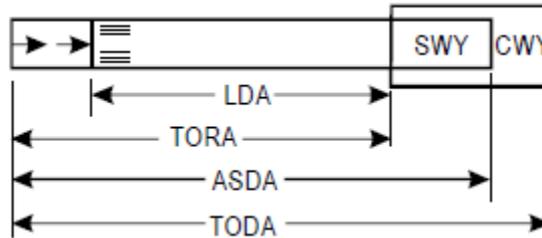


Figure 5

(c) The information on declared distances should be provided according to the following table:

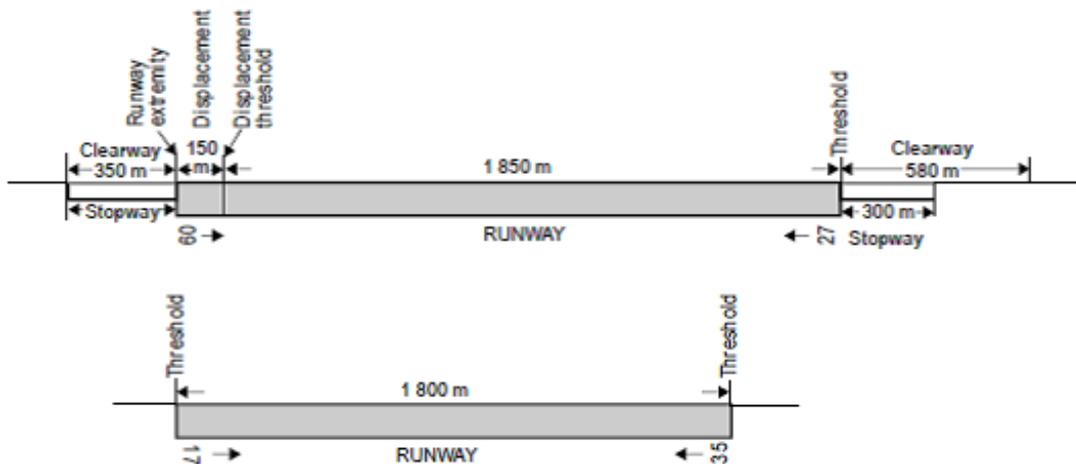


Figure 6

RUNWAY	TORA	ASDA	TODA	LDA
	m	m	m	m
09	2 000	2 300	2 580	1 850
27	2 000	2 350	2 350	2 000
17	NU	NU	NU	1 800
35	1 800	1 800	1 800	NU

Table 1

If a runway direction cannot be used for take-off or landing, or both because it is operationally forbidden, then this should be declared and the words ‘not usable’ or the abbreviation ‘NU’ entered.

- (d) — ~~When intersection take-offs are performed, the datum line from which the reduced runway declared distances for take-off are determined, should be defined by the intersection of the downwind edge as shown in the figure below:~~

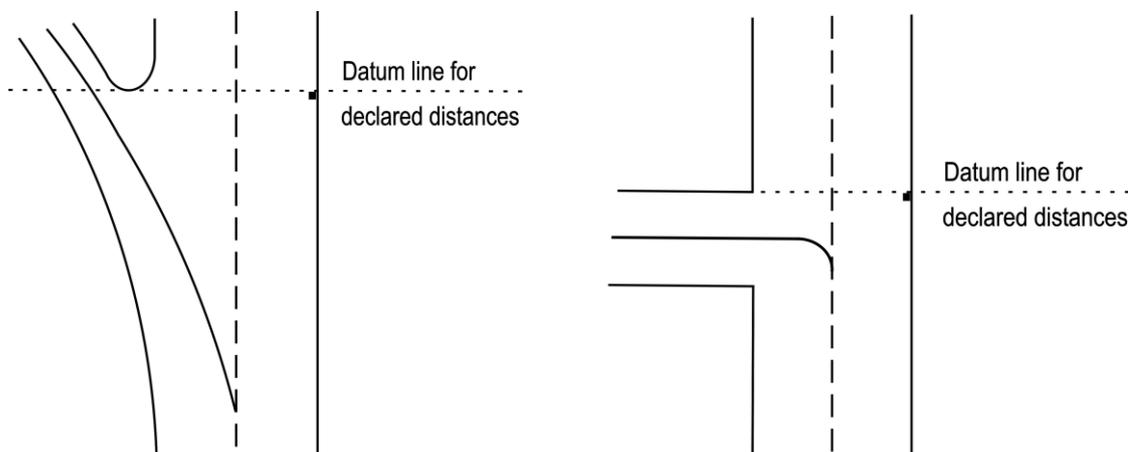


Figure 7

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.~~

DISABLED AIRCRAFT REMOVAL

~~(a) — The contact details (telephone/telex number(s), email address, etc.) of the office of the aerodrome coordinator of operations for the removal of an aircraft disabled on or adjacent to the movement area should be made available on request to aircraft operators.~~

~~(b) — Information concerning the capability to remove an aircraft disabled on or adjacent to the movement area should be made available.~~

~~(c) — The capability to remove a disabled aircraft may be expressed in terms of the largest type of aircraft which the aerodrome is equipped to remove.~~

RESCUE AND FIREFIGHTING

~~(a) — Information concerning the level of protection provided at an aerodrome for aircraft rescue and firefighting purposes during the hours of operation should be made available.~~

~~(b) — The level of protection normally available at the aerodrome should be expressed in terms of the category of the rescue and firefighting services and in accordance with the types and amounts of extinguishing agents normally available at the aerodrome.~~

~~(c) — Changes in the level of protection normally available at the aerodrome for rescue and firefighting should be notified to the appropriate air traffic services units and aeronautical information services units to enable those units to provide the necessary information to arriving and departing aircraft. When such a change has been corrected, the above units should be advised accordingly.~~

~~(d) — Changes in the level of protection from that normally available at the aerodrome could result from a change in the availability of extinguishing agents, equipment to deliver the agents or personnel to operate the equipment, etc.~~

~~(e) — A change in the level of protection is expressed in terms of the new category of the rescue and firefighting services available at the aerodrome.~~

VISUAL APPROACH SLOPE INDICATOR SYSTEMS

The following information concerning a visual approach indicator system is made available:

~~(a) — associated runway designation number;~~

~~(b) — type of system; for a PAPI or APAPI installation, the side of the runway on which the lights are installed, i.e. left or right, is given;~~

~~(c) — where the axis of the system is not parallel to the runway centre line, the angle of displacement and the direction of displacement, i.e. left or right, is indicated;~~



- ~~(d) — nominal approach slope angle(s); and~~
- ~~(e) — minimum eye height(s) over the threshold of the on-slope signal(s).~~

Rationale

The GM contains ICAO Standards included in Chapter 2 of ICAO Annex 14. Their inclusion into a GM does not ensure effective implementation, also considering the fact that all the data included in the GM needs to be reported to the AIS providers for publication in the AIP. The content is transferred to the relevant implementing rules in Part-ADR.OPS.A.

AMC1 ADR.OPS.A.015 Coordination between aerodrome operators and providers of aeronautical information services

REPORTING

- ~~(a) — The aerodrome operator should report on matters of operational significance or affecting aircraft and aerodrome operations in order to take appropriate action, particularly in respect of the following:
 - ~~(1) — construction or maintenance work;~~
 - ~~(2) — rough or broken surfaces on a runway, a taxiway, or an apron;~~
 - ~~(3) — snow, slush ice or frost on a runway, a taxiway, or an apron;~~
 - ~~(4) — water on a runway, a taxiway, or an apron;~~
 - ~~(5) — snow banks or drifts adjacent to a runway, a taxiway, or an apron;~~
 - ~~(6) — anti-icing or de-icing liquid chemicals, or other contaminants on a runway, a taxiway, or an apron;~~
 - ~~(7) — other temporary hazards, including parked aircraft;~~
 - ~~(8) — failure or irregular operation of part or all of the aerodrome visual aids; and~~
 - ~~(9) — failure of the normal or secondary power supply.~~~~
- ~~(b) — A change in the level of protection normally available at an aerodrome for rescue and firefighting should be expressed in terms of the new category available at the aerodrome. When such a change has been corrected, the air traffic services provider and the aeronautical information services providers should be advised accordingly.~~
- ~~(c) — The aerodrome operator should observe the predetermined, internationally agreed AIRAC effective dates in addition to 14 day postage time when submitting the raw information/data to aeronautical information services that affect charts and/or computer-based navigation systems which qualify to be notified by the aeronautical information regulation and control (AIRAC) system.~~

Rationale

The AMC is deleted because it contains ICAO Standards from Chapter 2 of Annex 14, which are important for pre-flight and in-flight information and needs to be provided in a standardised manner. The content of the AMC is included in ADR.OPS.A.015 implementing rule.

GM1 ADR.OPS.A.075 Aerodrome and runway elevations

Geoid undulation is measured in accordance with the appropriate system of coordinates.



Rationale

The GM transposes the note to 2.3 Aerodrome and runway elevations in ICAO Annex 14 Chapter 2.

AMC1 ADR.OPS.A.080 Aerodrome reference temperature

The aerodrome reference temperature should be the monthly mean of the daily maximum temperatures for the hottest month of the year (the hottest month being that which has the highest monthly mean temperature). This temperature should be averaged over a period of several years.

Rationale

The AMC transposes Recommendation 2.4.2 in ICAO Annex 14, Chapter 2.

GM1 ADR.OPS.A.090(b)(1)(i);(b)(2) Strength of pavements

PUBLICATION OF PCN

- (a) If necessary, PCNs may be published to an accuracy of one-tenth of a whole number.
- (b) Different PCNs may be reported if the strength of the pavement is subject to significant seasonal variation.

Rationale

Point (a) transposes the note to ICAO Annex 14 Standard 2.6.2 and point (b) transposes the note to Standard 2.6.3.

GM1 ADR.OPS.A.090(b)(4) Strength of pavements

MODULUS OF ELASTICITY

By adopting the layered elastic analysis (LEA) within the pavement rating system, the subgrade strength categories are designated with the modulus of elasticity (E modulus).

REPORTING OF COMPOSITE OR NON-STANDARD PAVEMENTS

If the actual construction of the pavement is composite or non-standard, include a note as in Example 2 in GM1 ADR.OPS.A.090(b).

Rationale

The GM transposes the note to ICAO Annex 14 Standard 2.6.6 (a) and refers to the reporting of composite or non-standard pavements. It also provides an explanation on the abbreviation 'E' used in ADR.OPS.A.090.

GM1 ADR.OPS.A.090(b) Strength of pavements

EXAMPLES

The following examples illustrate how pavement strength data are reported under the ACN-PCN method:

Example 1



If the bearing strength of a composite pavement, behaving like a flexible pavement and resting on a high strength subgrade, has been assessed by using aircraft experience to be PCN 50 and the maximum tyre pressure allowable is 1.25 MPa, then the reported information would be:

PCN 80 / R / B / W / T

Example 2

If the bearing strength of a composite pavement, behaving like a flexible pavement and resting on a high strength subgrade, has been assessed by using aircraft experience to be PCN 50 and the maximum tyre pressure allowable is 1.25 MPa, then the reported information would be:

PCN 50 / F / A / Y / U

Note: Composite construction

Example 3

If the bearing strength of a flexible pavement, resting on a medium strength subgrade, has been assessed by technical evaluation to be PCN 40 and the maximum allowable tyre pressure is 0.80 MPa, then the reported information would be:

PCN 40 / F / B / 0.80 MPa / T

Example 4

If a pavement is subject to a B747-400 all-up mass limitation of 390 000 kg, then the reported information would include the following note:

Note.— The reported PCN is subject to a B747-400 all-up mass limitation of 390 000 kg.

Rationale

The GM provides examples of reporting the PCN values.

GM1 ADR.OPS.A.090(c)(2) Strength of pavements

PUBLICATION OF PCR

Different PCRs may be reported if the strength of the pavement is subject to significant seasonal variation.

Rationale

The GM transposes the note to ICAO Annex 14 Standard 2.6.3, as revised in Amendment 15.

GM1 ADR.OPS.A.090 (c)(4) Strength of pavements

REPORTING OF COMPOSITE OR NON-STANDARD PAVEMENTS

If the actual construction of the pavement is composite or non-standard, include a note as in Example 2 in GM1 ADR.OPS.A.090(c).

Rationale

The GM transposes the note to ICAO Annex 14 Standard 2.6.6 (a) as revised in Amendment 15.



AMC1 ADR.OPS.A.095(a) Pre-flight altimeter check location

GENERAL

A pre-flight altimeter check location should be located on an apron.

Rationale

The AMC transposes ICAO Annex 14 Recommendation 2.7.2.

GM1 ADR.OPS.A.095(a) Pre-flight altimeter check location

GENERAL

- (a) Locating a pre-flight altimeter check location on an apron enables an altimeter check to be made prior to obtaining taxi clearance and eliminates the need for stopping for that purpose after leaving the apron.
- (b) Normally an entire apron can serve as a satisfactory altimeter check location.

Rationale

The GM explains the reason for selecting the pre-flight altimeter check location on an apron. It is based on Notes 1 and 2 to ICAO Annex 14 Recommendation 2.7.2.

GM1 ADR.OPS.A.110 Disabled aircraft removal

AERODROME CAPABILITY FOR DISABLED AIRCRAFT REMOVAL

The capability of the aerodrome operator to remove a disabled aircraft may be expressed in terms of the largest type of aircraft which the aerodrome is equipped to remove.

Rationale

There is no standard method for reporting the capability of the aerodrome operator for disabled aircraft removal, however, the GM provides more information on how this could be done. The GM is based on the Note to ICAO Annex 14 Recommendation 2.10.2.

GM1 ADR.OPS.A.115(c) Disabled aircraft removal

CHANGE OF THE CATEGORY OF RESCUE AND FIREFIGHTING SERVICE

Changes in the level of protection from that normally available at the aerodrome could result from a change in the availability of extinguishing agents, equipment to deliver the agents, or personnel to operate the equipment, etc.

Rationale

The GM is based on the Note to ICAO Annex 14 Standard 2.11.3 and provides information concerning the cases where a change to the level of protection may be necessary.

~~GM1 ADR.OPS.B.001 Provision of services~~

~~SERVICES~~

~~The services included in Part B of this Annex, need to be provided at an aerodrome. In some cases, these services are not directly provided by the aerodrome operator, but by another organisation or~~

~~State entity or combination of both. However, the aerodrome operator, being responsible for the operation of the aerodrome should have arrangements and interfaces with these organisations or entities to ensure that these services are provided according to the legal requirements. The method described above meets with the intention of an integrated Safety Management System that helps the aerodrome operator to ensure the safety objective of the service provision is being met. In completing this action, the aerodrome operator should hereby been seen to discharge its responsibility by employing the procedures mentioned above, furthermore, the aerodrome operator should not be understood to be directly responsible or liable for non-compliances by another entity involved in the arrangement.~~

Rationale

The GM is deleted because the relevant implementing rule is deleted.

AMC1 ADR.OPS.B.011(a) Removal of disabled aircraft

DISABLED AIRCRAFT REMOVAL PLAN

The aerodrome operator should ensure that the disabled aircraft removal plan is based on the characteristics of the aircraft that are normally expected to operate at the aerodrome.

Rationale

See the rationale provided for ADR.OPS.B.011.

AMC2 ADR.OPS.B.011(b) Removal of disabled aircraft

ORGANISATIONS INVOLVED IN THE REMOVAL OF DISABLED AIRCRAFT

The following main organisations should be involved in the overall aircraft removal operation:

- (a) aerodrome operator;
- (b) aircraft operator or its representative.

RESPONSIBILITIES AND ACTIONS

The disabled aircraft removal plan should include defined responsibilities and the actions to be taken by the involved organisations with regards to the:

- (a) removal of a disabled aircraft or parts thereof;
- (b) notification of the aircraft accident to the safety investigation authority; and
- (c) preservation of aircraft, mail, cargo, and records.

AVAILABLE EQUIPMENT AND PERSONNEL

The list of equipment and personnel available for the removal operation at, or in the vicinity, of the aerodrome should be up to date and contain:

- (a) contact details (names, telephone numbers and e-mail address) of the personnel; and
- (b) type and location of equipment and the average time it will take to bring them to the aerodrome if located elsewhere.

Rationale

See the rationale provided for ADR.OPS.B.011.



GM1 ADR.OPS.B.011 Removal of disabled aircraft

PURPOSE OF THE DISABLED AIRCRAFT REMOVAL PLAN

An aircraft removal incident can occur at any time and in any weather conditions with varying degrees of magnitude. The removal incidents can range from minor de-bogging to major events including damaged or missing landing gear. The recovery process may take from a few hours to many days depending on the severity of the occurrence. While recovery incidents cannot be predicted, they can be anticipated and prepared for.

Disabled aircraft can interfere with the normal operations at an aerodrome, resulting in restrictions, closure of the movement area or parts of it or even the entire aerodrome.

It is therefore necessary to remove the disabled aircraft in a timely and efficient manner, taking into account safety and operational requirements (e.g. number of movements, single runway operation and other considerations), subject to the approval of the safety investigation authority.

Generally, the aerodrome operator will play a support role by assisting the aircraft owner or operator with acquiring local resources and coordinating activities on the airport. The aircraft owner or operator is ultimately responsible for removing the disabled aircraft.

Rationale

See the rationale provided for ADR.OPS.B.011.

GM2 ADR.OPS.B.011 Removal of disabled aircraft

OUTLINE OF THE DISABLED AIRCRAFT REMOVAL PLAN DOCUMENT

For an aircraft removal operation to begin and be completed as quickly as possible, all parties must be expeditiously facilitated and already have the proper procedures in place. An efficient removal operation requires sufficient planning and readily accessible recovery equipment.

An outline of a disabled aircraft removal plan is provided below. This material is intended as a guide for basic matters to be covered in the plan as well as on action to be taken by the main parties responsible for the overall aircraft removal operation.

(a) Responsibilities:

- (1) Removal of a disabled aircraft or parts thereof. Identify the person or organisation (normally the aircraft owner or operator) responsible for the removal of the aircraft and define the procedures to follow in the event of failure to comply with such directions.
- (2) Notification of the aircraft accident to the safety investigation authority. Identify the person or organisation (normally the aircraft owner or operator or, when this is not possible, the appropriate authority) responsible for notifying the accident to the safety investigation authority.
- (3) Preservation of aircraft, mail, cargo, and records. Identify the person or organisation (normally the aircraft owner or operator) responsible for preserving, to the extent possible, the aircraft and parts thereof, cargo, mail, and all records. Define the procedures to be followed when it is necessary to disturb or move the aircraft or parts thereof (i.e. photographs, marks on the ground and a diagram of the accident site).

(b) Actions required by main responsible parties:

- (1) Aerodrome operator. List the actions to be taken by the aerodrome operator when implementing the plan such as:
 - (i) issue the required NOTAM, as appropriate;



- (ii) coordinate all aerodrome operations with the air traffic services units for continuation of aircraft operations, when possible;
 - (iii) determine any obstacles in accordance with clearance criteria found in CS-ADR-DSN, and, as a result, consider whether any part of the movement area should be closed;
 - (iv) provide for security of the accident site and coordinate with the safety investigation authority on measures to be taken before the aircraft removal operation is initiated;
 - (v) provide advance vehicles and personnel to escort airline equipment to the site;
 - (vi) establish a removal command post at the site, if considered necessary;
 - (vii) inspect all areas prior to resumption of normal aircraft operations;
 - (viii) convene a removal operation debriefing of all interested parties. The debriefing may include a review of safety investigation authority requirements, the coordinator's chronological report, and a discussion of the procedures and equipment used during the recovery operation. It may be desirable that all aircraft operators, especially those operating the same type of equipment, be invited to attend; and
 - (ix) amend the disabled aircraft removal plan to overcome problems identified from the above paragraph.
- (2) Aerodrome coordinator of disabled aircraft removal operations. List the actions that are expected to be taken by the aerodrome coordinator when implementing the plan such as:
- (i) convene a meeting with the aircraft operator representative, safety investigation authority, representatives of resident oil companies, heavy equipment contractors and other parties, as necessary, to discuss the most appropriate removal operation and agree upon a broad plan of actions:
 - escort routes between the aircraft operator's area and the accident site;
 - defueling to lighten the mass of the aircraft;
 - requirements and availability of equipment for the removal of the aircraft;
 - use of the aerodrome and aircraft operator's equipment;
 - dispatch of aircraft operator ancillary support devices to the scene;
 - weather conditions, particularly when a crane-lifting or pneumatic lifting-bag operation is necessary;
 - lighting of the site;
 - a contingency plan, should difficulties develop in the initial plan; and
 - (ii) provide for a rescue and fire fighting vehicle, when necessary;
 - (iii) supervise the aerodrome personnel and equipment assigned to the removal operation;
 - (iv) make decisions on behalf of the aerodrome operator, as necessary, to expedite the removal of the disabled aircraft;
 - (v) report further penetrations of the obstacle limitation surfaces due to the manoeuvring of cranes or other equipment during the lifting of the aircraft;

- (vi) monitor weather forecasts;
 - (vii) maintain a chronological summary of the removal operation;
 - (viii) have photographs of the removal operation taken where possible;
 - (ix) where excavations are necessary, check with the appropriate aerodrome maintenance services for underground utilities;
 - (x) keep the aerodrome operator and other aircraft operators informed of the progress of the aircraft removal operations; and
 - (xi) participate in the removal operation debriefing.
- (3) Aircraft operator. List the actions that are expected to be taken by the aircraft operator when implementing the plan such as:
- (i) arrange for portable stairs and removal of mail, baggage and cargo; it being understood that authority to remove these items must be secured from the safety investigation authority;
 - (ii) designate one representative with the authority to make all technical and financial decisions necessary to remove the aircraft;
 - (iii) consider designating of a representative to answer any questions from the press and to issue press releases as may be appropriate; and
 - (iv) participate in the removal operation debriefing.
- (4) Aircraft operator's representative. List the action to be taken by the aircraft operator's representative when implementing the plan such as:
- (i) implement the aircraft operator's removal plan for such an emergency;
 - (ii) meet with the aerodrome coordinator, safety investigation authority and other parties, as necessary, to develop a comprehensive plan for the removal of the aircraft;
 - (iii) decide on the need for consultation with aircraft airframe and engine manufacturers or other aircraft operator representatives experienced in such accidents; and
 - (iv) participate in the removal operation debriefing.
- (c) Equipment, personnel, and facilities
- (1) Equipment and personnel available.
- List the equipment (including information on the type and location of heavy equipment or special units needed and the average time it will take to get them to the airport) and the contact details of the personnel on or in the surrounding of the airport that would be available for the removal operation.
- Most airports find it economically impossible to store all the equipment necessary for the removal of a disabled aircraft. It has been generally agreed that the most feasible approach to the problem is to prepare a plan for the removal of a disabled aircraft and to make arrangements with other aerodromes for pooling the required specialised equipment. Aircraft operators have made arrangements so as to make specialised equipment available on short notice on a worldwide basis, and kits have been strategically placed around the world.
- In addition to the contact details, include information on the availability of human resources for road-making and other duties. The personnel involved in the removal of

disabled aircraft possess a level of proficiency that allows them to control a safe aircraft removal operation aircraft.

- (2) Access routes. Include information on access routes to any part of the aerodrome including, if required, special routes for cranes to avoid power lines. A grid map may be useful for this purpose.
- (3) Security. Define a means of maintaining security for the aircraft removal operation.
- (4) Aircraft removal equipment kits. Describe arrangements for the rapid receipt of aircraft removal equipment kits available from other airports.
- (5) Aircraft data. Describe arrangements to make available, at the aerodrome, manufacturer's data pertaining to aircraft removal for the various types of aircraft that normally use the aerodrome.
- (6) Aircraft defueling. Describe arrangements with the resident oil companies to ensure that the defueling, storage, and disposal of the aircraft fuel, including contaminated fuel, can be done at short notice.
- (7) Responsible representatives. List names, addresses, and telephone numbers of responsible representatives of each aircraft operator, as well as of the nearest representatives of aircraft and engine manufacturers.

Rationale

See the rationale provided for ADR.OPS.B.011.

GM3 ADR.OPS.B.011 Removal of disabled aircraft

TESTING OF THE DISABLED AIRCRAFT REMOVAL PLAN

The disabled aircraft removal plan may be tested as part of the emergency plan training cycle according to ADR.OPS.B.005, in the form of a partial and/or tabletop exercise.

Rationale

See the rationale provided for ADR.OPS.B.011.

AMC1 ADR.OPS.B.070(c)(1) Aerodrome works safety

WORK PLANNING PROCEDURE

- (a) The aerodrome operator should ensure that the work planning procedure provides for the planning and coordination of works on the movement area;
- (b) The aerodrome operator, during the planning process, should involve, where appropriate, affected stakeholders such as air traffic services providers, organisations responsible for the provision of AMS, if established, aircraft operators and organisations responsible for the provision of groundhandling services to review the requirements for the safe operations of the aerodrome during the proposed works.

Rationale

The proposed AMC is based on provision 4.3.2 in Chapter 4 (Work in progress) of ICAO Doc 9981 'PANS-Aerodromes'.



AMC1 ADR.OPS.B.070(c)(2) Aerodrome works safety

SAFETY ASSESSMENT OF PLANNED CHANGES

- (a) The aerodrome operator should:
- (1) complete beforehand, in coordination with the affected organisations, a safety assessment of all planned works to ensure that the risks to the safe operation of aircraft have been identified and appropriate measures are introduced to keep risks as low as reasonably practicable;
 - (2) document and make available to all affected organisations involved in the works or affected by any change in operations, the relevant procedures, actions, and decisions; and
 - (3) verify, before implementation, that draft operational procedures, instructions, or other information to be promulgated are appropriate and correct.
- (b) Regular maintenance works maybe covered by a general safety assessment that covers the respective maintenance.

Rationale

The AMC is based on provisions 4.3.3. and 4.3.4 in Chapter 4 (Work in progress) of ICAO Doc 9981 'PANS-Aerodromes'. Furthermore point (b) clarifies that regular maintenance works may be subject to a general safety assessment that covers the respective maintenance activity.

AMC1 ADR.OPS.B.070(c)(3) Aerodrome works safety

WORKS AUTHORISATION

- (a) The aerodrome operator, prior to the commencement of works, should provide a works authorisation document to the party conducting the works.
- (b) The authorisation document should contain specific permissions and conditions, which are already agreed between the aerodrome operator and the involved organisations. The party conducting the works should communicate the document to any sub-contractors involved.

Rationale

The AMC is based on provision 4.3.7 in Chapter 4 (Work in progress) of ICAO Doc 9981 'PANS-Aerodromes'.

GM1 ADR.OPS.B.070(c)(3) Aerodrome works safety

WORKS AUTHORISATION

The works authorisation procedure refers to the aerodrome operator approval for the commencement of works.

AMC1 ADR.OPS.B.070(c)(5) Aerodrome works safety

PROCEDURE FOR WORKSITE ESTABLISHMENT AND RETURN TO AIRCRAFT OPERATIONS

MARKING AND LIGHTING OF UNSERVICEABLE AREAS

- (a) The aerodrome operator should ensure that:



- (1) unserviceability markers are displayed whenever any portion of a taxiway, apron, or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely;
- (2) on a movement area used at night, unserviceability lights should be used;
- (3) unserviceability markers and lights are placed at intervals sufficiently close so as to delineate the unserviceable area. When lights are used to mark temporary unserviceable areas at night or during reduced visibility conditions, these lights should mark the extremities of the area. A minimum of four such lights should be used, except where the area is triangular in shape where a minimum of three lights may be used. The number of lights should be increased when the area is large or of unusual configuration. At least one light should be installed for each 7.5 m of peripheral distance of the area. If the lights are directional, they should be orientated so that, as far as possible, their beams are aligned in the direction from which aircraft or vehicles will approach. Where aircraft or vehicles will normally approach from several directions, consideration should be given to adding extra lights or using omnidirectional lights to show the area from these directions.
- (4) unserviceability markers consist of conspicuous upstanding devices such as flags, cones, or marker boards;
- (5) unserviceability markers and lights meet the specifications described in [CS ADR.DSN.R.870](#);
- (6) existing markings leading into a worksite are masked or the route is closed; and
- (7) existing aeronautical ground lighting and signs leading into the worksite are extinguished or masked on the movement area when used at night or low visibility.

CLOSED RUNWAYS AND TAXIWAYS, OR PARTS THEREOF

- (b) The aerodrome operator should ensure that:
 - (1) 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;
 - (2) on a runway, a closed marking is placed at each end of the runway, or portion thereof, declared closed, and additional markings are so placed that the maximum interval between markings does not exceed 300 m. On a taxiway, a closed marking is placed at each end of the taxiway or portion thereof closed;
 - (3) when a runway, or a taxiway, or portion thereof is permanently closed, all normal runway and taxiway markings are obliterated;
 - (4) lighting on a closed runway or taxiway, or a portion thereof is not operated, except as required for maintenance purposes; and
 - (5) 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.

WORKSITE RETURN TO OPERATIONAL USE

- (c) The procedure for returning the worksite to operational use should include at least the following:
 - (1) the removal from the worksite of personnel, vehicles, plants and unserviceability lights and markers;



- (2) the inspection of the affected areas for operational serviceability including the condition of pavements, signs and markings, presence of FOD or surface contaminants such as dirt, sand, or loose objects; and
- (3) the notification of relevant authorities or affected organisations, using suitable means of communication, including the cancellation of relevant NOTAMs.
- (4) the use of appropriate checklists to record relevant actions.

RUNWAY PAVEMENT OVERLAYS

(d) The aerodrome operator should ensure that:

- (1) 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:
 - (i) 0.5 to 1.0 % for overlays up to and including 5 cm in thickness; and
 - (ii) not more than 0.5 % for overlays more than 5 cm in thickness.
- (2) 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.
- (3) The location of any temporary threshold should be identified by a 3.6-m wide transverse stripe.

Rationale

The AMC consolidates the existing AMC2 ADR.OPS.B.070, AMC3 ADR.OPS.B.070 and AMC4 ADR.OPS.B.070. In addition, it elaborates further on the content of the procedure to return worksite to operational use.

AMC1 ADR.OPS.B.070(c)(6) Aerodrome works safety

MONITORING, OVERSIGHT AND CONTROL OF WORKS

- (a) The aerodrome operator should hold prior to start-up and during the works, regular site meetings to ensure that safety requirements are met and possible conflicts between the works and operations are resolved. Meetings should be documented. The following points should be considered:
 - (1) safety awareness in relation to work on the movement area;
 - (2) protection of construction workers from aerodrome hazards, including jet blast;
 - (3) procedure for quickly summoning emergency responders in case of a fire, spill, accident, or similar event; and
 - (4) operational briefings on the interaction of the works with the aerodrome operations (e.g. runway(s) in use, expected visibility conditions, meteorological conditions, safety issues).
- (b) The worksite control procedure established by the aerodrome operator should include, but not limited, the following:
 - (1) all contractor's drivers should be escorted by a qualified vehicle operator or undergo appropriate driver training and testing in accordance with ADR.OPS.B.024;
 - (2) access routes should be agreed upon in advance and clearly identified to minimise interference with operations on the aerodrome;
 - (3) possible changes to the existing road layout depending on the vehicle traffic levels;



- (4) designation of staff access routes and if such routes do not exist, then a safety risk assessment should be conducted to ensure that access can be safely achieved;
 - (5) hours of operation of the works;
 - (6) any service clearance checks (underground location of services) that needs to be undertaken before work commences to ensure that cables or pipes are not damaged;
 - (7) smoking restrictions;
 - (8) description, monitoring and enforcement of hot work restrictions (possibly involving a separate hot works permit);
 - (9) the requirement to use of lookouts and/or listening watch on the appropriate ATS frequency;
 - (10) if cranes are used, appropriate lighting and operating height restrictions to avoid infringement of obstacle limitation surfaces, obstacle protection surfaces, interference with radio navigation aids, surface movement radar and line of sight of ATS tower;
 - (11) procedures for crossing taxiways, if required;
 - (12) adequate FOD and dust control measures that should be taken by all contractors to cover all eventualities;
 - (13) requirement for vehicles entering or leaving the worksite to be cleaned to prevent mud or debris being deposited in the movement area;
 - (14) provision of an appropriate alerting mechanism to suspend work activities, in case of possible adverse meteorological conditions (e.g. lightning strikes, strong winds, snow) or aircraft emergencies;
 - (15) measures to ensure that worksite floodlighting (light direction and/or height) does not affect aircraft and ATS operation.
- (c) Where significant changes to markings or lightings are being made, the aerodrome operator should conduct a preliminary check to ensure that the changes have been correctly implemented and are functioning as intended.
- (d) The aerodrome operator should obtain feedback from the parties involved to ensure the implementation of corrective actions, if necessary.
- (e) The aerodrome operator should ensure that contractors have made available a point-of-contact outside normal working hours.

Rationale

The AMC is based on Appendix 2 to Chapter 4 (Work in progress) of ICAO Doc 9981 'PANS-Aerodromes'.

AMC1 ADR.OPS.B.070 Aerodrome works safety

GENERAL

- ~~(a) The procedures should be appropriate to the volume and nature of operations at the aerodrome.~~
- ~~(b) Construction or maintenance work on the movement area, or work affecting aerodrome operations should be planned, established, implemented, or approved by the aerodrome operator.~~
- ~~(c) The scope of work, physical extent, and time period should be notified to concerned relevant parties. If such work will render limitations to the use of a particular runway, additional measures should be implemented to ensure safety.~~



- ~~(d) — Roles and responsibilities for operations and tasks associated with the reduction of runway length available and the work-in-progress (WIP) are clearly understood and complied with.~~
- ~~(e) — The aerodrome operator should put in place appropriate measures to monitor the safety of the aerodrome and aircraft operations during aerodrome works such that timely corrective action is taken when necessary to assure continued safe operations.~~
- ~~(f) — The aerodrome operator should ensure the works site is returned to operational use in a safe and timely manner by ensuring:
 - ~~(1) — the works site is cleared of personnel, vehicles, and plant in a safe and timely manner;~~
 - ~~(2) — The works affected area is inspected for operational serviceability in accordance with the hand-back procedures; and~~
 - ~~(3) — relevant authorities or organisations are notified of the restoration of aerodrome serviceability in accordance with procedures, using suitable means of communication.~~~~

Rationale

The AMC is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(1), AMC1 ADR.OPS.B.070(c)(2), AMC1 ADR.OPS.B.070(c)(3) and AMC1 ADR.OPS.B.070(c)(6).

AMC2 ADR.OPS.B.070 Aerodrome works safety

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) — 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.~~
- ~~(c) — The location of any temporary threshold should be identified by a 3.6 m wide transverse stripe.~~

Rationale

The AMC is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(5).

AMC3 ADR.OPS.B.070 Aerodrome works safety

MARKING AND LIGHTING OF UNSERVICEABLE AREAS

- ~~(a) — The aerodrome operator should ensure that:
 - ~~(1) — unserviceability markers are displayed whenever any portion of a taxiway, apron, or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely;~~
 - ~~(2) — on a movement area used at night, unserviceability lights should be used; and~~
 - ~~(3) — Unserviceability markers and lights are placed at intervals sufficiently close so as to delineate the unserviceable area.~~~~



- ~~(b) — Unserviceability markers should consist of conspicuous upstanding devices such as flags, cones, or marker boards.~~
- ~~(c) — Unserviceability markers and lights should meet the specifications described in CS-ADR-DSN.R.870.~~

Rationale

The AMC is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(5).

AMC4 ADR.OPS.B.070 Aerodrome works safety

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.~~

Rationale

The AMC is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(5).

GM1 ADR.OPS.B.070 Aerodrome works safety

MAINTENANCE WORKS

- ~~(a) — Persons or sections entering the movement area to perform maintenance should have a written approval by the aerodrome operator.~~
- ~~(b) — Entrance to the movement area should be subject to clearance by the unit responsible for that area (ATC, apron management, aerodrome operator, etc.) using appropriate means (R/T, telephone, etc.).~~
- ~~(c) — Individuals carrying out maintenance works should comply with local rules concerning the control and operation of vehicles in the movement area.~~

Rationale

The GM is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(1), AMC1 ADR.OPS.B.070(c)(2), AMC1 ADR.OPS.B.070(c)(3) and AMC1 ADR.OPS.B.070(c)(6).

GM2 ADR.OPS.B.070 Aerodrome works safety

MINOR CONSTRUCTION/MAINTENANCE WORK

- ~~(a) — A system of work permits should be established for minor works on the movement area.~~
- ~~(b) — The objectives of the work permits should be such that:~~



- ~~(1) — no work is taking place on the movement area without the knowledge of aerodrome operator's staff and air traffic services;~~
- ~~(2) — permitted times of work are strictly followed; and~~
- ~~(3) — all individuals taking part in the work are briefed in detail on the following:
 - ~~(i) — precise areas in which work may be done;~~
 - ~~(ii) — the routes to be followed to and from the working area;~~
 - ~~(iii) — the R/T procedures to be used;~~
 - ~~(iv) — the safety precautions to be observed, the maintenance of a listening watch and the use of look-outs; and~~
 - ~~(v) — the reporting procedure to be followed on completion of work.~~~~
- ~~(c) — At the conclusion of work, aerodrome operator's staff, or other appropriate staff, should inspect the working area to ensure that it has been left in a satisfactory condition.~~

Rationale

The GM is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(1), AMC1 ADR.OPS.B.070(c)(2), AMC1 ADR.OPS.B.070(c)(3) and AMC1 ADR.OPS.B.070(c)(6).

GM3-ADR.OPS.B.070-Aerodrome works safety

MAJOR CONSTRUCTION/MAINTENANCE WORK

- ~~(a) — Before the commencement of any substantial work on the movement area, a liaison group comprising representatives from the aerodrome operator, air traffic services, apron management services, if applicable, and subcontractors' agents should be established.~~
- ~~(b) — The group could meet, as often as considered necessary, to review progress, and consider the need for any change in working practices to meet operational requirements.~~
- ~~(c) — As far as practicable, working areas should be blocked off from the active parts of the movement area by the erection of physical barriers.~~
- ~~(d) — Consideration should be given to the marking and lighting of barriers.~~
- ~~(e) — The lights of taxiways leading into working areas should be permanently 'off'.~~
- ~~(f) — Before works commence, the following should be established:
 - ~~(1) — the hours of work;~~
 - ~~(2) — the authorised routes;~~
 - ~~(3) — the communications facilities to be used;~~
 - ~~(4) — the permitted heights of vehicles and equipment, and the limitations to be placed on operating heights of cranes; and~~
 - ~~(5) — any limitation to be placed on use of electrical equipment which might cause interference with navigational facilities or aircraft communications.~~~~
- ~~(g) — Contractors should be briefed for possible hazards to personnel working on aerodromes, in particular the jet blast problem and noise.~~
- ~~(h) — Where contractors work on or traverse aircraft pavement areas, these areas should be inspected thoroughly before they are opened again for aircraft use, with particular attention to the presence of debris and the general cleanliness of the surface.~~



- ~~(i) — Where aircraft are constantly using areas open to contractors, inspections at frequent intervals are required to ensure the continuing operational safety of the aerodrome.~~
- ~~(j) — Adequate marking arrangements should be provided for crane jibs when extra conspicuity is considered desirable.~~
- ~~(k) — If work is of prolonged duration, a constant watch is required to ensure that the marking and lighting of obstacles and unserviceable areas does not degrade below acceptable limits.~~
- ~~(l) — The effect of tall cranes on ILS and radar, in conjunction with those responsible for electronic landing aids and steps taken to reduce limitations to the minimum, should be considered.~~

Rationale

The GM is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(1), AMC1 ADR.OPS.B.070(c)(2), AMC1 ADR.OPS.B.070(c)(3) and AMC1 ADR.OPS.B.070(c)(6).

GM4 ADR.OPS.B.070 Aerodromes works safety

USE OF UNSERVICEABILITY LIGHTS

~~When lights are used to mark temporary unserviceable areas at night or during reduced visibility conditions, these lights mark the most potentially dangerous extremities of the area. A minimum of four such lights could be used, except where the area is triangular in shape where a minimum of three lights may be employed. The number of lights may be increased when the area is large or of unusual configuration. At least one light should be installed for each 7.5 m of peripheral distance of the area. If the lights are directional, they should be orientated so that, as far as possible, their beams are aligned in the direction from which aircraft or vehicles will approach. Where aircraft or vehicles will normally approach from several directions, consideration should be given to adding extra lights or using omnidirectional lights to show the area from these directions. Unserviceable area lights should be frangible. Their height should be sufficiently low to preserve clearance for propellers and for engine pods of jet aircraft.~~

Rationale

The GM is deleted and its content is transferred to AMC1 ADR.OPS.B.070(c)(5), point (a)(3).

GM51 ADR.OPS.B.070(c)(5) Aerodrome works safety

USE OF TEMPORARY RUNWAY MARKINGS

- (a) Circumstances may occur when it is not practicable to install permanent markings, for example during runway resurfacing. ~~In order to~~ provide sufficient visual guidance to aircraft, the following markings ~~should be~~ are considered:
 - (1) runway centre line;
 - (2) taxiway centre line lead on/off;
 - (3) runway edge line;
 - (4) runway threshold; and
 - (5) touchdown zone and aiming point markings.
- (b) Centre line and edge marking widths can be replaced by temporary markings of reduced width from 0.9 m to 0.6 m, if required.
- (c) Touchdown zone and aiming point markings ~~should be~~ are painted as soon as possible after the resurface of the runway.



- (d) Threshold markings ~~should be~~ are painted as soon as possible, using temporary materials before making them permanent.

Rationale

Change of numbering.

AMC1 ADR.OPS.B.070(d) Aerodrome works safety

PROCEDURE FOR REDUCED RUNWAY LENGTH OPERATIONS

- (a) The procedure for reduced runway length operations, when works require the reduction of the declared distances should include the following:
- (1) the identification and assessment of the associated risks and mitigation, as necessary, of the potential hazards before, during, and on cessation of operations with reduced declared distances available and works-in-progress to ensure the safety of aircraft operations;
 - (2) the calculation and establishment, where necessary, of a revised runway strip, runway safety area (RESA) and obstacle limitation surfaces, such as the approach and take-off climb surfaces;
 - (3) the establishment of a safety zone between the area of the runway that is in use and the worksite or unusable runway;
 - (4) the promulgation of the details of the reduced declared distances in accordance with ADR.OPS.A.057 and, when possible, the broadcast of the information on automatic terminal information service (ATIS); and
 - (5) the assessment and mitigation of the impact on the ability of rescue and firefighting and emergency services to perform their functions.
- (b) The aerodrome operator, in cooperation with air traffic services, should be responsible to coordinate and manage the opening and closing of the runway and other parts of the movement area, as necessary, and the worksite.
- (c) The aerodrome operator should coordinate and approve any tactical decision concerning aircraft operations, which deviate from the agreed operational procedures, with the exception of an urgent safety nature.
- (d) The aerodrome operator should be responsible to monitor the safety of aerodrome and aircraft operations in the proximity of the worksite, to ensure that timely and corrective action is taken, when necessary.

Rationale

The AMC is based on Appendix 1 to Chapter 4 (Works in progress) of ICAO Doc 9981 'PANS-Aerodromes'.

GM1 ADR.OPS.B.070(d) Aerodrome works safety

RISKS RELATED TO REDUCED RUNWAY LENGTH OPERATIONS

Risks may result from inappropriate or potentially misleading display of visual aids, inappropriate or potentially misleading navigational aids, adverse environmental conditions or unusual meteorological conditions, and from restricted obstacle clearance and wingtip separation distances. Identified hazards may cover a wide range of topics, including those that do not pose a risk only to aircraft but also to personnel, e.g. the potential risk from jet blast.



Rationale

The content of the GM is based on the Note to point 1.1(a) of Appendix 1 to Chapter 4 (Works in progress) of ICAO Doc 9981 'PANS-Aerodromes'.

GM2 ADR.OPS.B.070(d) Aerodrome works safety

SAFETY ZONES

The location, size, and shape of the safety zone depends on the temporary configuration of the runway, to provide for items such as RESA, jet blast protection and abbreviated or simple approach lighting system.

Rationale

The content of the GM is based on the Note to point 1.1(c) of Appendix 1 to Chapter 4 (Works in progress) of ICAO Doc 9981 'PANS-Aerodromes'.

AMC1 ADR.OPS.B.090 Use of the aerodrome by **higher code letter** aircraft exceeding the certified design characteristics of the aerodrome

ELEMENTS TO BE ASSESSED

- (a) The aerodrome operator should assess the characteristics of the aircraft that exceed the code letter and/or outer main gear wheel span and their related impact as follows:
- (1) Wingspan
 - (i) taxiway/taxilane separation distances (including runway/taxiway separation distances);
 - (ii) the dimensions of the OFZ;
 - (iii) the location of the runway-holding position (due to the impact of the wingspan on OFZ dimensions);
 - (iv) the dimensions of aprons and holding bays;
 - (2) Outer main gear wheel span
 - (i) runway width;
 - (ii) the dimensions of turn pads;
 - (iii) taxiway width;
 - (iv) taxiway fillets;
 - (v) the dimensions of aprons and holding bays; and
 - (vi) the dimension of the OFZ.
 - (3) Wheel base
 - (i) the dimensions of turn pads;
 - (ii) taxiway fillets;
 - (iii) the dimensions of aprons and holding bays; and aeroplane stands.
 - (4) Fuselage length



- (i) the dimensions of the movement area (taxiway, holding bays, and aprons);
 - (ii) the aerodrome category for RFF;
 - (iii) ground movement and control (e.g. reduced clearance behind a longer aeroplane holding at an apron or a runway/intermediate holding position to permit the passing of another aeroplane);
 - (iv) de-icing facilities; and
 - (v) clearances at the aircraft stand.
- (5) Fuselage width
- (i) aerodrome category for RFF
- (6) Fuselage height
- (7) Nose characteristics
- (i) location of the runway-holding position
- (8) Tail height
- (i) the location of the runway-holding position;
 - (ii) ILS critical and sensitive areas: In addition to the tail height of the critical aeroplane, tail composition, tail position, fuselage height and length can have an effect on ILS critical and sensitive areas;
 - (iii) de-icing/anti-icing facilities;
 - (iv) aeroplane parking position (in relation to aerodrome OLS);
 - (v) runway/parallel taxiway separation distances; and
 - (vi) the clearance of any aerodrome infrastructure or facilities built over stationary or moving aeroplanes.
- (9) Wing tip vertical clearance
- (i) taxiway separation distances with height-limited objects;
 - (ii) apron and holding bay clearances with height-limited objects;
 - (iii) aerodrome signage clearances;
 - (iv) service road locations; and
 - (v) aerodrome maintenance services (e.g. snow removal);
- (10) Cockpit view (cockpit height, cockpit cut-off angle and the corresponding obscured segment)
- (i) runway visual references (aiming point);
 - (ii) runway sight distance;
 - (iii) taxiing operations on straight and curved sections;
 - (iv) markings and signs on runways, turn pads, taxiways, aprons and holding bays;
 - (v) lights: in low visibility conditions, the number and spacing of visible lights when taxiing may depend on the cockpit view; and
 - (vi) calibration of PAPI/VASIS (pilot eye height above wheel height on approach).
- (11) Distance from the pilot's eye position to the nose landing gear



- (i) taxiway fillets (wheel track);
 - (ii) the dimensions of aprons and holding bays; and
 - (iii) the dimensions of turn pads.
- (12) Main landing gear layout
- (i) aerodrome pavement system.
- (13) Gear steering system
- (i) dimensions of turn pads and the dimensions of aprons and holding bays
- (14) Maximum aeroplane mass;
- (i) the mass limitation on existing bridges, tunnels, culverts and other structures under runways and taxiways;
 - (ii) disabled aeroplane removal; and
 - (iii) arresting systems when provided as an element of kinetic energy.
- (15) Landing gear geometry, tyre pressure and aircraft classification number (ACN) values;
- (i) aerodrome pavement and associated shoulders.
- (16) Engine characteristics
- (i) runway shoulder width and composition (jet blast and ingestion issues during take-off and landing)
 - (ii) shoulder width and composition of runway turn pads;
 - (iii) taxiway shoulder width and composition (jet blast and ingestion issues during taxiing);
 - (iv) bridge width (jet blast under the bridge);
 - (v) dimensions and location of blast protection fences;
 - (vi) location and structural strength of signs;
 - (vii) characteristics of runway and taxiway edge lights;
 - (viii) separation between aeroplanes and adjacent ground service personnel, vehicles or passengers;
 - (ix) design of engine run-up areas and holding bays;
 - (x) design and use of functional areas adjacent to the manoeuvring area;
 - (xi) snow removal procedures;
 - (xii) engine geometry
 - (A) number of engines;
 - (B) location of engines (span and length);
 - (C) vertical clearance of engines;
 - (D) vertical and horizontal extent of possible jet blast or propeller wash.
 - (xiii) engine airflow
 - (A) idle, breakaway and take-off thrust exhaust velocities;
 - (B) thrust reverser fitment and flow patterns;



(C) inlet suction effects at ground level.

(17) Maximum passenger and fuel carrying capacity

- (i) aerodrome emergency planning;
- (ii) aerodrome rescue and fire fighting; and

(18) Flight performance;

- (i) runway width;
- (ii) runway length;
- (iii) the OFZ;
- (iv) runway/taxiway separation;
- (v) aiming point marking.

~~When assessing the possibility of operation of aircraft whose code letter is higher than the code letter of the aerodrome reference code, the aerodrome operator should, amongst other issues, assess the impact of the characteristics of the aircraft on the aerodrome, its facilities, equipment and its operation, and vice versa.~~

~~Aircraft characteristics to be assessed include, but are not limited to:~~

- ~~(a) fuselage length;~~
- ~~(b) fuselage width;~~
- ~~(c) fuselage height;~~
- ~~(d) tail height;~~
- ~~(e) wingspan;~~
- ~~(f) wing tip vertical clearance;~~
- ~~(g) cockpit view;~~
- ~~(h) distance from the pilot's eye position to the nose landing gear and to the main landing gear;~~
- ~~(i) outer main gear wheel span;~~
- ~~(j) wheelbase;~~
- ~~(k) main gear steering system;~~
- ~~(l) landing gear geometry;~~
- ~~(m) engine data;~~
- ~~(n) flight performance; and~~
- ~~(o) technology evolution.~~

Rationale

See the rationale provided for ADR.OPS.B.090.

GM1 ADR.OPS.B.090 Use of the aerodrome by aircraft exceeding the certified design characteristics of the aerodrome

CERTIFIED AERODROME DESIGN CHARACTERISTICS



In accordance with ADR.AR.C.035 the certificate is considered to include the aerodrome's certification basis, the aerodrome manual, and, if relevant, any other operating conditions or limitations prescribed by the Competent Authority and any Deviation Acceptance and Action Documents (DAAD).

Rationale

See the rationale provided for ADR.OPS.B.090.

GM2 ADR.OPS.B.090 Use of the aerodrome by aircraft exceeding the certified aerodrome design characteristics

WHEEL BASE

The clearance distance on a runway turn pad or on a taxiway is determined with regard to the dimensions of the outer main gear wheel span (OMGWS). For aeroplanes with an OMGWS between 6 m up to but not including 9 m, the clearance distance on a runway turn pad or on a curved portion of a taxiway is determined with regards to the OMGWS but with a further differentiation in reference to the wheel base (see CS ADR-DSN.B.095, CS ADR-DSN.D.240, and additionally CS ADR-DSN.D.250 and CS ADR-DSN.D.255). ADR.OPS.B.090 is also applicable in this case.

Rationale

See the rationale provided for ADR.OPS.B.090.

GM13 ADR.OPS.B.090 Use of the aerodrome by ~~higher code letter~~ aircraft exceeding the certified design characteristics of the aerodrome

ELEMENTS TO BE ASSESSED – AIRCRAFT CHARACTERISTICS

- (1) Wingspan
 - (i) wake turbulence;
 - (ii) gate selection;
 - (iii) aerodrome maintenance services around the aeroplane;
 - (iv) equipment for disabled aeroplane removal; and
 - (v) de-icing.
- (2) Wheel base
 - (i) terminal areas
- (3) Fuselage length
 - (i) passenger gates and terminal areas;
- (4) Fuselage height, in particular door sill height
 - (i) the operational limits of the air bridges;
 - (ii) mobile steps;
 - (iii) catering trucks;
 - (iv) persons with reduced mobility;
 - (v) dimensions of the apron.
- (5) Tail height
 - (i) the dimensions of aeroplane maintenance services;
- (6) Maximum aeroplane mass



- (i) wake turbulence.
- (7) Engine characteristics
 - (i) design of air bridges; and
 - (ii) location of refuelling pits on the aircraft stand.The engine characteristics include engine geometry and engine airflow characteristics, which may affect the aerodrome infrastructure as well as ground handling of the aeroplane and operations in adjacent areas which are likely to become affected by jet blast.
- (8) Maximum passenger and fuel carrying capacity
 - (i) terminal facilities;
 - (ii) fuel storage and distribution;
 - (iii) air bridge loading configuration.
- (9) Flight performance
 - (i) wake turbulence;
 - (ii) noise.

ADDITIONAL ELEMENTS TO BE ASSESSED - AIRCRAFT GROUND SERVICING REQUIREMENTS

The following non-exhaustive list of aircraft ground servicing characteristics and requirements may affect the available aerodrome infrastructure:

- (a) ground power;
- (b) passengers embarking and disembarking;
- (c) cargo loading and unloading;
- (d) fuelling;
- (e) pushback and towing;
- (f) de-icing;
- (g) taxiing and marshalling;
- (h) aeroplane maintenance;
- (i) RFF;
- (j) equipment areas;
- (k) stand allocation; and
- (l) disabled aircraft removal.

Each assessment is specific to a particular type of aircraft and to a particular operational context. The assessment may require a review of the obstacle limitation surfaces at an aerodrome as described in Chapter H and J of CS-ADR-DSN. At aerodromes where low visibility operations are implemented, additional procedures may be implemented to safeguard the operation of aircraft. Additional processes that ensure suitable measures are in place to protect the signal produced by the ground-based radio navigation equipment may be necessary at aerodromes with precision instrument approaches.

Further guidance on this issue is contained in ICAO Circular 305-AN/177 and ICAO Circular 301-AN/174.

In any case, the elements that have to be taken into account for the safety assessment are, without prejudice to other assessments that may have to be conducted, in accordance with other applicable requirements contained in Part-ADR.OPS.

Such assessments should include, but are not limited to:

- (a) the aircraft mass, tire pressure and ACN values — with regard to overload operations; and



~~(b) — maximum passenger and fuel carrying capacity — with regard to level of RFFS protection to be provided and the aerodrome emergency planning.~~

Rationale

See the rationale provided for ADR.OPS.B.090.

GM1 ADR.OPS.B.095(b) Designation of hot spots

STRATEGIES TO MITIGATE THE RISK OF HOT SPOT(S)

Strategies to manage and mitigate the risk from hot spots, depending on the case, include, but are not limited to the following:

- (a) awareness campaigns;
- (b) additional visual aids (signs, markings, and lighting);
- (c) establishment of alternative routings;
- (d) introducing changes to the design of parts of the aerodrome; and
- (e) the mitigation of blind spots in the aerodrome control tower.

Rationale

The GM is based on the content of GM3 ADR.OR.D.027, which is deleted.

GM1 ADR.OPS.B.095(c) Designation of hot spot(s)

EXAMPLES OF HOT SPOT(S) CHARTS

Examples of how hot spots are shown on charts are provided in Figures 1, 2, and 3 below.



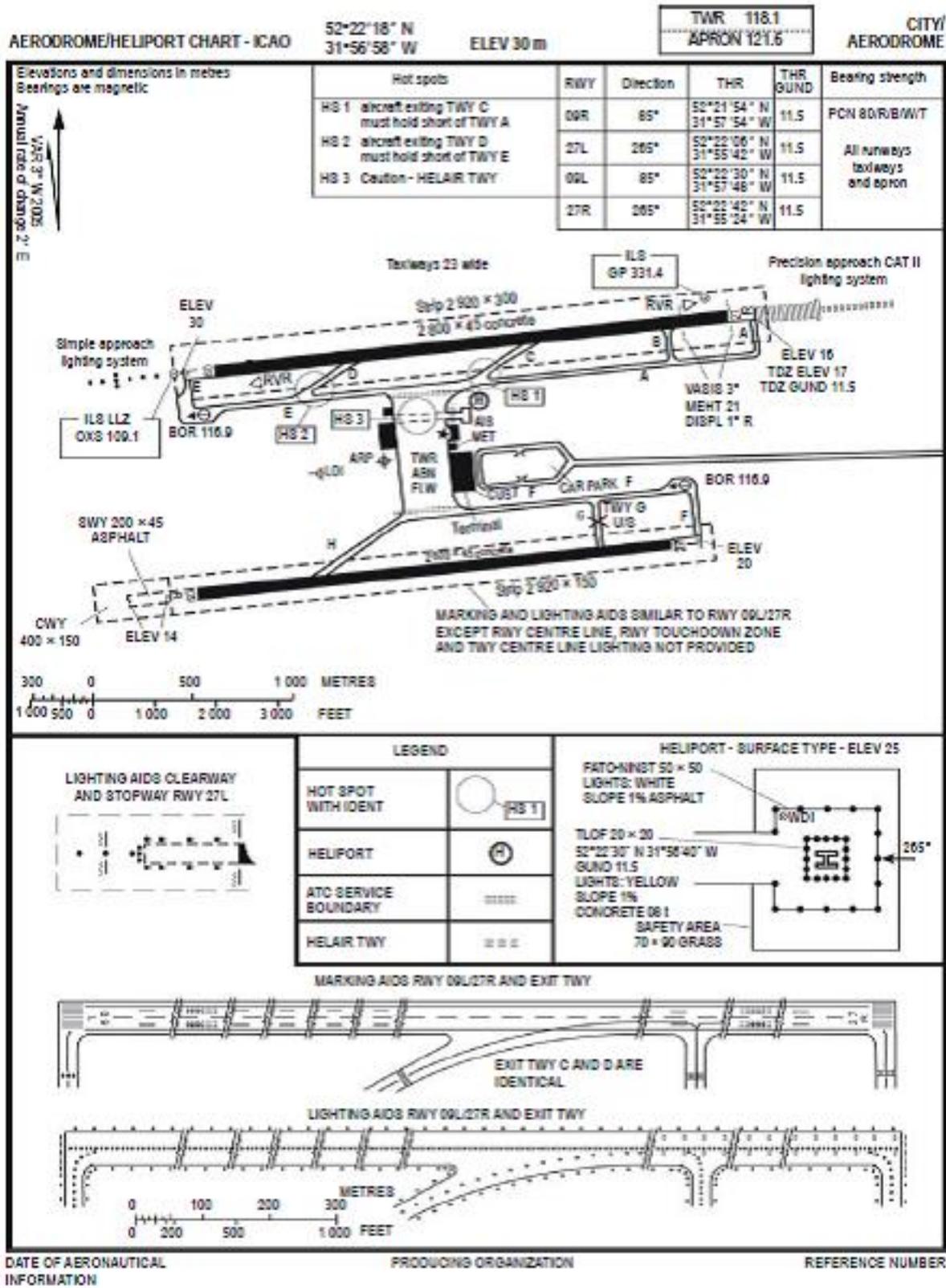


Figure 1

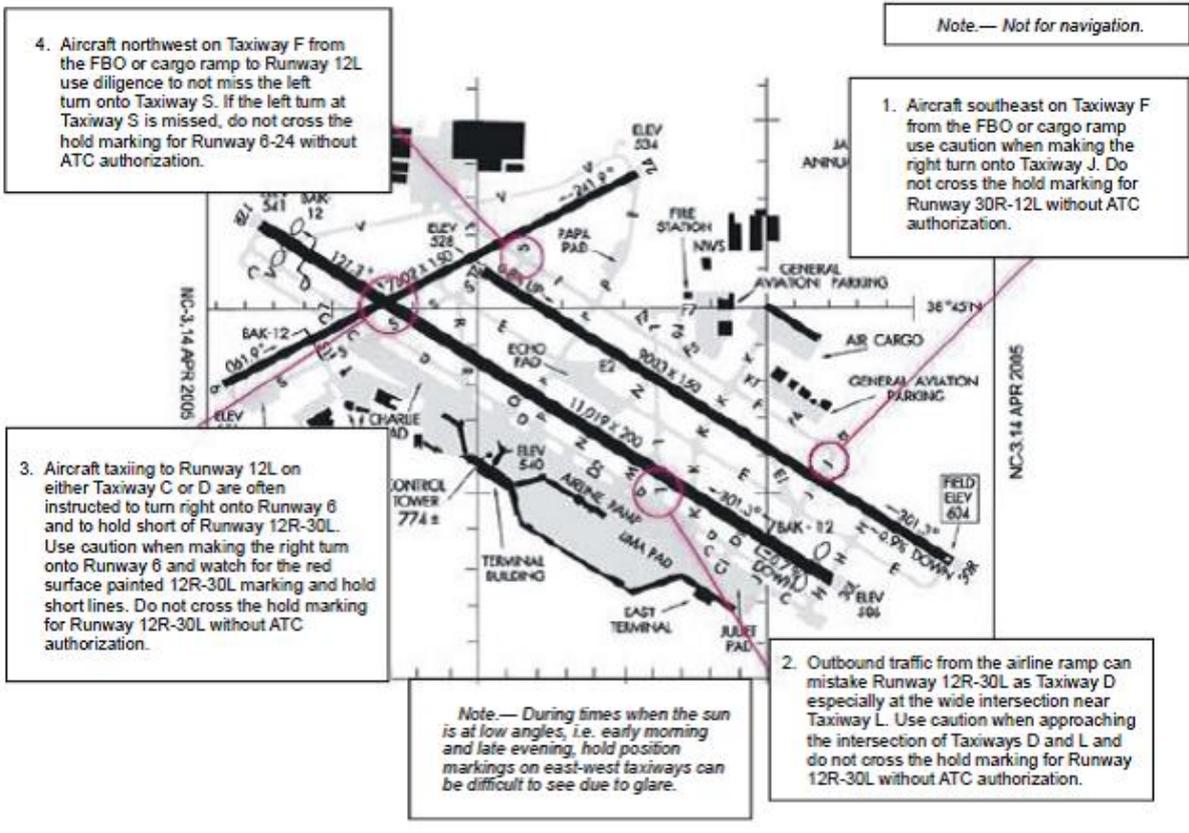


Figure 2

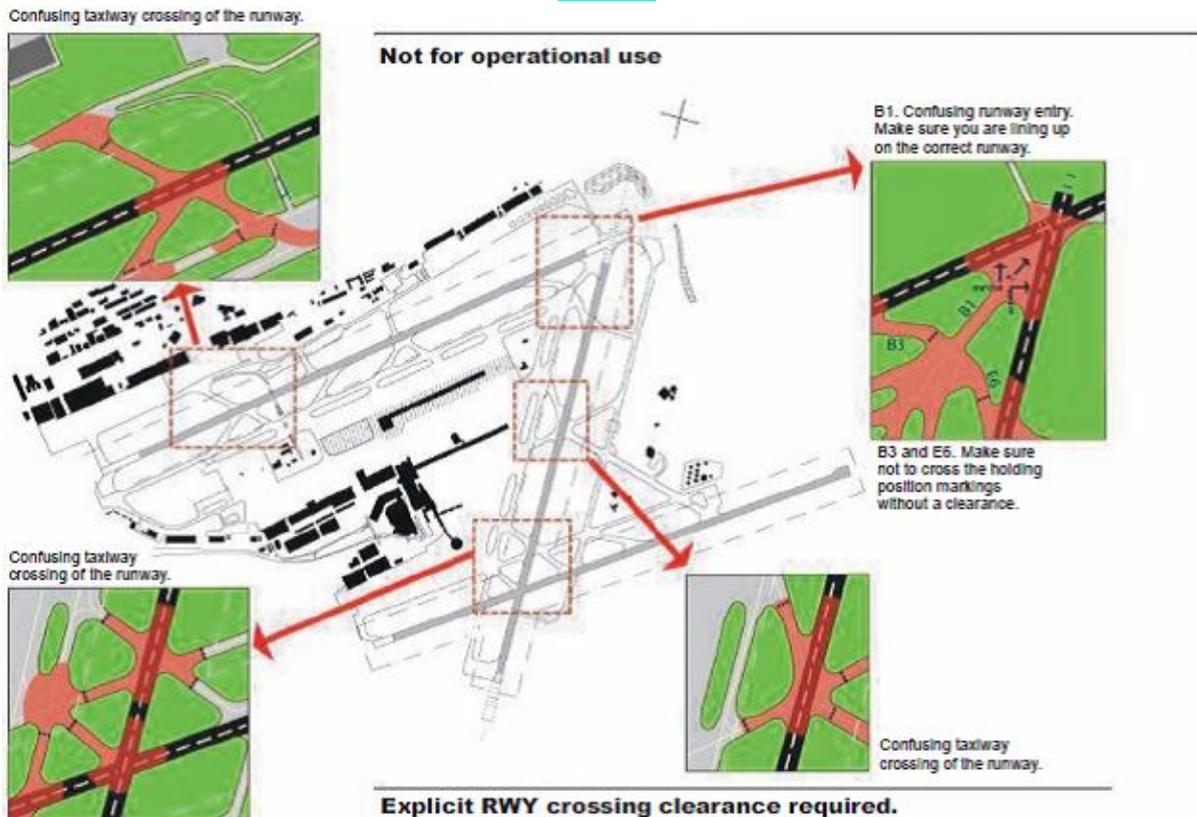


Figure 3

Rationale

The GM is based on the content of GM3 ADR.OR.D.027, which is deleted.

GM1 ADR.OPS.B.100(a) Suspension or closure of runway operations

SUSPENSION OF RUNWAY OPERATIONS

- (a) Planned and unplanned events on an aerodrome can necessitate the temporary suspension of runway operations for a short period of time or for a longer period of time.
- (b) In the majority of cases, reasons for suspending runway operations are unplanned. Examples may include:
 - (1) short-term removal of disabled aircraft or vehicle from the runway;
 - (2) presence of FOD on the runway;
 - (3) significant wildlife strikes on the runway;
 - (4) presence of an unauthorised UAS in the runway system;
 - (5) significant failure of runway lighting;
 - (6) ice control and snow removal operations;
 - (7) aircraft incident, e.g. tail strike, aborted take-off, tyre burst, etc.;
 - (8) full emergency or local stand-by.

Rationale

The GM is based on Attachment C to Chapter 8 (Runway Safety) of ICAO Doc 9981 'PANS-Aerodromes'.

GM2 ADR.OPS.B.100(a) Suspension or closure of runway operations

CLOSURE OF RUNWAY OPERATIONS

Examples of runway closure may include:

- (a) removal of disabled aircraft or heavy vehicles from the runway which is expected to take significant time;
- (b) significant deterioration of runway surface; and
- (c) planned maintenance (e.g. rubber removal, repainting of markings, runway lighting maintenance/replacement/cleaning, surface repairs, etc.)

Rationale

The GM is based on Attachment C to Chapter 8 (Runway Safety) of ICAO Doc 9981 'PANS-Aerodromes'.

AMC1 ADR.OPS.B.110(b)(5) Suspension or closure of runway operations

ACTIONS BEFORE RECOMMENCEMENT OF RUNWAY OPERATIONS

The following actions should be completed if runway operations are recommenced following a suspension or closure of runway operations:

- (a) remedial works is completed, e.g. clearance of FOD, wildlife remains, runway lighting repair, removal of disabled aircraft;
- (b) a runway inspection under the authorisation of air traffic services is conducted;
- (c) all vehicles and personnel have vacated the runway and report to the air traffic services;



- (d) runway availability is confirmed to air traffic services;
- (e) relevant NOTAM, if published, is cancelled;
- (f) runway availability is promulgated by air traffic services using ATIS and radiotelephony.

Rationale

The AMC is based on Attachment C to Chapter 8 (Runway Safety) of ICAO Doc 9981 'PANS-Aerodromes'.

AMC1 ADR.OPS.C.011 Overload operations

CRITERIA FOR OVERLOAD OPERATIONS [applicable until 27 November 2024]

- (a) For those operations in which the magnitude of overload and/or the frequency of use do not justify a detailed analysis, the aerodrome operator should use the following criteria, in order that the operation of aircraft does not affect the pavement:
 - (1) for flexible pavements, occasional movements by aircraft with ACN not exceeding 10 % above the reported PCN may be allowed;
 - (2) for rigid or composite pavements, in which a rigid pavement layer provides a primary element of the structure, occasional movements by aircraft with ACN not exceeding 5 % above the reported PCN may be allowed;
 - (3) if the pavement structure is unknown, the 5 % limitation should apply; and
 - (4) the annual number of overload movements should not exceed approximately the 5 % of the total annual aircraft movements.
- (b) The aerodrome operator should not permit overload operations on pavements exhibiting signs of distress or failure. Furthermore, overload operations should be avoided during any periods of thaw following frost penetration, or when the strength of the pavement or its subgrade could be weakened by water. Where overload operations are conducted, the aerodrome operator should review the relevant pavement condition regularly, and should review the criteria for overload operations periodically, since repetition of overloads can cause severe shortening of pavement life or require major rehabilitation of pavement.

Rationale

The AMC is based on the content of Attachment A, Section 20 in ICAO Annex 14 Volume I.

AMC2 ADR.OPS.C.011 Overload operations

CRITERIA FOR OVERLOAD OPERATIONS [applicable after 28 November 2024]

- (a) For those operations in which the magnitude of overload and/or the frequency of use do not justify a detailed analysis, the aerodrome operator should use the following criteria, in order not to adversely affect the pavement:
 - (1) for flexible and rigid pavements, occasional movements by aircraft with ACR not exceeding 10 % above the reported PCR may be allowed; and
 - (2) the annual number of overload movements should not exceed approximately 5 % of the total annual movements excluding light aircraft.
- (b) The aerodrome operator should not permit overload operations on pavements exhibiting signs of distress or failure. Furthermore, overload operations should be avoided during any periods of thaw following frost penetration, or when the strength of the pavement or its subgrade could



be weakened by water. Where overload operations are conducted, the aerodrome operator should review the relevant pavement condition regularly, and should review the criteria for overload operations periodically, since repetition of overloads can cause severe shortening of pavement life or require major rehabilitation of pavement.

Rationale

The AMC is based on the content of Attachment A, Section 20 in ICAO Annex 14 Volume I, as revised by ICAO State Letter AN 4/1.2.28-20/35.

GM1 ADR.OPS.C.011 Overload operations

GENERAL

Overloading of pavements can result either from loads too large, or from substantially increased application rate, or both. Loads larger than the defined (design or evaluation) load shorten the design life, whilst smaller loads extend it. With the exception of massive overloading, pavements in their structural behaviour are not subject to a particular limiting load above which they suddenly or catastrophically fail. Behaviour is such that a pavement can sustain a definable load for an expected number of repetitions during its design life. As a result, occasional minor overloading is acceptable, when expedient with only limited loss of pavement life expectancy and relatively small acceleration of pavement deterioration.

Rationale

The GM is based on the content of Attachment A, Section 20 in ICAO Annex 14 Volume I.



4. Impact assessment (IA)

In accordance with EASA Management Board Decision No 18-2015, and in accordance with the relevant ToR, there is no need to develop a regulatory impact assessment (RIA), as this NPA has been developed in the framework of 'Regular Updates of Aerodrome Rules'.



5. Proposed actions to support implementation

The purpose of this chapter is to indicate appropriate means for facilitating possible ways for implementation of the subject requirements as for example:

- Focused communication for Advisory Body meeting(s) (MAB/SAB/TeB/TEC);
- Providing supporting clarifications in electronic communication tools;
- Dedicated thematic workshop/session (if found beneficial, with focus mainly on the new ACR/PCR methodology).



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';
- Decision 2014/013/R of the Executive Director of the Agency of 27 February 2014 adopting Certification Specifications and Guidance Material for Aerodromes Design 'CS-ADR-DSN — Initial issue'.

6.3. Other reference documents

- ICAO Annex 14 to the Convention on International Civil Aviation, Aerodromes, Volume I – Aerodrome Design and Operations, 8th Edition, July 2018, Amendment 15;
- ICAO Doc 9981, Procedures for air navigation services 'PANS-Aerodromes', Second edition, 2016, Amendment 3;
- SIB 2020 – 17, Higher code letter operations, published on 25 September 2020.



7. Appendix

N/A



8. Quality of the document

If you are not satisfied with the quality of this document, please indicate the areas which you believe could be improved and provide a short justification/explanation:

- technical **quality** of the draft proposed rules and/or regulations and/or the draft proposed amendments to them
- text clarity and readability
- quality of the impact assessment (IA)
- others (please specify)

Note: Your replies and/or comments to this section shall be considered for internal quality assurance and management purposes only and will not be published in the related CRD.

