



# Advisory Circular

**Subject: Changes to Runway Surface Condition Reporting**

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## 1.0 Introduction

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend, or permit deviations from regulatory requirements, nor does it establish minimum standards.

## 1.1 Purpose

- (1) The purpose of this document is to introduce and explain changes to Runway Surface Condition (RSC) reporting resulting from the implementation of the Global Reporting Format (GRF) in Canada on 12 August 2021. Furthermore, this document introduces changes to the Canadian NOTAM Procedures Manual (CNOP), Canadian Runway Friction Index (CRFI) reporting requirements, and new versions of the Aircraft Movement Surface Condition Report (AMSCR) and Canadian Runway Friction Index (CRFI) form.

## 1.2 Applicability

- (1) This document applies to aerodrome operators.

## 1.3 Description of changes

- (1) This document has been heavily revised in light of implementation of the Global Reporting Format.

## 2.0 References and requirements

### 2.1 Reference documents

- (1) It is intended that the following reference materials be used in conjunction with this document:
  - (a) *Aeronautics Act* (R.S., 1985, c. A-2);
  - (b) Part III, Subpart 01 of the *Canadian Aviation Regulations* (CARs) — Aerodromes;
  - (c) Part III, Subpart 02 of the CARs — Airports;
  - (d) Transport Canada Publication, TP 312 — Aerodrome Standards and Recommended Practices;
  - (e) Advisory Circular (AC) 300-019 — Global Reporting Format (GRF) for Runway Surface Conditions; and
  - (f) NAV CANADA - Canadian NOTAM Operating Procedures (CNOP).

### 2.2 Cancelled documents

- (1) AC 302-013 – Airport Winter Maintenance and Planning.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

### 2.3 Definitions and abbreviations

- (1) The following **definitions** are used in this document:

- (a) **NOTAM:** A notice distributed by means of telecommunications containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations;
  - (b) **RSC NOTAM:** A special series NOTAM notifying the presence of hazardous conditions due to contaminants on runways by means of a specific format. They are issued only for aerodromes under the NOTAM Series S, A, or B and are disseminated according to the dissemination category of that aerodrome; and
  - (c) **NES:** In the context of runway surface condition reporting, an internet application for the direct entry of runway surface conditions by an accountable source, the output being an RSC NOTAM. NES is also an internet interface that allows dialog between automated reporting systems and the NAV CANADA database.
- (2) The following **abbreviations** are used in this document:
- (a) **AC:** Advisory Circular;
  - (b) **AMSCR:** Aircraft Movement Surface Condition Report;
  - (c) **CAR:** Canadian Aviation Regulations;
  - (d) **CNOP:** Canadian NOTAM Procedures Manual;
  - (e) **CRFI:** Canadian Runway Friction Index;
  - (f) **GRF:** Global Reporting Format;
  - (g) **ICAO:** International Civil Aviation Organization;
  - (h) **NES:** NOTAM Entry System;
  - (i) **NOTAM:** Notice to Airmen;
  - (j) **NPA:** Notice of Proposed Amendment;
  - (k) **RSC:** Runway Surface Condition; and
  - (l) **TCCA:** Transport Canada Civil Aviation.

### 3.0 Background

- (1) Amendments to the CARs (Parts I and III – Airport Winter Maintenance) became effective 15 May 2020. Amendments were made to:
  - (a) Subsection 101.01(1) to include the definition for ice;
  - (b) Subpart 2 of Part III of Schedule II to Subpart 3 of Part I of the Regulations to include a schedule of penalties; and,
  - (c) Division IV of Subpart 2 of Part III of the Regulations to lay out the body of the winter maintenance regulations, including definitions.
- (2) The amendments and the updates to the associated standards are:
  - (a) to standardize winter maintenance operations at airports so that there is a minimum safety standard for all airports; and,
  - (b) to ensure reliable and timely information is available to air operators and flight crews when making take-off and landing decisions at airports during the winter months.
- (3) The amendments imposed new winter maintenance requirements on airports servicing Subparts 703 [Air Taxi Operations], 704 [Commuter Operations] or 705 [Airline Operations] air operators. In

addition to the baseline requirements, airports servicing Subparts 704 or 705 air operators need to meet additional requirements due to the different take-off and landing needs of larger Subpart 704 and 705 aircraft. These new requirements ensure a consistent approach to winter maintenance across all airports, regardless of the type of aircraft that use these facilities.

The amendments establish requirements in the following areas:

- (a) *Winter maintenance planning.* The amendments require that airport operators, in consultation with air operators, develop a plan for how winter maintenance operations will be conducted. The plan is to include specific information related to priority areas, safety procedures, and the coordination of the activities among the airport staff involved in winter maintenance operations.
  - (b) *Ice control chemicals and sand.* The amendments require that airport operators use ice control chemicals specifically for use on movement areas, as specified in Transport Canada's *Airport Standards – Airport Winter Maintenance*, which are incorporated by reference into the amendments. The amendments require the use of sand that meets specific requirements and mandate the removal of the sand when it is no longer required, as specified in the *Airport Standards – Airport Winter Maintenance*.
  - (c) *Friction Measurement.* The amendments require the use of a decelerometer for friction measurement readings and procedures for determining the Canadian runway friction index (CRFI). This information can be used by pilots to determine if they can safely take-off and land on a contaminated runway. These specific requirements are linked to airports serving Subpart 705 air operators.
  - (d) *Maximum snow accumulation slope (%) on or adjacent to threshold areas and adjacent to runways and taxiways.* To prevent damage to aircraft while they are landing, taking off, or taxiing, the amendments do not permit snow to accumulate on or adjacent to threshold areas, or adjacent to runways or taxiways above a specified slope. The details of this requirement are provided in the *Airport Standards – Airport Winter Maintenance*.
  - (e) *Movement area inspections and reports.* The amendments establish conditions that determine when movement area inspections are required and the minimum frequency for inspections to ensure that the runway condition information provided to pilots is accurate. The *Airport Standards – Airport Winter Maintenance* outlines the requirement for daily inspections, including when significant change(s) in the runway surface conditions occur, and the requirements for the removal of contaminants from a movement area.
  - (f) *Training.* The amendments require that the operator of an airport provide persons who will be assigned duties in respect of its airport winter maintenance plan with the applicable initial and recurrent training.
- (4) *Training records.* The amendments require the operator of an airport to keep a training record for each person who receives any training; and to keep that training record for five years after the day on which the latest training was received.
- (5) Those airports that service only Subpart 703 air operators:
- (a) The amendments provide a compliance option to airports that service only Subpart 703 air operators. These airports will be able to choose to comply with the full requirements of the amendments, or an alternative approach in which airport operators must comply with sections 302.406 and 302.407.
    - (i) Section 302.406 requires the airport operator to consult annually with air operators on the intended level of winter maintenance, determine the level of service that they will offer, provide this information for publication in the Canada

Flight Supplement (CFS), and include information in the airport operations manual about the level of winter maintenance.

- (ii) Section 302.407 requires the airport operators to comply with the use of ice control chemicals and sand on movement areas as specified in the Airport Standards – Airport Winter Maintenance, and removal of sand from the movement areas with the exception of gravel runways.
- (6) The International Civil Aviation Organization (ICAO) has developed the Global Reporting Format (GRF); a new globally harmonized methodology for runway surface condition (RSC) assessment and reporting. The implementation date for GRF in Canada is 12 August 2021.
- (7) Accordingly, NAV CANADA is replacing the internet based software for delivering Aircraft Movement Surface Condition Reports (AMSCRs), including the Canadian Runway Friction Index (CRFI), as part of NAV CANADA's NOTAM distribution process.
- (8) NAV CANADA's new web portal is called the NOTAM Entry System (NES) and has been developed in support of their initiative to provide the ICAO format, and in support of the GRF in Canada. The software will be implemented in conjunction with the GRF in Canada on 12 August 2021.
- (9) The NES will provide users with the means to manually input AMSCRs into NAV CANADA's Aeronautical Data Management System to create and distribute RSC NOTAMs. The procedures, which are described in the CNOP, are embedded in the NES software.
- (10) Personnel may input AMSCRs into the NES at a suitable computer terminal with an internet connection. The option will remain to deliver the report to NAV CANADA by telephone, fax, etc., where a computer terminal is not available.
- (11) Two new AMSCR forms have been developed in consideration of the NES data input procedure. One version of the AMSCR may be used when reporting surface conditions by runway thirds, while the second version may be used when reporting by full runway length. The AMSCRs and their respective User Guides are available in the Appendices of this document.

#### **4.0 Validity period**

- (1) Where applicable, AMSCRs should be completed and reported in accordance with CAR 302.417 of Division IV – Airport Winter Maintenance.
- (2) A RSC NOTAM consists of runway surface condition information for each runway reported at an airport. RSC NOTAM validity period will closely coincide with the most recently submitted AMSCR; it is a NAV CANADA system control.
- (3) AMSCR validity periods are regulated elements. It is the airport operator's responsibility to ensure the published AMSCR validity period satisfies the regulatory requirements.

#### **5.0 Reporting criteria**

##### **5.1 General**

- (1) Information modules are available to aerodrome and airport operators to support the development and delivery of their training programs. To access the information modules please contact [TC.FlightStandards-Normsvol.TC@tc.gc.ca](mailto:TC.FlightStandards-Normsvol.TC@tc.gc.ca) and include GRF Information Modules in the subject line.

## 5.2 Reporting by runway thirds or full runway length

- (1) Runway surface conditions may be reported by runway third, or by full runway length. The decision to report by runway third or full runway length is made by the aerodrome or airport operator, through consultation with a representative sample of air operators which use the facilities.
- (2) The reporting methodology normally remains consistent for the entire winter season to facilitate the consistent dissemination of the information and expectation by the end users.
- (3) When runway condition information is reported in thirds, a runway condition code is to be reported. Conversely, if the runway condition information reported by full runway length, then the runway condition code will not be reported. Reporting by runway thirds is not applicable for unpaved runways (gravel, turf, etc.) or partially paved runways. Refer to Section 5.3 of AC 300-019 for more information on determining runway condition codes in Canada.
- (4) It is possible to report one or more runways by thirds, while other runways at the same facility are reported by full runway length.
- (5) An AMSCR for reporting by runway thirds is included in Appendix A. The User Guide is found in Appendix B.
- (6) An AMSCR for reporting by full runway length is included in Appendix C. The User Guide is found in Appendix D.

## 5.3 Percent of coverage

- (1) With the implementation of GRF in Canada, standardized increments of reportable percent of runway coverage have been introduced. Reportable percent coverage is limited to increments of 10% (i.e. 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, & 100%), as well as increments of 25% (i.e. 25% & 75%).
- (2) Percent coverage of the runway need not add to 100%.

## 5.4 Depth of contaminant

- (1) Inches are used to report depths. For depths less than 2 inches, the fractions 1/8", 1/4", 1/2", 3/4", 1", and 1½" are to be used. Above 2 inches, whole values at 1 inch increments are used (e.g. 3", 4", 5", 6", etc.).
- (2) TRACE is no longer a reportable depth. Depths less than 1/8" should be rounded up and reported as 1/8".
- (3) When the depth is variable, the maximum depth should be reported. The runway remarks section may be used to report a range of values for depth.

## 5.5 Number of different conditions that may be reported

- (1) The NES limits the number of different runway surface descriptions that may be reported on a runway (or runway third) to 2 types.
- (2) The DRY surface description is only reported as a percent coverage of 100%, and is only reported when:
  - (a) there are contaminants to be reported in other runway thirds, or other runway thirds are WET;
  - (b) the cleared width is less than the published width and the cleared portion of the runway is 100% DRY;

- (c) when a significant change has occurred; and/or
- (d) when one or more runways are DRY and another runway(s) at the same airport reported to be wet or contaminated.

## 5.6 Reporting Canadian Runway Friction Index

- (1) CAR 302.416 outlines the procedures for friction measurements.

**Note:** In accordance with CAR 322.411(2)(d), “the operator of an airport shall [...] immediately forward Canadian Runway Friction Index (CRFI) readings of 0.40 or less to the ground station referred to in paragraph (a).” There is no requirement to report CRFI measurements greater than 0.40, however airports may still do so if the measurements are available.

- (2) Wet snow is deemed suitably dry to report CRFI readings:

- (a) When stepping on wet snow, the result under foot is compacted snow.

**Note:** If the result is splatter, slush, or visible water – DO NOT REPORT CRFI.

- (b) When driving on wet snow, the result in the tire tracks is compacted snow.

**Note:** If the result is splatter, slush, or visible water – DO NOT REPORT CRFI.

- (3) The reporting of runway surface conditions should not be confused with the requirements to report the CRFI by thirds. For airports serving aeroplanes operated in an air transport service under Subpart 705, CRFI reporting is dependent on the length of the runway (separate and distinct from runway surface condition reporting) and is as follows:

- (a) For runways greater than or equal to 1,829m (6,000ft) in length, the measurement of CRFI readings is performed and averaged for each third of the runway length in the report; and

- (b) For runways less than 1,829m (6,000ft) in length, CRFI can be:

- (i) measured and averaged for the full runway length in the report; or
- (ii) measured and averaged for each third.

- (4) Airports with multiple runways may need to report CRFI in two formats:

- (a) by thirds for runways 1,829m (6,000ft) or greater in length; and/or
- (b) by full runway length for runways less than 1,829m (6,000ft) in length.

## 6.0 Obscured runway lights

- (1) A light that is obscured in its intended direction(s) of use by snow, or other is deemed to be a failed light. The airport operator should communicate this via a separate and distinct NOTAM (see TP312 5<sup>th</sup> edition, Section 9.1.3 *Visual Aids* and Table 9.1.3.1 – Lighting Serviceability Table).

## 7.0 Surface condition reporting for gravel runways

- (1) The reporting of surface conditions on a gravel runway is more difficult than it is for a paved runway. In the case of gravel runways, it is impossible to remove all the winter contaminants from the gravel surface. In many northern sites, the common practice is to prepare a solid snow-compacted base on top of the gravel whereby the compacted snow becomes the operational surface for winter operations. Thus, throughout most of the fall and winter, the operational base is

not a normal gravel surface but is rather a frozen gravel, a compacted snow, or a compacted snow/gravel mix. This surface type should be noted in the Canada Flight Supplement.

- (2) The term that best describes the existing runway condition (compacted-snow base or compacted snow/gravel mix) should be used for reporting.
- (3) In the case of gravel runways, the AMSCR form by full runway length should be used and the RSC data should report the top layer of contaminants as one unit or 100%, e.g. *30% compacted-snow base, 70% loose snow*. Any additional layer of contaminants below the surface layer that may affect aircraft braking performance should be defined in the "Runway Remarks" Section.
- (4) The Canadian NOTAM Procedures manual and AC 300-019 have more details concerning reporting surface conditions.

## **8.0 Taxiways and aprons**

- (1) The reporting of conditions on taxiways and aprons will be published via AMSCR and NES.
- (2) Percent coverage of taxiways and aprons is not reported.
- (3) Only one type of surface description is reported per taxiway or apron.
- (4) See AC 300-019 for more information on condition reporting for taxiways and aprons.

## **9.0 Conclusion**

- (1) Amendments to the CARs (Parts I and III – Airport Winter Maintenance) became effective 15 May 2020.
- (2) The implementation date for GRF in Canada is 12 August 2021.
- (3) NAV CANADA will replace the SNOWiz system with the new NES software on 12 August 2021, to coincide with GRF implementation.
- (4) Two new AMSCR forms have been developed. One version of the AMSCR may be used when reporting surface conditions by runway thirds, while the second version may be used when reporting by full runway length. The AMSCRs and their respective User Guides are available in the Appendices of this document.
- (5) For more information on the NES, please contact: the Customer Service Centre at NAV CANADA, 613-563-5588, [service@navcanada.ca](mailto:service@navcanada.ca).

## **10.0 Information management**

- (1) Not applicable.

## **11.0 Document history**

- (1) AC 300-005 Issue 01, RDIMS 7595645 (E), 7595648 (F), dated 2012-09-21 – Changes to Runway Surface Condition Reporting.
- (2) AC 300-005 Issue 02, RDIMS 7595645 (E), 7595648 (F), dated 2012-11-24 – Changes to Runway Surface Condition Reporting.
- (3) AC 300-005 Issue 03, RDIMS 8137962 (E), 8137924 (F), dated 2013-02-05 – Changes to Runway Surface Condition Reporting.

- (4) AC 300-005 Issue 04, RDIMS 8221137 (E), 8516681 (F), dated 2013-07-12 – Changes to Runway Surface Condition Reporting.
- (5) AC 300-005 Issue 05, RDIMS 10534979 (E), 10535126 (F), dated 2015-04-21 – Changes to Runway Surface Condition Reporting.
- (6) AC 300-005 Issue 06, RDIMS 14214200 (E), 14218220 (F), dated 2018-10-31 – Changes to Runway Surface Condition Reporting.

## 12.0 Contact office

For more information, please contact:

E:mail: <http://www.tc.gc.ca/eng/regions.htm>

Suggestions for amendment to this document are invited, and should be submitted via:

E:mail: [TC.FlightStandards-Normsvol.TC@tc.gc.ca](mailto:TC.FlightStandards-Normsvol.TC@tc.gc.ca)

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**Appendix A – AMSCR form (conditions by runway thirds)**

**Appendix B – AMSCR form (conditions by runway thirds) user guide**

**Appendix C – AMSCR form (conditions by full length)**

**Appendix D – AMSCR form (conditions by full length) user guide**