REPUBLIC OF ALBANIA

ALBANIAN CIVIL AVIATION AUTHORITY

RUNWAY SURFACE FRICTION ASSESSMENT AND GLOBAL REPORTING FORMAT GUIDANCE MATERIAL

ACAA-DAD-GM2-GRF (Issue 02, Revision 00)

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Approved by:

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Executive Director of Albanian Civil Aviation Authority

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0 ADMINISTRATION

0.1 Record of Amendments

The table below describes the dates and reason for the different amendments of the current Guidance Material.

A vertical black line on the left-hand side of the page identify the changes with the previous version.

Issue No.	Revision No.	Date	Amended by	Reason
01	00	11.11.2021		Initial Issue
02	00	04.12.2023		Major Amendments

0.2 Approval List

Action	Name and position	Date	Signature
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0.3 Revision table

Page #	Issue No.	Revision No.	Date	Edited by

0.4 Distribution List

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0.5 Definitions & Acronyms

Term	Definition
Aerodrome	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
Braking action	A pilot's characterization of the deceleration: associated with the wheel braking effort and directional controllability of the aircraft.
Contaminant	Means material that collects on a surface, including standing water, snow, slush, compacted snow, ice, frost, sand, and ice control chemicals.
Contaminated runway	A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the following substances: compacted snow, dry snow, frost, ice, slush, standing water, wet ice or wet snow.
Compacted snow	Snow that has been compacted into a solid mass such that airplane tires, at operating pressures and loading, will run on the surface without significant further compaction or rutting of the surface.
Check Runs	Runs intended to confirm that the operation of the CFME remains constant. There are performed before and after Standard Runs.
Continuous Friction Measuring Equipment	A device designed to produce continuous measurement of runway friction values.
Design Objective Level	The State-set friction level to be achieved or exceeded on a new or resurfaced runway within one year.
Dry	Means a surface condition that is free of visible moisture and has no observed contaminants.
Dry runway	A runway is considered fry if its surface is free of visible moisture and not contaminated within the area intended to be used.
Dry snow	Snow from which a snowball cannot readily be made.
Friction level	The lowest average friction value calculated from a minimum of 10 averaged friction values, of applicable Standard Runs, obtained over a rolling distance of 100 meters within a portion of the pavement.

Friction force	The force that resist the relative motion between two surfaces in contact: an aircraft tire and a pavement surface. It affects control over the aircraft in lateral and longitudinal direction.
Friction characteristics	Physical, functional and operational features of friction arising from a dynamic system (pavement, tyre, contaminant, environment, speed, aircraft, pilot)
Friction coefficient	(Dimensionless ratio of friction and pressing force) is not a property of the pavement surface but a system response from the measuring system.
Frost	Means ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.
Hydroplaning	The condition when a layer of water separates an aircraft's tires from the runway surface
Grooved runway	Means a runway with closely space transverse grooves on the runway surface, which allow rain water to escape from beneath tires of an aircraft.
Ice	Water that has frozen or compacted snow that has transitioned into ice, in cold and dry conditions.
Ice control chemicals	Means chemicals used to prevent ice formation, to prevent ice from bonding to a surface, or to break up or melt ice on a surface.
Loose contaminants	Means those contaminants that an airplane's tire will not remain on the surface of without breaking through. Water, slush, wet snow, and dry snow are loose contaminants. For loose contaminants, the depth of the contaminant can affect both the airplane's acceleration and deceleration capability.
Maintenance Planning Level	The State-set friction level below which a runway maintenance programme should be undertaken.
Minimum Friction Level	The State-set friction level below which a runway shall be notified as 'may be slippery when wet'.
Paved surface	Means a surface of asphaltic concrete (flexible) or Portland cement concrete (rigid).
Percent coverage of contaminant	Means the estimated amount of contaminant present on the surface of the runway and reported as percentage of the assessed surface.

Portion of the pavement	A rectangular area of the runway width running the declared length, referred to as the 'central' trafficked portion and two 'outer' portions.
Porous friction course runway	Means a runway with an open graded, thin hot-mix asphalt surface. This permits rain water to permeate through the course and drain off transversely to the side of the runway, preventing water buildup on the surface and creating a relatively dry pavement condition during rainfall.
Runway	A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.
Runway Surface Friction Assessment	The assessment of friction carried out under conditions of self-wetting using a CFME.
Runway surface condition descriptors	One of the following elements on the surface of the runway: Compacted snow, dry snow, frost, ice, slush, standing water.
Runway condition assessment matrix	Means a matrix allowing for the assessment of runway condition code from a set of observed runway surface condition(s) and pilot report of braking action.
Runway condition code	A number describing the runway surface condition to be used in the RCR.
Runway condition report	A comprehensive standardized report relating to runway surface condition(s) and its effect on the airplane landing and take-off performance.
Runway surface condition	A description of the condition(s) of the runway surface used in the RCR and which established the basis for the determination of the RWYCC for airplane performance purposes.
Sand	Means small particles of crushed angular mineral aggregates or natural sand material used to improve runway surface friction levels.
Standard Runs	A series of runs to a prescribed pattern within an assessment.
Slippery when wet	A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.

Skid resistance	The ability of the travelled surface to prevent the loss of tire traction. Related to pavement design, construction and maintenance.
Slush	Snow that is so water-saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully.
Solid contaminant	Means those contaminants that an airplane's tire will remain on top of and not break through. Compacted snow and ice are solid contaminants. For solid contaminants, the depth of the contaminant does not affect the airplane's acceleration and deceleration capability.
Standing water	Water of depth greater than 3 mm including running water of depth greater than 3 mm.
Test Water Depth	Test water depth (also known as nominal test water thickness). The water flow rate produced by the CFME's self-wetting equipment divided by the test speed multiplied by the width of application.
Wet	Means a surface condition where there is any visible dampness or water up to and including 1/8 inch (3 mm) deep within the intended area of use.
Wet ice	Ice with water on top of it or ice that is melting.
Wet snow	Snow that contains enough water content to be able to make a well-compacted, solid snowball, but water will not squeeze out.
Wet Runway Surface	A runway that is soaked but no significant patches of standing water are visible.

0.6 Abbreviations and Acronyms

Abbreviation or Acronym	Meaning
ACAA	Albanian Civil Aviation Authority
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
ATC	Air Traffic Control
ANSP	Air Navigation Service Provider
ATS	Air Traffic Service
AIC	Aeronautical Information Circular
ATIS	Automatic Terminal Information Service
AIM	Aeronautical Information Manual
AIREP	Aircraft Report
AGL	Above Ground Level
AMSL	Above Mean Sea Level
AMSCR	Aircraft Movement Surface Condition Report
AO	Aerodrome Operator
ASDA	Accelerate Stop Distance Available
CFME	Continuous Friction Measuring Equipment
DOL	Design Objective Level
EASA	European Union Aviation Safety Agency
EU	European Union
FIR	Flight Information Region
FL	Flight Level
GRF	Global Reporting Format
GND	Ground level
HMA	Hot-Mix Asphalt
LDA	Landing Distance Available
LoA	Letter of Agreement
RFI	Runway Friction Index
RCAM	Runway Condition Assessment Matrix

RWYCC	Runway Condition Code
RCR	Runway Condition Report
RSC	Runway Surface Condition
PANS	Procedures for Air Navigation Services
PFC	Porous Friction Course
PCC	Portland Cement Concrete
PSC	Polished Stone Value
SMS	Safety Management System
SARP	Standards and Recommended Practices
SOP	Standard Operating Procedure
SMA	Stone Matrix Asphalt
SFC	Surface
MO	Minister's Order
MET	Meteorological Information Management
MFL	Minimum Friction Level
MPL	Maintenance Planning Level
MTD	Mean Texture Depth
MPD	Mean Profile Depth
NOTAM	Notice to Airmen
OAT	Outside Air Temperature
TDZ	Touchdown Zone
TALPA	Take-off and landing Performance Assessment
UNL	Unlimited
UTC	Coordinated Universal Time

INTRODUCTION

1.1 Objective

The objective of this guidance material is to provide instructions to Aerodrome Operators undertaking runway surface friction assessment by describing the key element of the procedure. It also sets out target values, as produced by CFME, for surface friction levels that should prompt maintenance and/or NOTAM action by aerodrome operators following any such assessment. This guidance material also provides guidance to aerodrome operators on how they may vary the frequency of runway surface friction level assessments in order to adjust maintenance scheduled to meet the objective of adequate runway conditions for safe aircraft operations.

This guidance material describes how evaluation should be done using various types of Continuous Friction Measuring Equipment (CFME) now accepted for use worldwide: Mu-Meters, Grip Testers, Airport Surface Friction Testers (ASFT) and BV-11 Skidometer.

This guidance material provides guidance to airport operators to assist them in developing specific procedures on visual assessment and reporting of runway surface conditions and the implementation of the Global Reporting Format (GRF), and the implementation of this process in compliance with applicable regulatory requirements.

Furthermore, describes thorough information regarding the issuance of NOTAMs in relation to contaminants on a runway.

1.2 Regulatory Framework

- Law No. 96/2020 “Air Code of the Republic of Albania”;
- Law No. 53/2022 “For the organisation and administration of the Civil Aviation Authority”;
- Minister’s Order No. 130/2012 “Regulation for certification, registration of aerodromes and operation obligations and responsibilities falling on aerodrome operators, transposing Annex 14”;
- Minister’s Order No. 170/2022 “Regulation for determining the requirements and administrative procedures related to the aerodromes in the Republic of Albania”;
- Annex 14, Volume 1 – Aerodromes Design and Operations;
- Annex 15 – Aeronautical Information Services;
- ICAO Doc 9981 – Aerodromes;
- ICAO Doc 9774 – Manual on Certification of Aerodromes;
- ICAO Doc 8126 – Aeronautical Information Services Manual;
- ICAO Doc 9157 “Aerodrome Design Manual”, Part 3 “Pavements:
- ICAO Circular 355 – Assessment, Measurement and Reporting of Runway Service Conditions;
- Best practices from other countries such as UK, USA, Canada etc.

Regulation (EU) 2020/2148 of 8 October 2020 amending Regulation (EU) 139/2014 has integrated ICAO's SARPs for the assessment and reporting of runway surface conditions, including and adding definitions for the new terms. In this regard, aerodrome operators must take all necessary measures to implement the new regulatory requirements and implement the new GRF format.

Chapter 10 of ICAO Annex 14, Vol I describes the need to carry out regular evaluations of the friction characteristics of the runway surface and to ensure that friction is maintained at an acceptable level, and in any case the friction characteristics do not fall below the Minimum Friction Level (MFL). Friction characteristics, after November 2021 will not be used for runway surface condition reporting purposes but only for maintenance purposes.

The effective monitoring of the friction's characteristics with the runway surface should be clearly defined together with the methodology for evaluation, documentation, and preservation of evidence, as an important element of runway maintenance, as well as a complementary element for the evaluation of runway surface conditions.

According to ICAO Annex 14, Vol I, Chapter 2 "Aerodrome Data", 2.9 "Condition of the movement area and related facilities" information on the condition of the movement area and the operational status of related facilities shall be provided to the appropriate aeronautical information services unit, 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 reported without delay.

ADR.OPS.A.057 "Origination of NOTAM" specifies that the aerodrome operator shall:

- establish and implement procedures in accordance with which it originates a NOTAM issued by the relevant aeronautical information services provider that contains information on the establishment, condition, or change of any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel involved with flight operations;
- The aerodrome operator shall originate a NOTAM when it is necessary to provide the following information:
  - presence of, removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;
  - presence of a runway or portion thereof which is slippery wet.

ADR.OPS.A.060 "Reporting of surface contaminants" specifies that the aerodrome operator shall report to the aeronautical information serviced and air traffic services units on matters of operational significance affecting aircraft and aerodrome operations on the movement area, particularly in respect of the presence of the following:

a) water;
b) snow;

c) slush;
d) ice;
e) frost;
f) anti-icing or de-icing liquid chemicals or other contaminants;
g) snowbanks or drifts.

ADR.OPS.A.065 "Reporting of the runway surface condition" specifies that the aerodrome operator shall report the runway surface condition over each third of the runway using a runway condition report (RCR). The report shall include a runway condition code (RWYCC) using numbers 0 to 6, the contaminant coverage and depth, and a description using the following terms:

1. COMPACTED SNOW;
2. DRY;
3. DRY SNOW;
4. DRY SNOW ON TOP OF COMPACTED SNOW;
5. DRY SNOW ON TOP OF ICE;
6. FROST;
7. ICE;
8. SLIPPERY WET;
9. SLUSH;
10. SPECIALLY PREPARED WINTER RUNWAY;
11. STANDING WATER;
12. WATER ON TOP OF COMPACTED SNOW;
13. WET;
14. WET ICE;
15. WET SNOW;
16. WET SNOW ON TOP OF COMPACTED SNOW;
17. WET SNOW ON TOP OF ICE;
18. CHEMICALLY TREATED;
19. LOOSE SAND.

- Reporting shall commence when a significant change in runway surface condition occurs due to water, snow, slush, ice or frost.
- Reporting of the runway surface condition shall continue to reflect significant changes until the runway is no longer contaminated. When that situation occurs, the aerodrome operator shall issue an RCR that states that the runway is wet or dry as appropriate.
- Friction measurements shall not be reported.
- When a paved runway or portion thereof is slippery wet, the aerodrome operator shall make such information available to the relevant aerodrome users. That shall be done by originating a NOTAM and shall describe the location of the affected portion.

1.3 Requirements

The criteria in this guidance material are applied to all aerodromes in the Republic of Albania certified in

accordance with the requirements of Regulation 130/2012, transposition of Annex 14, Volume I of ICAO, as well as to aerodromes certified according to the requirements of Regulation 170/2022, transposition of Regulation (EU) 139/2014.

The procedures in this guidance material regarding the evaluation of runway surface friction should only be used for maintaining runway surface friction levels for maintenance purposes, or as supporting elements for determining RWYCC but which, in accordance with the new methodology in GRFs will not be reported to the pilot. Data collected on friction characteristics should be made available to airport users upon request.

This guidance material addresses the following issues:

1. Runway surface friction characteristics and runway surface contaminants;
2. How runway surface characteristics relate to aircraft performance;
3. Assessment of runway surface conditions;
4. Global Reporting Format;
5. Reporting and distribution of information regarding runway surface conditions;
6. Issuance of NOTAMs in relation to contaminants on a runway.

The criteria related to the new runway surface condition assessment methodology and GRF have become applicable on November 5, 2021.

Airport operators must take all necessary measures to guarantee the implementation of these rules and procedures in accordance with the deadlines.

Furthermore, this guidance material describes thorough information regarding the issuance of NOTAMs in relation to contaminants on a runway.

1.4 Responsibility

Ultimate responsibility for measuring of runway friction characteristics, GRF and issuance of NOTAM regarding contaminants in the runway are, must in practise, rest with the aerodrome operator. Nevertheless, other stakeholders such as AIS, ANSP, aircraft operators etc. share the responsibility with the aerodrome operator.

2. PAVEMENT

2.1 Basic functions of pavements

Pavements must fulfil some basic functions:

- Provide adequate bearing strength (structure of the pavement);
- Provide good riding qualities (geometric shape);
- Provide good surface friction characteristics (texture and drainage);
- Longevity;
- Ease of maintenance.

2.2 Dry runway

Dry runway has a pavement which is clear of contaminants and visible moisture within the required length and width being used. It has no operationally significant effect on friction levels, regardless of:

- Type of pavement;
- Configuration of the surface and;
- Speed of the aircraft.

2.3 Wet runway

Wet runway has a pavement that is neither dry nor contaminated. Wet surface friction problem equals drainage (design) problem which can be:

- Surface drainage (surface shape and slopes);
- Tire/ground interface drainage (macrotexture); and
- Penetration drainage (microtexture).

Furthermore, friction can be significantly influenced by engineering surfaces, if all of mentioned drainage aspects are satisfied.

2.4 Contaminated runway

Contaminated surface friction problem equals maintenance problem. It can be significantly influenced by maintenance measures provided by the airport operator such as:

- Maintenance of interfacial drainage capability;
- Removal of rubber deposits;
- Removal of snow, slush, ice or frost; and
- Removal of other deposits such as sand, dust, mud and oil.

Aerodrome operators may be exposed to:

- Wet runway condition scenarios only; (**Albania's chosen case**)
- Snow and ice conditions at irregular intervals – runway closure can be tolerated to a certain

extent;
- Snow and ice conditions during which the aerodrome operator must operate as normally as possible.

The level of maintenance required is a function of exposure to contaminants, the maintenance equipment available and the competence of the personnel operating this equipment.
The level of maintenance provided is the capability to remove contaminants as rapidly and completely as possible to avoid accumulation.

2.5 Design: Texture

Texture is defined internationally through ISO standards 13473 as deviation of a pavement surface from a true planar surface, with a texture wavelength less than 0.5 mm. These standards refer to texture measured by volume or by profile and expressed as mean texture depth (MTD) or mean profile depth (MPD)
Microtexture correspond to texture wavelengths up to 0.5 mm. Macrotexture corresponds to texture wavelengths of 0.5 to 50 mm.

2.5.1 Microtexture

Microtexture if the texture of the individual stones, dependent on the shape of the stones and how they wear. They are hardly detectable by eye and have a build-in quality of the pavement surface (crushed stone PSV). It is a primary component in wet skid resistance at slow speeds.
The problem with the microtexture is that it can change within short time periods without being detected (rubber deposits).

2.5.2 Macrotexture

Macrotexture if the texture between the individual stones, detectable by the eye and it depends on the size of aggregate used or by treatment of the surface (grooving). It is important for friction in the high-speed range (stopping distance and directional control capability).
Measurements methods are:
- “Sand patch” and
- NASA grease patch”

2.6 Design: Drainage

The objective of the drainage system is to prevent accumulation of water on the pavement surface or to drain water off the runway in the shortest path possible and particularly out of the area of the wheel path.
There are two distinct drainage process:
- Natural drainage of the surface water from the top of the pavement surface (combined longitudinal and transverse slope, surface evenness, cambered runway surface); and
- Dynamic drainage of the surface water trapped under a moving tire (design of adequate texture of a new surface, can be improved by adding transverse grooves).

Processes of natural and dynamic drainage can be controlled through pavement:

- Design
- Construction; and
- Maintenance

Drainage can be enhanced by special measures such as grooving and porous friction course (PFC), but the emphasis is on good runway design, construction and maintenance (slope, drainage, surface material).

2.6.1 Slope (drainage)

The maximum slope allowed for the various runway classes and different parts of the movement area is given in ICAO SARPs and EASA requirements.

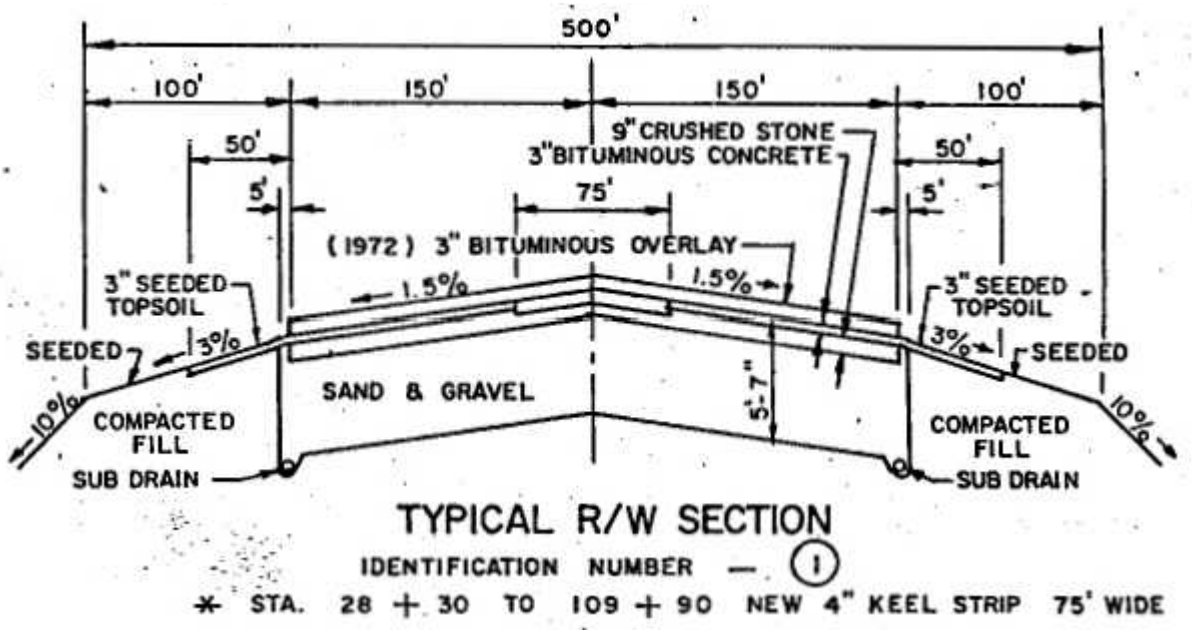


Figure 1. Typical R/W Section.

Further guidance is given in Doc 9157, Part 1 – Runways and Part 3.

2.6.2 Macrotexture (drainage)

Open macrotexture provides a high water-discharge rates from under the tires with a minimum of dynamic pressure build-up. Macrotexture if particularly important for friction in the high-speed range.
Aircraft tires cannot be produced with patterned treads as an automobile tire, so they contribute substantially less to interface drainage. Their effectiveness decreases rapidly with tire wear.
ICAO recommends, and EASA required a macrotexture of no less than 1 mm MTD.

2.6.3 Microtexture (drainage)

The interface drainage between the individual aggregate and the tire is dependent upon the fine texture on the surface of the aggregate. At lower speeds, water can escape as the pavement and tire come into contact. For a better microtexture drainage, crushes aggregates should be used.

Rainfall
Small amounts of water can have a significant effect on aircraft performance. Macrotexture (smooth or rough) and drainage affect aircraft performance.
Standing water: at sufficiently high rainfall rates, water will rise above the texture depth. It can lead to equally hazardous situations as might occur on smooth runways.

2.7 Construction: Selection of aggregates and surface improvement methods:

- Crushed aggregates: Good microtexture is a prerequisite for good friction characteristics.
- Portland cement concrete (PCC): The friction characteristics are obtained by transversal texturing of the surface of the concrete under construction (roughness).
- Hot-mix asphalt (HMA): Adequately shaped crushed aggregates, well-graded asphalt mix design and standard mechanical characteristics (e.g. adhesion of binder to aggregates, stiffness, resistance to permanent deformation, resistance to fatigue/crack initiation, resistance to abrasion) = macrotexture 0.7 to 0.8 mm (slightly higher for SMA (stone matrix asphalt)) (11 to 14 mm size aggregate).
- Grooving and PFC: Improvement of friction characteristics for runway pavements (additional guidance in Doc 9157, Part 3).

2.8 Construction: Grooving

- Enhancing surface drainage and tire/ground interfacial drainage.
- Natural drainage can be slowed down by surface texture but can be improved by grooving. Grooving provides escape channels for dynamic drainage.
- Reduces the danger of hydroplaning for an aircraft landing on a wet runway.
- Reduces the size, or eliminates, water pools.
- Can be used on PCC and HMA surfaces designed for runways.
- Construction methods. Grooves are saw-cut by diamond-tipped rotary blades. Must meet tolerances set by the State for alignment, depth, width and centre-to-centre spacing.
- Maintenance. A system must be established for maintaining clean grooves (rubber removal) and preventing/repairing collapsed grooves.
- Grooves wear down with traffic and partly fill with rubber in the touchdown areas, reducing macrotexture.
- The average texture is still mainly determined by the unworn and unclogged grooves on the rest of runway.

2.9 Construction: Porous friction course PFC

Porous friction course (PFC) is an alternative to grooving, which is designed to improve the skid resistance and to reduce the incidence of hydroplaning by providing a highly porous material (voids 20 to 25 per cent).
Main difficulties regarding PFC is:

- Rubber deposits, which must be monitored and removed before they fill up the structural void spaces,
- Contamination, which may fill void spaces and reduce drainage efficiency.

2.10 Maintenance

Maintenance programme ensures adequate drainage, rubber removal and cleaning of runway (non-winter contaminants).
Degradation is caused by:

- Rubber deposits (can be managed through a rubber removal programme);
- Surface polishing (can be managed by monitoring loss of sharpness and a retexturing/resurfacing programme) and;
- Poor drainage (can be managed by monitoring changes in geometry or/and blocking of drainage channels and a reshaping programme).

According to AMC1 ADR.OR.OPS.C.010 (b) (3) the trend monitoring concept is used to ensure that the degradation of surface friction characteristics is above the minimum friction level specified by the State.

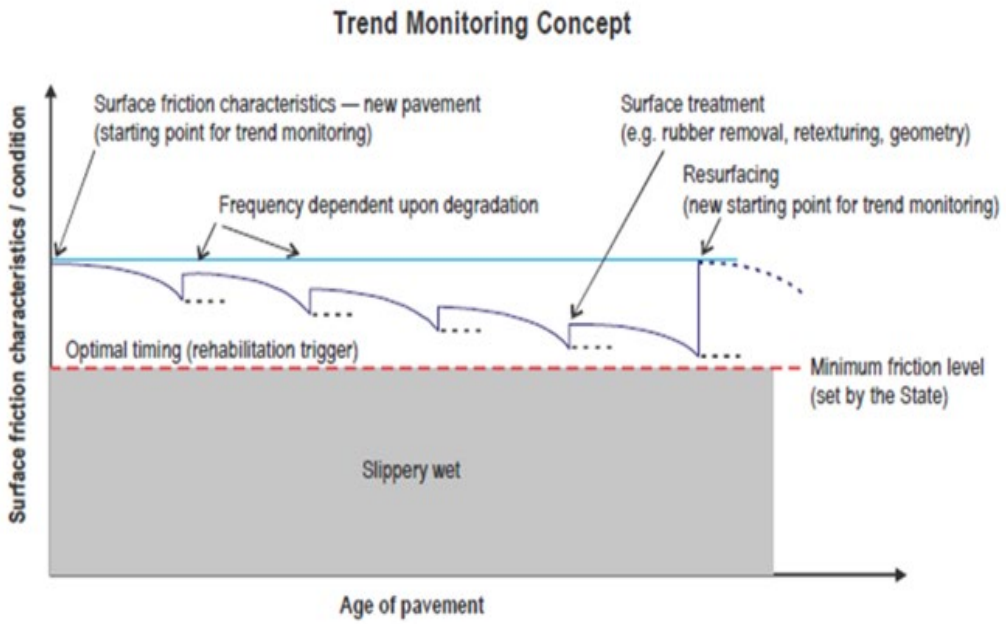


Figure 2. Trend Monitoring Concept.

2.10.1 Maintenance: Removal of rubber

Removal of rubber is applied in order to restore the inherent friction characteristics and unmask covered, painted runway markings (primarily in the touchdown and braking area of a runway)
Additional guidance on removal of rubber and other surface contaminants can be found in Doc 9137, Part 2 – Pavement Surface Conditions and Part 9 – Airport Maintenance Practices.

Damage to surface and installations

- Damage of the underlying surface depends on the method used, equipment and experience of the operator.
- Most damage appears to be associated with water blasting, so only experienced operators should be used.
- The least damage is associated with chemical removal.
- The removal of rubber with shot blasting can have the advantage of retexturing a polished pavement surface (retexturing)

2.11 Skid resistance

The factors that cause loss of skid resistance can be grouped into two categories:

- Mechanical wear and polishing action from rolling and braking of aircraft tires or from tools used for maintenance; and
- Accumulation of contaminants.

These two categories directly relate to microtexture and macrotexture.

2.10.1 Microtexture: skid resistance

Microtexture can be lost when exposed to mechanical wear of the aggregate (polishing). The susceptibility for mechanical wear of the aggregates is a build-in quality: PSV (Polished Stone Value). Microtexture effects the skid resistance at low speeds.

2.10.2 Macrotexture (skid resistance)

Macrotexture if reduced and lost as the voids between the aggregate become filled with contaminants. It can be:

- A temporary condition (snow and ice), or
- A persistent condition (accumulation of rubber deposits)

Macrotexture affects the skid resistance at high-speed.

3. RUNWAY SURFACE FRICTION ASSESSMENTS

3.1 Introduction

Friction characteristics of the critical tire-to-ground contact area are property belonging to:

- Pavement surface (runway: slope, texture);
- Tires (Aircraft: tread depth, inflation pressure);
- Contaminants (between the tire and the pavement); and
- Atmosphere (precipitation, wind, temperature, radiation affecting the state of the contaminant).

Friction + Aeroplane + Pilot = Dynamic Process

Aircraft response (rolling, slipping, skidding) is a function of dynamic system that encompasses:

- Atmosphere/contaminant + tire/pavement reaction = tire/pavement friction and drag;
- Combine it with aircraft (aerodynamics, engine thrust, brake system, landing gear) and pilot (technique, control, braking, steering) = System response.

Runway friction evaluation should consist of:

- Visual survey of surface inadequacies, such as drainage problems, ponding, rutting, groove deteriorations and structural deficiencies;
- Friction evaluation performed with a self-wetting Continuous Friction Measuring Equipment (CFME);
- Pavement surface texture measurement performed with grease or sand patch method.

A runway surface friction assessment is conducted under controlled dry conditions, using the self-wetting function of CFME, to establish the friction characteristics of a runway and to identify those areas of a runway surface that may require maintenance in order to restore surface friction values to the MPL or above.

To lessen potential problems caused by reduced runway surface friction, two approaches are possible: provision of reliable aircraft performance data for take-off and landing related to available runway surface friction/aircraft braking performance, and provision of adequate runway surface friction always and under all environmental conditions.

The first approach has proved difficult, mainly because of the problem of determining runway friction characteristics in operationally meaningful terms in all conditions, and the problem of correlation between CFME used on the ground and aircraft braking performance. This applies to the wet runway case.

The second approach addresses specifically the wet runway. It consists of specifying the minimum levels of friction characteristics for pavement design and maintenance. Runways which have been constructed according to appropriate standards and are adequately maintained thereafter, provide optimum operational conditions and meet this objective. Accordingly, aerodrome operators should concentrate on developing and implementing appropriate procedures for runway design, construction and continuing maintenance.

By adopting a systematic approach to the measurement of runway surface friction characteristics, the degradation of runway surface friction can be determined by the comparison and assessment of data over time. By utilizing this data, aerodrome operators should be in a position to target maintenance as required in order to help ensure aircraft braking performance does not fall below internationally accepted levels.

3.2 Assessment Periodicity

The aerodrome operator should determine the frequency of the assessments that will enable any significant change in runway surface friction characteristics to be identified and, if appropriate, for remedial maintenance to be conducted before the friction level falls below the Minimum Friction Level (MFL).

The recommended maximum intervals between runway surface friction assessments is outlined in Table 1.

Table 1. Recommended maximum intervals between runway surface friction assessment.

Daily turbo-jet aeroplane arrivals for runway end	Minimum friction survey frequency runway
<15	Once per year
16 to 30	Once every 6 months
31 to 90	Once every 3 months
91 to 150	Once every month
151 to 210	Once every 2 weeks
>210	Once every week

Note: The total number of movements, on both runway directions, determines the average number of movements on a runway.

3.3 Trend Analysis

The friction characteristics of a runway will vary over time as the runway is subject to wear and tear (polishing), accumulation of rubber deposits and to the effects of weather and other environmental conditions. Aerodrome operators should monitor the results of assessments and should alter the interval between assessments depending on the results. If historical data indicate that the surface is deteriorating relatively quickly, more frequent monitoring may be required in order to ensure that maintenance is

arranged before the friction characteristics deteriorate to MFL. The aerodrome operator should record the justification for any variation from the recommended periodicity for assessments.

The friction characteristics of a runway can also alter significantly following maintenance activities, even if the activity was not intended to affect the friction characteristics. Therefore, a runway surface friction assessment should be conducted following any significant maintenance activity conducted on the runway and before the runway is returned to service. Runway surface friction assessments should also be conducted following pilot reports of perceived poor braking action, if there are visible signs of a build-up of rubber deposits, runway surface wear, or for any other relevant reason. In this cases, responsible personnel for evaluating runway surface conditions should determine whether the runway is wet (RWYCC = 5) or slippery wet (RWYCC = 3).

3.4 Additional Assessments

Any data gathering conducted on a wet runway with the self-wetting system turned off cannot be used for the purpose of friction monitoring assessment.

Especially on new surfaces, or resurfaced runways, an aerodrome operator should carry out additional friction testing to establish friction readings during adverse weather conditions and to identify those areas of the runway where contamination (i.e. water) may build up over a short period of time. This is of importance where re-profiling of the runway's lateral, longitudinal or sloping planes has been accomplished as part of any rehabilitation project. These assessments should be conducted under natural conditions with the CFME self-wetting system switched off. Under these circumstances, the values given in Table 3 do not apply and it is up to the ALH to assess the data if necessary, with the help of experts.

When there are indications that the friction characteristics of a runway may be reduced because of poor drainage, an additional assessment should be conducted, but this time under natural conditions representative of local rain. This assessment differs in that water depths in the poorly drained areas are normally greater in local rain conditions. The results are thus more appropriate to identify problem areas having low friction values that could induce hydroplaning than the standard assessment method. If circumstances do not permit assessments to be conducted during natural conditions representative of rain, then dousing the runway surface with water may simulate this condition.

When conducting assessments on wet runways, it is important to note that, unlike compacted snow and ice conditions, in which there is very limited variation of the friction reading with speed, a wet runway produces a drop-in friction with an increase in speed. However, as the speed increases, the rate at which the friction is reduced becomes less. Among the factors affecting friction between the tyre and the runway surface, texture is particularly important. If the runway has a good macro-texture (roughness) allowing the water to escape beneath the tyre, then the friction value will be less affected by speed. Conversely, a low macro-texture (smooth) surface will produce a larger drop in friction as speed increases

Accordingly, when assessing runways to determine their friction characteristics, and whether maintenance action is necessary to improve it, a speed high enough to reveal these friction/speed

variations should be used. Figure 1 below shows a typical graph to illustrate the variation in friction between textures.

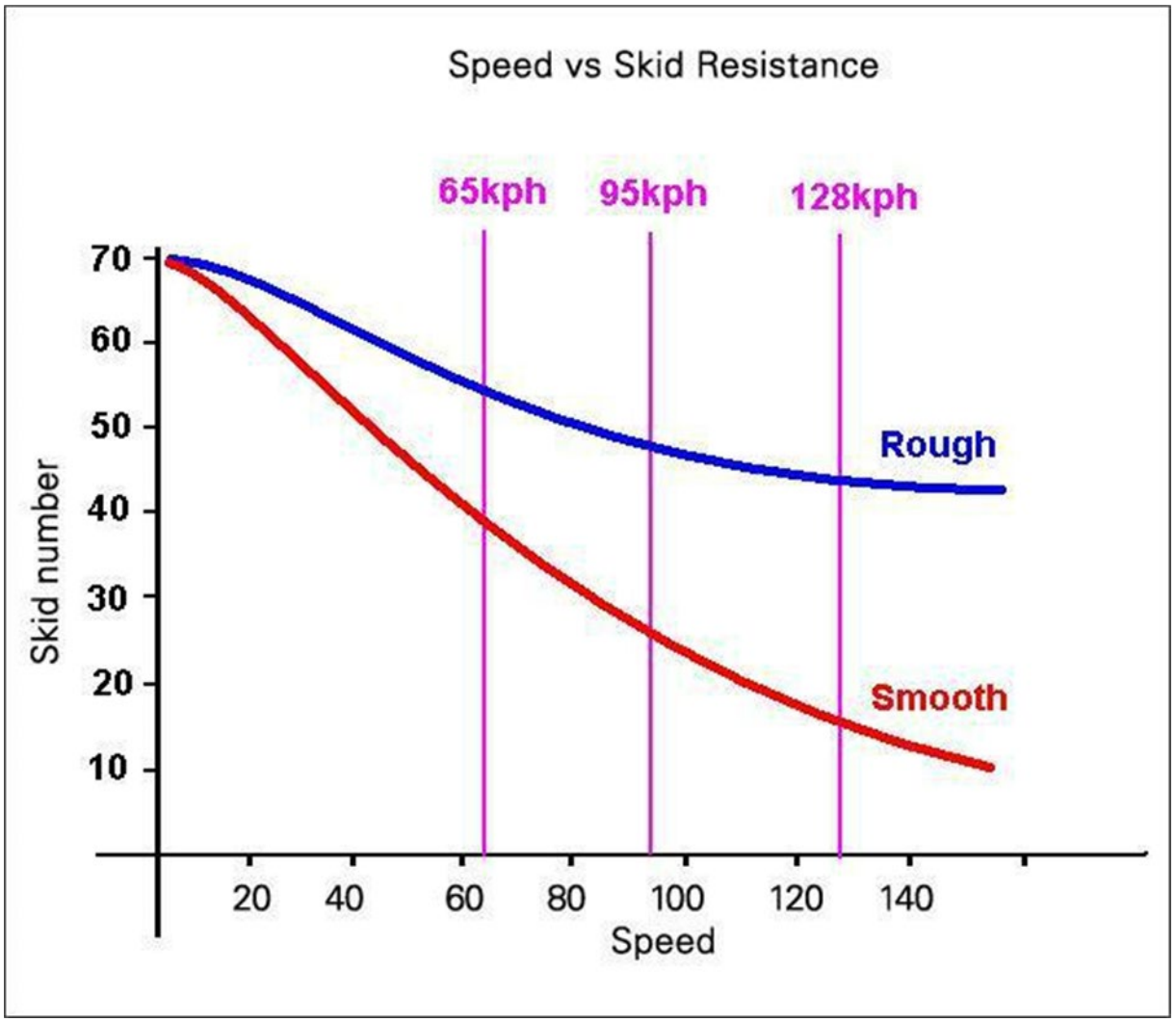


Figure 3. Speed vs Skid Resistance.

CFME manufacturers should be consulted concerning any special operating procedures involved in testing at higher speeds. Operational safety assessments relating to specific aerodrome procedures may need to be reviewed to consider testing at higher speeds.

4. RUNWAY SURFACE FRICTION ASSESSMENT PROCEDURES

4.1 Equipment checks

The CFME operator should ensure that the equipment is in full working order and calibrated in accordance with the manufacturers' operating instructions. Those with responsibility for the provision of CFME should ensure that the equipment is serviced regularly and that the measuring tyre is of the correct specification and remains within manufacturers' tolerance. General guidance on test speeds, nominal test water film thickness, test tyre type, test tyre pressure and test tyre condition should be sought from the CFME manufacturer, but the operator must be aware that if the parameters specified in Table 3 are not adhered to, the values therein will not apply.

4.2 Operators training and competence

The success of friction measurement in delivering reliable friction data depends greatly on the personnel who are responsible for operating the CFME. All operators should be trained and competent in the equipment's operation and maintenance and be aware of the critical factors affecting the accuracy of friction measurements. Training may be conducted during normal assessment runs provided that suitable measures are in place to ensure that the results of the runs are valid. If additional runs are conducted for the purpose of training or maintenance of competence, the results may be included in the assessment system if they are known to be valid.

Where a contractor carries out an assessment, it is the responsibility of the aerodrome operator to satisfy himself as to the competence and experience of the CFME operator.

4.3 Assessment Conditions

During assessment operations the runway surface should be free from precipitation with no wet patches. Runs should be completed in a timely manner, with coordination from ATC, so that during the period of assessment check runs and standard runs are completed under the same conditions.

The assessment should be conducted at an ambient air temperature above 2°C.

Dampness, fog and mist conditions might also affect the outcome of the assessment and aerodrome operators should be aware that crosswinds might affect assessments utilising self-wetting. Aerodrome operators should seek advice on these issues from the CFME manufacturer.

4.4 Assessment Procedure

A runway surface friction assessment consists of at least two check runs in addition to a series of standard runs.

Check Runs:

a) A check run is designed to confirm that the operation of the CFME is consistent throughout the full runway surface friction assessment; one should be conducted before and the other after completion of the standard runs, under the same conditions. Reference to manufacturers' guidelines should be made to determine the maximum variation between the two runs permissible.

b) Check runs should be performed over the entire pavement length at a constant speed on a part of the runway that does not traverse any other runs.

Standard Runs:

a) A standard run should be carried out along the entire pavement length at a constant run speed, allowing for acceleration and safe deceleration. Consideration should be given to means of ensuring the target speed is maintained during the run. If cruise control is fitted to the vehicle it should be checked to ensure its accuracy. During assessment runs, any over/under speed warnings given by the CFME should take precedence over the vehicle speedometer or cruise control. Table 2 defines the recommended location of each run for nominal width runways.

b) The track(s) of the measuring wheel(s) should not run along the line of the pavement joints or longitudinal cracks. Aerodrome operators should ensure that CFME drivers have sufficient means of track keeping whilst engaged in standard runs. This is especially important at night and when conducting runs away from the centreline or edge markings.

Table 2. Recommended Format for Runway Surface Friction Assessment Standard Runs Based on Nominal Runway Width

Runway Width	Recommended lateral displacement of standard runs each side of the centreline (metres)					
	Central portion			Outer portion		
18 m	1.5	3.5	6			
23 m	1.5	3	6	9		
30 m	1.5	4	7	12		
45 m	1.5	4	7	11	17	
60 m	1.5	4	7	11	17	23

c) The run pattern for a runway with Touchdown Zone (TDZ) markings should be planned so as to include one run either side of the centreline to pass through the centre of the painted TDZ markings.
d) If there is any reason to doubt the accuracy of the runway surface friction assessment, it should be repeated.
e) On runways without displaced thresholds or paved areas before the start, or beyond the end, of LDA and especially runways near to 1200 m ASDA, operators should ensure that drivers of CFME are equipped with a suitable vehicle that can attain a steady target speed as soon as practicable. A safe method of delineating the braking zone at the end of the run should also be available to the driver to allow safe braking at the end of the run.

4.5 Records

As with all elements of the aerodrome operator's SMS, procedures should ensure all appropriate records of all runway surface friction assessments are kept for a period of at least 24 months from the date of assessment.
The following items should be recorded for each assessment, and made available upon request to the CAA:

- Date and time of assessment, including operative's name;
- Runway assessed;
- Run number and runway direction;
- Distance from the centreline and on which side of centreline the run was performed;
- Constant run speed (km/h) for each run;
- Run length;
- Test water depth;
- Test tyre type;
- Measure of tyre wear;
- Surface condition and air temperature;
- Average friction level per run; and
- Friction levels indicating 100 m rolling average by Portion.

Furthermore, should maintenance intervention be indicated, the location, extent, methods employed, and results should be recorded.

5. EVALUATION OF RUNWAY SURFACE FRICTION ASSESSMENT RESULTS

5.1 Introduction

Aerodrome operators should make effective use of the assessment data produced by CFME. Regular reviews coupled with planned maintenance activities driven by trend analysis will ensure that surface friction characteristics are consistently acceptable. Certified Aerodromes are recommended to use either CFME manufacturers' software-based reporting or to export raw data into an appropriate spreadsheet format. If provided, a 'quick view' 100 m rolling average by Portion table is a convenient way of summarizing the assessments. However, detailed examination of the data for each 10 m reading should be carried out after each assessment to identify areas of the runway, which may require maintenance or closer monitoring.

Failure to follow this guidance could lead to a runway that "may be slippery when wet" or even require taking out of service under certain weather conditions.

The friction readings obtained should be compared with the following friction levels:

- The Design Objective Level (DOL);
- The Maintenance Planning Level (MPL);
- The Minimum Friction Level (MFL).

For any given runway surface, the friction readings produced by different CFME are liable to differ from each other. Also, for any given runway surface the readings given by a CFME are liable to alter if the test speed, test water depth or test tyre type are altered. Table 3 sets out the test speed, test water depth and test tyre type required for the assessment, and gives the DOL, MPL and MFL in terms of the friction readings provided, when these requirements are met, by each of the CFME devices.

Table 3. Friction Level Values

	Test Speed	Test water depth	Test tyre type	DOL	MPL	MFL
Mu-Meter	65 kph	0.50 mm	ASTM E670-09 [1]	0.72 or greater	0.52	0.42
Grip Tester	65 kph	0.25 mm	ASTM E1844-08 [2]	0.80 or greater	0.53	0.43
ASFT	65 kph	1.00 mm	ASTM E1551-08 [3]	0.82 or greater	0.60	0.50
BV-11 Skidometer [4]	65 kph	1.00 mm	ASTM E1551	0.82	0.60	0.50

1. *This is the Standard Test Method for Side Force Friction on Paved Surfaces Using the Mu-Meter, which includes the specification for the Mu-Meter test tyre.*
2. *This is the Standard Specification for A Size 10 × 4-5 Smooth-Tread Friction Test Tire, which is the tyre used by the Grip Tester.*
3. *This is the Standard Specification for Special Purpose, Smooth-Tread Tire, operated on Fixed Braking Slip Continuous Friction Measuring Equipment, which is the tyre used by the CFMEs like the ASFT.*
4. *The BV-11 Skidometer is a wheel-mounted friction measuring trailer made to ASTM E1551 specifications, designed to operate at a specified slip ratio between 15 and 17%, regardless of the tire configuration for measurement*

5.2 100 m Rolling Averages

The concept of 100 m rolling average is based on ICAO Annex 14 Chapter 10 Aerodrome Maintenance "Note - A portion (area) of the runway in the order of 100 m long may be considered significant for maintenance or reporting action."

The following is an explanation of how CFME collects data and derives values for 100 m rolling average per run or per Portion of the runway width and should be read in conjunction with Figure 2. During a standard run friction reading are collected by the CFME along the line of the complete run, provided the operator maintains target speed. An averaged friction value is collected in 10 m increments along the run so that, over 100 m, an average can be calculated; this is the average of the 10 inclusive averaged values within the 100 m. To assist in understanding the process, as an example, a 1,000 m run would collect 100 hundred-metre readings in 10 m increments. The first rolling average is the sum of the first 10 readings divided by 10 (RA_1). The second rolling average is the sum of readings number 2 to 11 divided

by 10 (RA_2) and so on to the end of the run. The last rolling average, in this example, is the sum of readings number 90 to 100 divided by ten. A rolling average is best visualised as a 100 m long cursor passing over the surface of the runway. The illustration shows the cursor has reached a position from RA_{12} to RA_{22} (e.g. from 210 m to 310 m along the run). This cursor can be moved to 10 different positions whilst still including the 10 m increment in question (i.e. RA_{22}). By comparing the values shown against each 10 m increment on the runway against the adjacent line representing the rolling average the difference should be self-evident. After a value has been attributed to every 10 m increment of the run, the CFME's on-board software sifts these average friction values and selects the lowest of them. So, at the start of the run there will be only one to choose from (RA_1). However, at 10 m there will be two values from which to select (RA_1 and RA_2) etc. This process is repeated throughout the run in order to locate the minimum 100 m rolling average at any 10 m segment on the run.

The runway width is divided into three areas; these areas, or Portions of the pavement, are referred to as 'central' and 'outer' trafficked Portions and bound the edges of the sliding cursor. (See Table 2)

On a 45 m wide runway each Portion is 15 m wide. On runways of lesser width, the central Portion remains 15 m wide and each outer portion has its width reduced by applying the formula: ~ W/2 – 7.5 where W is the total width of the runway in metres.

From Table 2, 6 standard runs cover the 15 m central trafficked Portion and the remainder the outer Portions.

The procedure for calculating the 100 m rolling average for each run is repeated in a similar fashion for each of the three Portions across the runway. In each case, the applicable runs across the width of each Portion are first averaged before undertaking the rolling average calculation as described above.

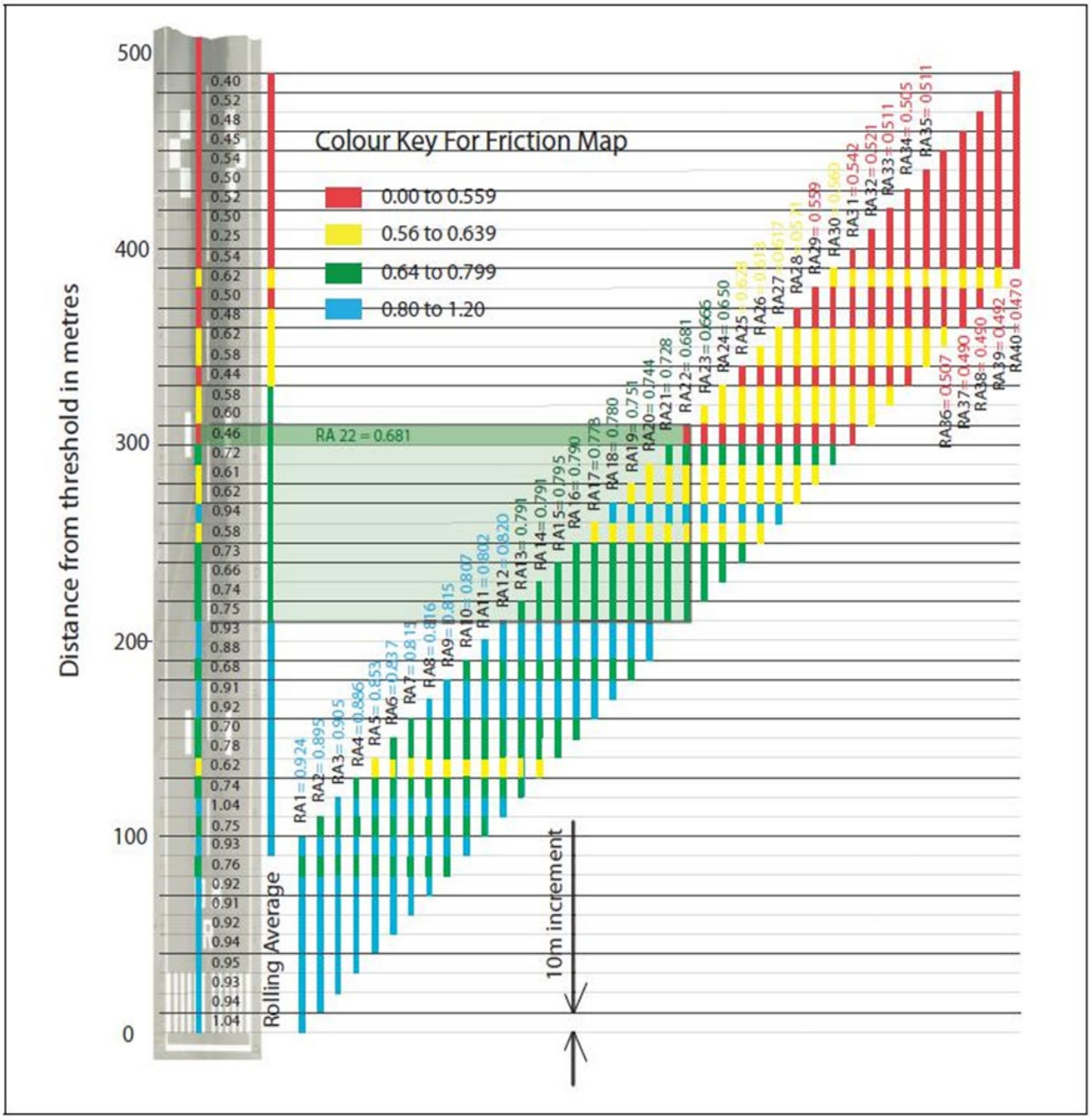


Figure 4. Average assessed values.

5.3 Actions to be taken as a result of runway friction assessment

The aerodrome operator should review the results of each runway friction assessment and where appropriate take the following action:

a) For a new constructed pavement, the average friction value for a 100 metre section shall be greater than the levels stipulated in Table 3 (refer to DOL value).

b) Measurement at or below the maintenance planning level trigger a complete survey of the texture, contaminant and drainage state of the affected runway third.

c) Minimum Friction Level: If the results of testing indicate that friction has dropped below the Minimum Friction Level, stipulated in Table 3, Aerodrome operator shall take measures for maintenance purposes and additional assessment, including corrective actions such as: ex. plan rubber removal works for the affected touchdown zone.
A NOTAM must be promulgated that advises that the runway pavement falls below the minimum friction level when wet.

Caution should be exercised when choosing the most appropriate method of restoring friction values. Expert advice on the types of processes best suited to both the surface and the cause of the reduced friction levels should be sought to guard against causing damage to the runway.

5.4 Assessment made following maintenance activities

The friction characteristics of some runway surface materials can improve over time, commonly as a result of the dispersal of volatile oils in the surface layers following rehabilitation. However, if the runway surface friction assessment indicates that the friction characteristics of an area of the runway that has been subject to maintenance work are poorer than anticipated or fall below the MPL, additional assessments should be performed over a period of time to ascertain whether the friction characteristics remain stable, improve, or if additional work should be carried out.

Aerodrome operators contemplating major runway rehabilitation and/or re-profiling must contact the CAA in advance to discuss management of the overall friction characteristics of the runway during the project. Of importance to the CAA in this context will be the extent and length of time areas of any base course will remain exposed and newly laid wearing course will be left un-grooved, if grooving is envisaged.

Certified aerodromes should ensure that procedures in the aerodrome SMS that manage risks associated with the work in respect of friction characteristics of the runway are effective, both throughout the period of works, if the runway is to be taken back into service at times and during any wearing-in period following completion of the project.

6. GLOBAL REPORTING FORMAT SYSTEM (GRF) FOR ASSESSMENT AND REPORTING OF RUNWAY SURFACE CONDITIONS

6.1 Introduction

The International Civil Aviation Organization (ICAO) has identified runway safety, particularly runway excursions, as a primary concern for aviation safety. Indeed, lessons learnt from investigations into accidents and incidents suggest that the principal cause for excursions occurring during landing stem from ineffective braking action due to runway contamination. This trend has been corroborated by aircraft operators and aircraft manufacturers.

It has been acknowledged that a lack of standardized runway assessment and reporting methodology has created deficits in the processes employed by aerodrome operators around the world which indirectly contribute to the highlighted concerns pertaining runway safety. Consequently, to address these shortfalls, ICAO has developed a new congruous methodology for assessing and reporting runway surface conditions. This methodology is known as Global Reporting Format (GRF) and has been globally applicable from 4th November 2021.

Assessing and reporting the condition of the movement area and related facilities is necessary in order to provide the flight crew with the information needed for safe operation of the airplane. The runway condition report (RCR) is used for reporting assessed information.
On a global level, movement areas are exposed to a multitude of climatic conditions and consequently a significant difference in the condition to be reported. The RCR describes a basic structure applicable for all these climatic variations. Assessing runway surface conditions rely on a great variety of techniques and no single solution can apply to every situation.
The philosophy of the RCR is that the aerodrome operator assesses the runway surface conditions whenever contaminants are present on an operational runway. From this assessment, a runway condition code (RWYCC) and a description of the runway surface are reported which can be used by the flight crew for airplane performance calculations. This format, based on the type, depth and coverage of contaminants, is the best assessment of the runway surface condition by the aerodrome operator; however, all other pertinent information will be taken into consideration and be kept up to date and changes in conditions reported without delay.
The RWYCC reflects the runway braking capability as a function of the surface conditions. With this information, the flight crew can derive, from the performance information provided by the airplane manufacturer, the necessary stopping distance of an aircraft on the approach under the prevailing conditions.

6.2 Conceptual integrity of GRF

GRF has:

- 5 fundamental elements;
    - Runway Condition Assessment Matrix (RCAM): A matrix allowing the assessment of the

runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report from braking action;
    - Runway Condition Code (RWYCC): A number describing the runway surface condition to be used in the RCR;
    - Runway Condition Report (RCR): A comprehensive standardized report relating to runway surface condition(s) and its effect on the aeroplane landing and take-off performance;
    - Runway Surface Conditions: A description of the condition(s) of the runway surface used in the RCR and which established the basis for the determination of the RWYCC for aeroplane performance purposes; and
    - Runway Surface Condition Descriptors.
- 4 runway surface conditions;
    - Dry runway;
    - Wet runway;
    - Slippery wet; and
    - Contaminated runway.
- 8 contaminated runway surface condition descriptors:
    - Compacted snow;
    - Dry snow;
    - Frost;
    - Ice;
    - Slush;
    - Standing water;
    - Wet ice; and
    - Snow.

Since Albania is not regularly exposed to snow and ice conditions, aerodrome operators will apply the water reporting scenario rather than the full snow and ice reporting format. In cases of presence of snow or ice in the manoeuvring areas, the aerodrome operator will have to declare the runway closed via NOTAM and perform the required maintenance procedures, as defined in the approved Snow Plan.

6.3 Expected benefits of the GRF

Expected benefits of the GRF are:

- Reporting of Runway surface condition in a standardized manner
- Establish a common language between all actors in the system: aerodrome operators, aircraft operators, pilots, ANSPs (ATCs), AIM, MET, aircraft manufacturers, etc.
- Allow pilots to accurately determine airplane take-off and landing performance.

6.4 Stakeholders responsibilities on GRF implementation

Table 4. Stakeholders responsibilities

Stakeholders Responsibilities				
Aerodrome Operators	**Air Traffic Services (ATS)**	**Aeronautical Information Services (AIS)**	**Aircraft operators**	**Aircraft manufacturers**
Assess the runway surface conditions, including contaminants, for each third of the runway length, and report them by means of a uniform runway condition report (RCR)	Convey the information received via the RCR and/or special air-report (AIREP) to end users (voice communications, ATIS, CPDLC)	Provide the information received in the RCR to end users (SNOWTAM)	Utilize the information in conjunction with the performance data provided be the aircraft manufacturers to determine if landing or take-off operations can be conducted safely and provide runway braking action special air-reports (AIREP)	Provide the necessary performance data in the aeroplane flight manual.

6.5 Duties of the aerodrome operator related to the implementation of GRF and the new methodology of assessment and reporting of runway surface conditions

- Identify the persons who are responsible for the implementation (the persons who will perform the evaluation of the runway surface conditions and the personnel who will perform the reporting of the runway surface conditions);
- Join the national implementation team;
- Coordinate with other stakeholders;
- Create the GRF implementation plan to ensure coordination and timely implementation (tasks, dates, roles and responsibilities);
- Identify personnel and make them aware of the change;
- Identify the necessary changes in the organization, policies and procedures, the change plan, as well as perform the risk assessment for the development of the process;
- Identify necessary changes in documentation and make changes (e.g. amendment of LoA with Air Navigation Service Provider);
- Identify the required equipment and tools (devices, software) and plan the purchase;
- Training - ensure all staff are properly trained;

- Submit the change management request to CAA according to the approved formats.

The implementation team consists of ACAA, aerodrome operators, ANSP (AIS, ATS, MET), aircraft operators (pilots, dispatchers).

6.6 Assessment of runway surface condition

Assessment of runway surface conditions shall be made through:

- Visual inspection;
- Continuous monitoring of situation and prevailing weather conditions;
- Other:
    - Temperature (OAT or surface);
    - Dew point;
    - Wind (speed and direction);
    - Control and deceleration of the inspection vehicle;
    - Pilots reports of runway braking action;
    - Friction readings (CFME or decelerometer)
    - Weather forecast;
    - Last RCR;
    - Relevant NOTAMs;
    - Runway treatments performed.

Assessment of runway surface conditions shall be made:

- At least once during each shift when runway is wet, or contaminants are present;
- When weather condition is changing, and it can affect previous RCR;
- When visual runway inspections and/or AIREP indicate change;
- Following snow clearing or treatments;
- Following incident or accident;
- When ATC indicated.

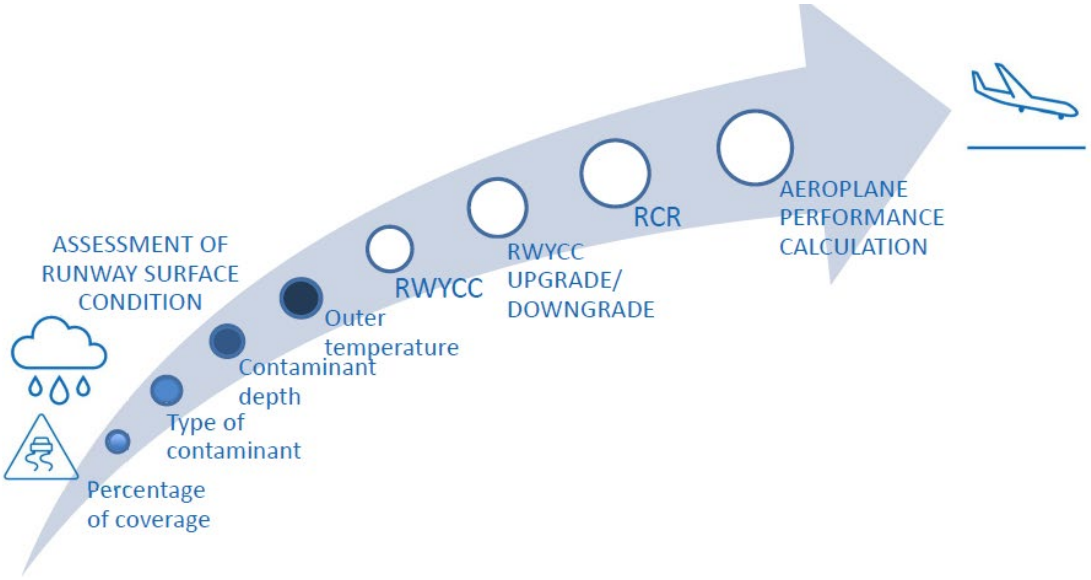


Figure 5. Assessment of runway surface condition.

Airport operator assess:

1. Percentage of coverage of contamination in each runway third:
    a. If the distribution of the contaminant is not uniform → Plan language remarks part of the situation awareness section of the RCR.
    b. If the total coverage of multiple contaminants is ≥ per cent (but no single contaminant covers ≥ 25 per cent) of any runway third → RWYCC (based on judgment of contaminant that will mostly affect aeroplane's performance).

Table 5. Percentage of coverage of contamination.

Assessed per cent	Reported per cent
10-25	25
26-50	50
51-75	75
76-100	100

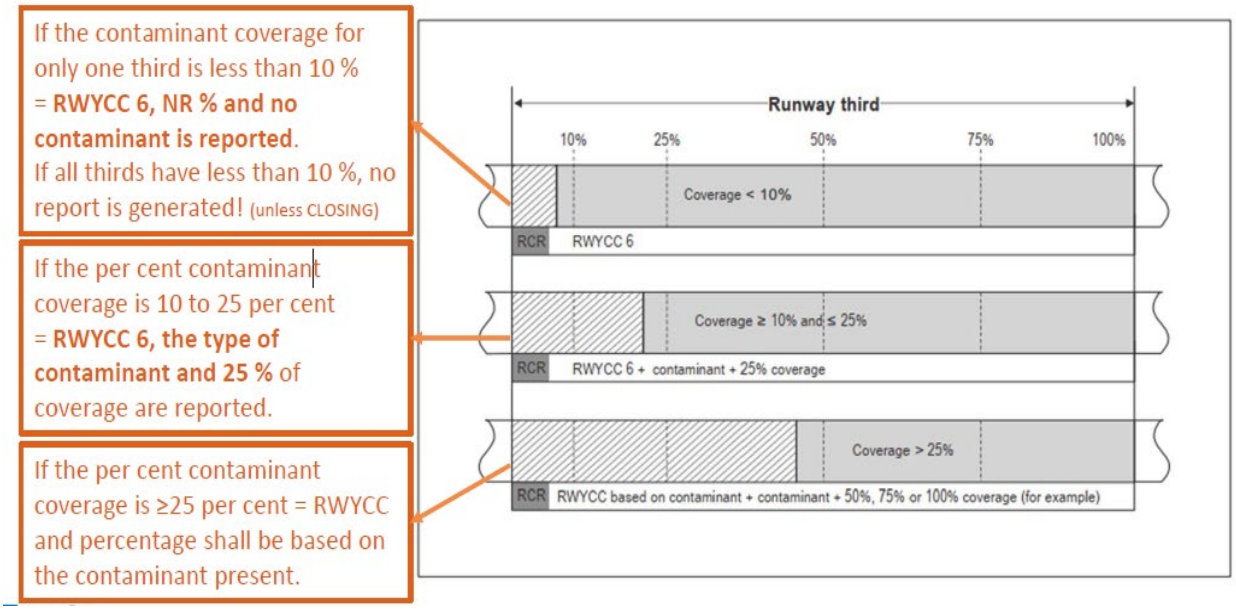


Figure 6. Percentage of coverage of contamination.

2. Type of contaminant:

Four runway surface conditions:

- DRY: RWYCC 6 and is reported only:
    - When where is a need to report conditions on one or more of the other thirds
    - Where the report is the last, final, closing after RCR (e.g. 6/6/6 NR/NR/NR NR/NR/NR DRY/DRY/DRY)
- WET: RWYCC 5, a report of rain at the airport is enough to assign the code.

- SLIPPERY WET: RWYCC 3, contributing factors are rubber build-up, groove failures, texture problems. Determination methods: functional friction measurements, observation by aerodrome maintenance personnel, repeated pilot reports, analysis of aeroplane stopping performance.
  RWYCC 3/3/3 100/100/100 NR/NR/NR WET/WET/WET
  Plain language section: "RWY SLIPPERY WET"
  + NOTAM
- Contaminated Runway: STANDING WATER. Mud (mm), ash, sand and oil are reported in plain language remark session of RCR. For rubber contamination an assumption of RWYCC 3 restored usual performances margins.

Table 6. RWYCC for different runway surface conditions.

Runway surface conditions	RWYCC
DRY	6
WET	5
SLIPPERY WET	3
STANDING WATER (more than 3 mm)	2

3. Contaminant depth

3 mm threshold – contamination depth of up to 3 mm are expected to provide similar stopping performance as a wet runway. Above this depth impact on friction forces is more significant and additional drag effects start to apply.

Table 7. Contaminant depth.

Contaminant	Valid values to be reported (mm)	Significant change
STANDING WATER	04, then assessed value	3 mm up to and including 15 mm

4. Surface on air temperature

- The threshold for the classification of compacted snow is OAT 15 ^{0}C (RWYCC 4 below OAT – 15 ^{0}C and RWYCC 3 above OAT – 15 ^{0}C)
- Runway surface temperature should preferably be used where available.

5. Determination of RWYCC by using RCAM

Table 8. Determination of RWYCC by using RCAM.

Runway condition code	Assessment criteria	Downgrade assessment criteria	
	Runway surface descriptors	Aeroplane deceleration or directional control observation	Pilot report of runway braking action
6	DRY	-	-
5	WET	Braking deceleration is normal for the wheel braking effort applied and directional control is normal	GOOD
3	SLIPPERY WET	Braking deceleration is noticeably reduced for the wheel braking effort applied or directional control is noticeably reducing	MEDIUM
2	STANDING WATER (more than 3 mm)	Braking deceleration or directional control is between medium and poor	MEDIUM TO POOR

Visual evaluation of movement area to assess surface condition is the core of the method for determining RWYCC. Designated staff for the assessment must use their best judgment and have enough experience to determine the RWYCC that best reflect the actual situation at the airport.

6. Downgrading and upgrading RWYCC

Downgrading and upgrading is an integral part of the assessment.

When all other observations, experience and local knowledge indicate that the primary (initial) assignment of the RWYCC does not reflect the prevailing conditions accurately, a downgrade or upgrade should be made.

Downgrading assigned RWYCC

Aspects when assessing the runway slipperiness for a downgrade:

- prevailing weather conditions:
  - stable below freezing temperature;

  - dynamic conditions;
  - active precipitation;
- observations (information and source);
- measurements:
  - friction measurements of a compacted snow- or ice-covered surface, FMD meets the standard set or agreed by the State;
  - vehicle behaviour;
  - shoe scraping;
- experience (local knowledge); and
- AIREPs.

Upgrading assigned RWYCC

Upgrade is applicable only when the initial RWYCC is 0 or 1, thus it will not be applied since in snow and ice conditions no RCR will be generated but the runway will be declared closed.

7. Runway Condition Report (RCR)

- Reporting shall commence when a significant change in runway surface condition occurs due to water, snow, slush, ice or frost;
- Reporting of the runway surface condition should continue to reflect significant changes until the runway is no longer contaminated:
  - When this situation occurs, the aerodrome will issue a runway condition report that states the runway is wet or dry as appropriate.
- Information to be reported shall be thoroughly checked before it is submitted to the AIS in order to ensure all necessary information has been included and that it is correct in detail.
- A significant change is:
  - any change in the RWYCC (0 to 6);
  - any change in contaminant type;
  - any change in reportable contaminant coverage;
  - any change in contaminant depth;
  - any other information, for example a pilot report of runway braking action**.**
- A change in contaminant coverage

Table 9. Percentage of coverage of contamination.

Assessed per cent	Reported per cent
10-25	25
26-50	50
51-75	75
76-100	100

  - If the percentage of coverage is changed, e.g. 25 to 30 %, a new RCR should be used.

- A change in contaminant depth

Table 10. Contaminant depth.

Contaminant	Values to be reported (mm)	Significant change
STANDING WATER	04, then assessed value	3 mm up to and including 15 mm

The information to be included in the generation of the RCR is divided into two sections:

- Aeroplane performance calculation section
- Situational awareness section

The information to be included in each section is reflected in the table below:

Table 11. Runway Condition Report (RCR).

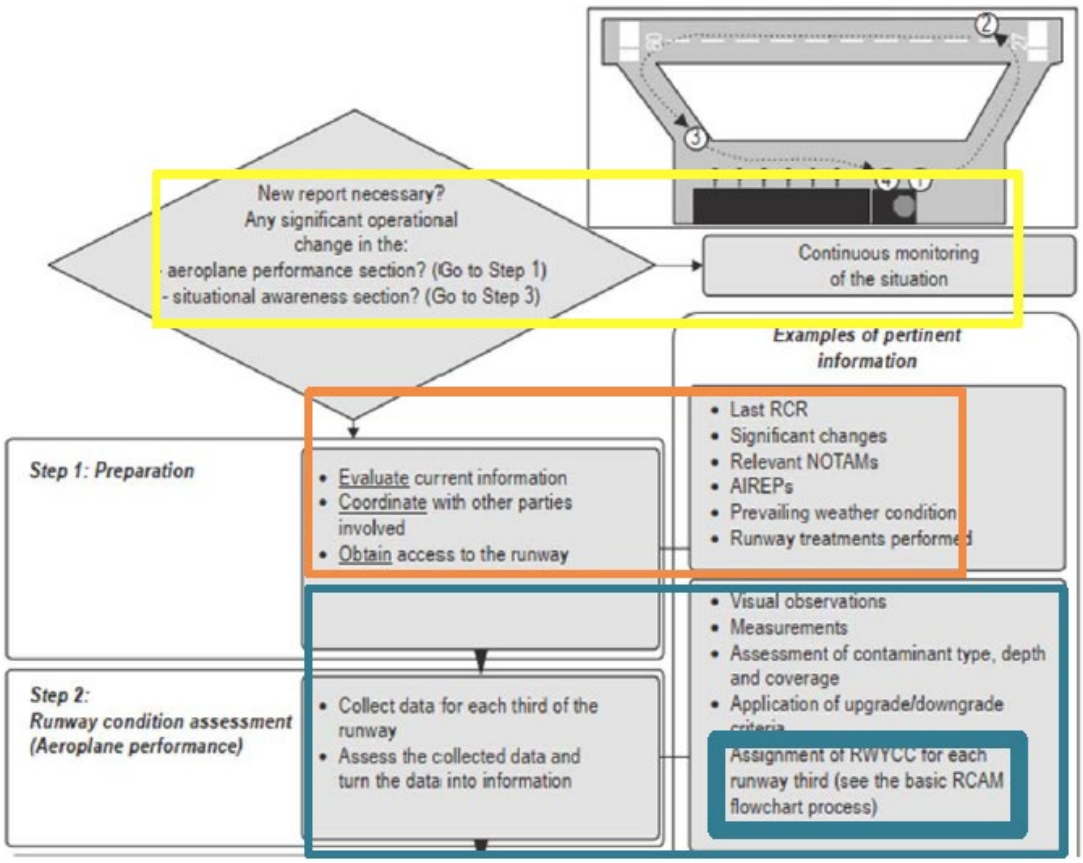
Runway Condition Report (RCR)	
Aeroplane performance calculation section	
Information	Source
Aerodrome location indicator	ICAO Doc 7910, Location Indicators
Date and time of assessment	UTC time
Lowest runway identification number	Actual runway
RWYCC for each runway third	Assessment based on RCAM and associated procedures.
Percent coverage contaminant for each runway third	Visual observation for each runway third
Depth of loose contaminant for each runway third	Visual observation for each runway third, confirmed by measurements when appropriate
Condition description (contaminant type) for each runway third	Visual observation for each runway third
Width of runway to which the RWYCCs apply if less than published width	Visual observation while at the runway and information from local procedures/snow plan.
Situational awareness section	
Reduces runway length	NOTAM
Drifting snow on the runway	Visual observation while at the runway
Loose sand on the runway	Visual observation while at the runway
Chemical treatment of the runway	Know application of the treatment. Visual observation of residual chemicals on the runway
Snowbanks on the runway	Visual observation while at the runway
Snowbanks on taxiway	Visual observation while at the runway
Snowbanks adjacent to the runway penetrating level/profile set in the aerodrome snow plan	Visual observation while at the runway, confirmed by measurements when appropriate
Taxiway conditions	Visual observation, AIREP, reports by other

	aerodrome personnel, etc.
Apron conditions	Visual observation, AIREP, reports by other aerodrome personnel, etc.
State-approves and published use of measures friction coefficient	Dependent upon the standard set or agreed by the State
Plan language remarks using only allowable characters in capital letters	Any additional significant operational information to be reported

5.7 Runway condition assessment process

Runway condition assessment process is described by the charts below:

- The generic runway condition assessment process; and
- The basic RCAM flowchart process A and B, as follows.



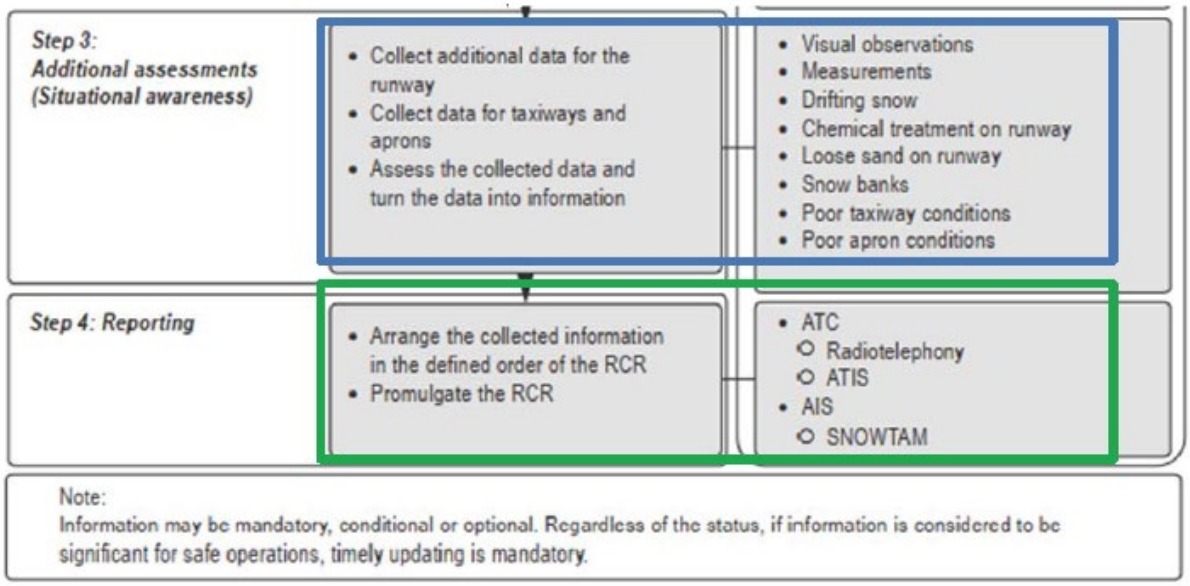


Figure 7. The generic runway condition assessment process.

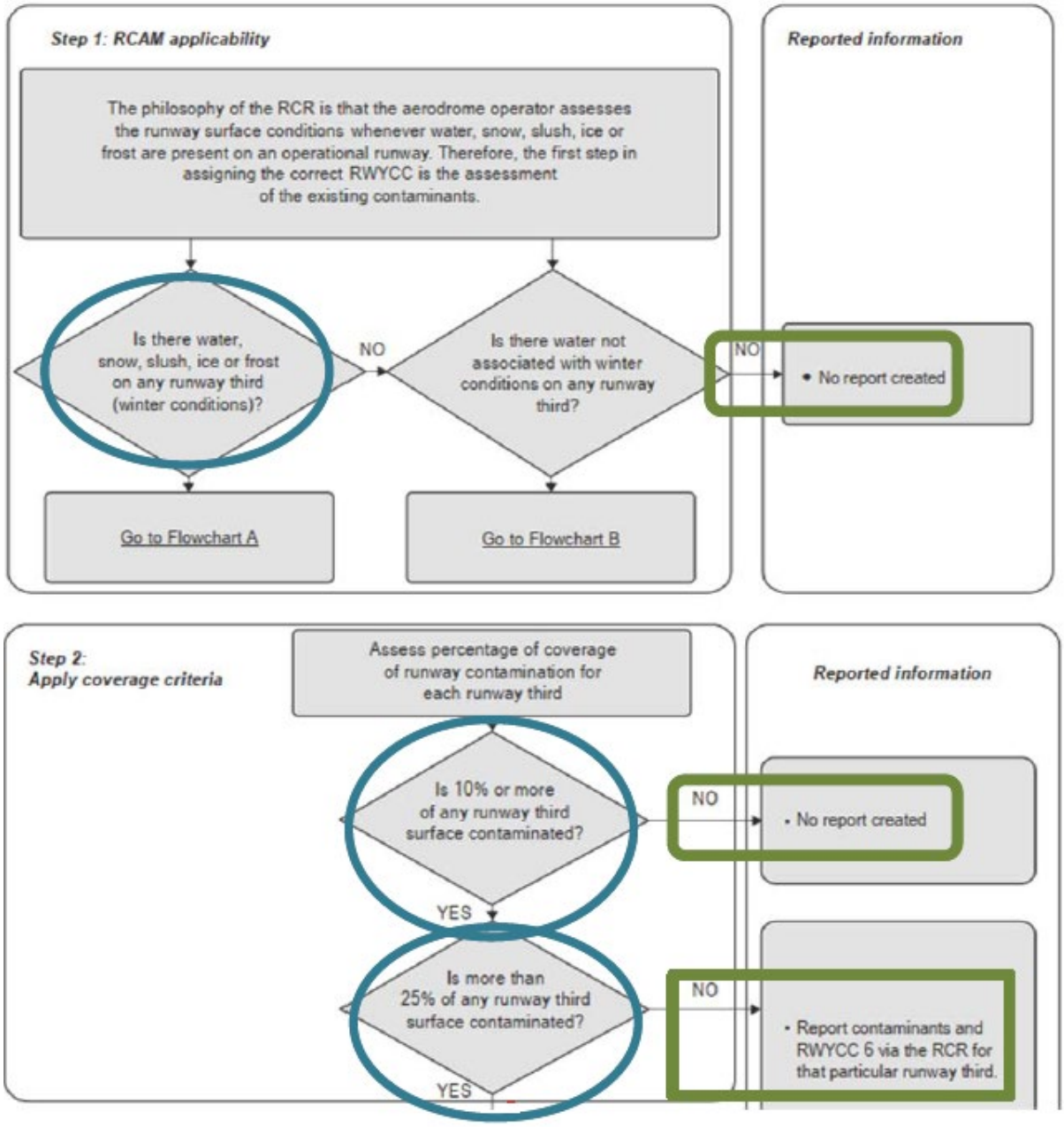


Figure 8. The basic RCAM flowchart process (A), Part 1.

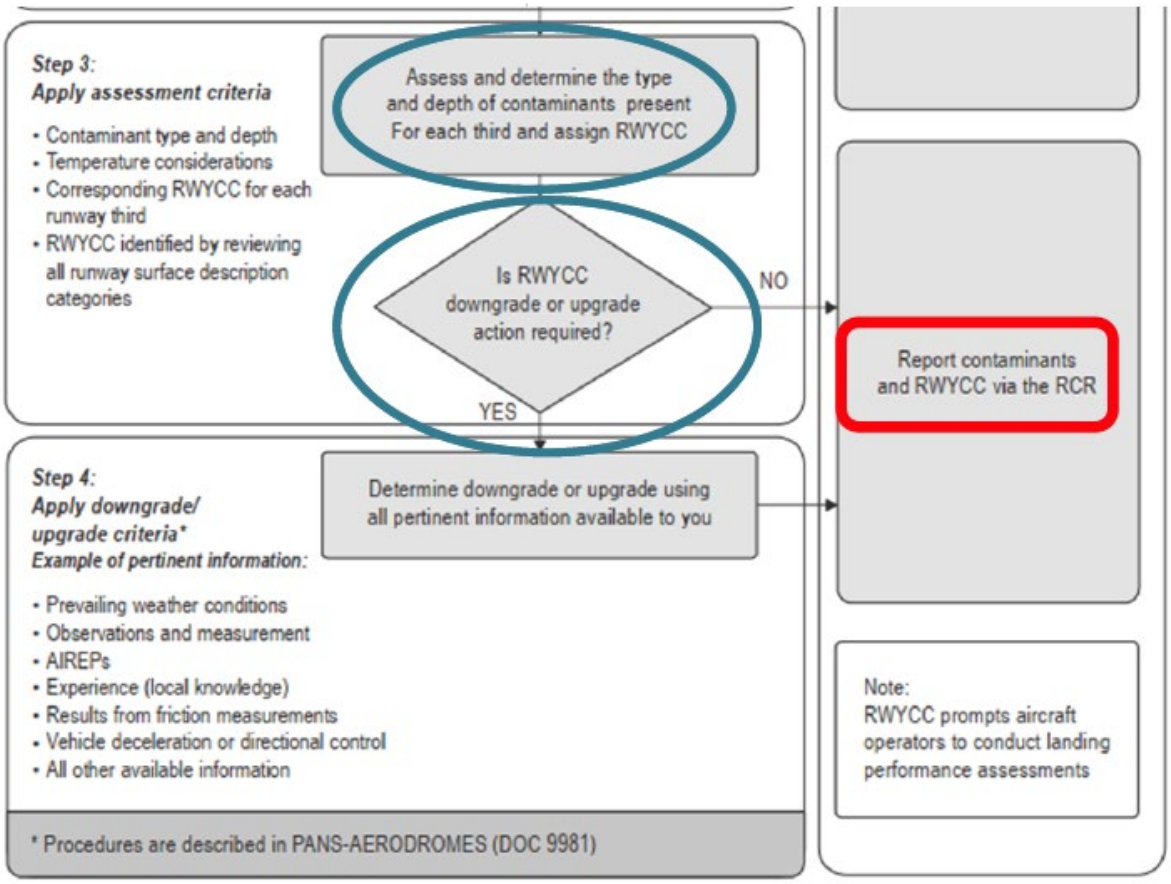


Figure 9. The basic RCAM flowchart process (A), Part 2.

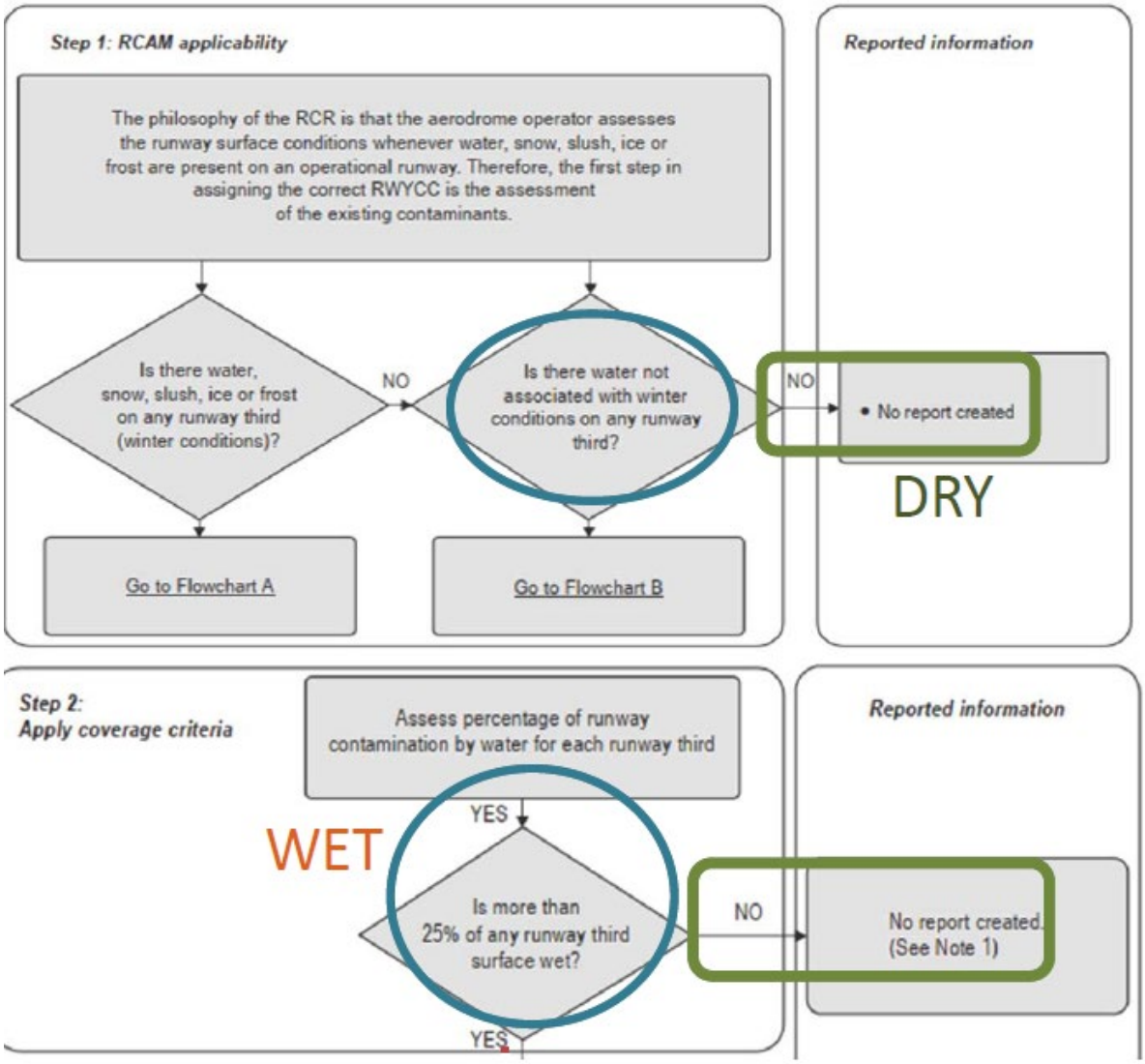


Figure 10. The basic RCAM flowchart process (B), Part 1.

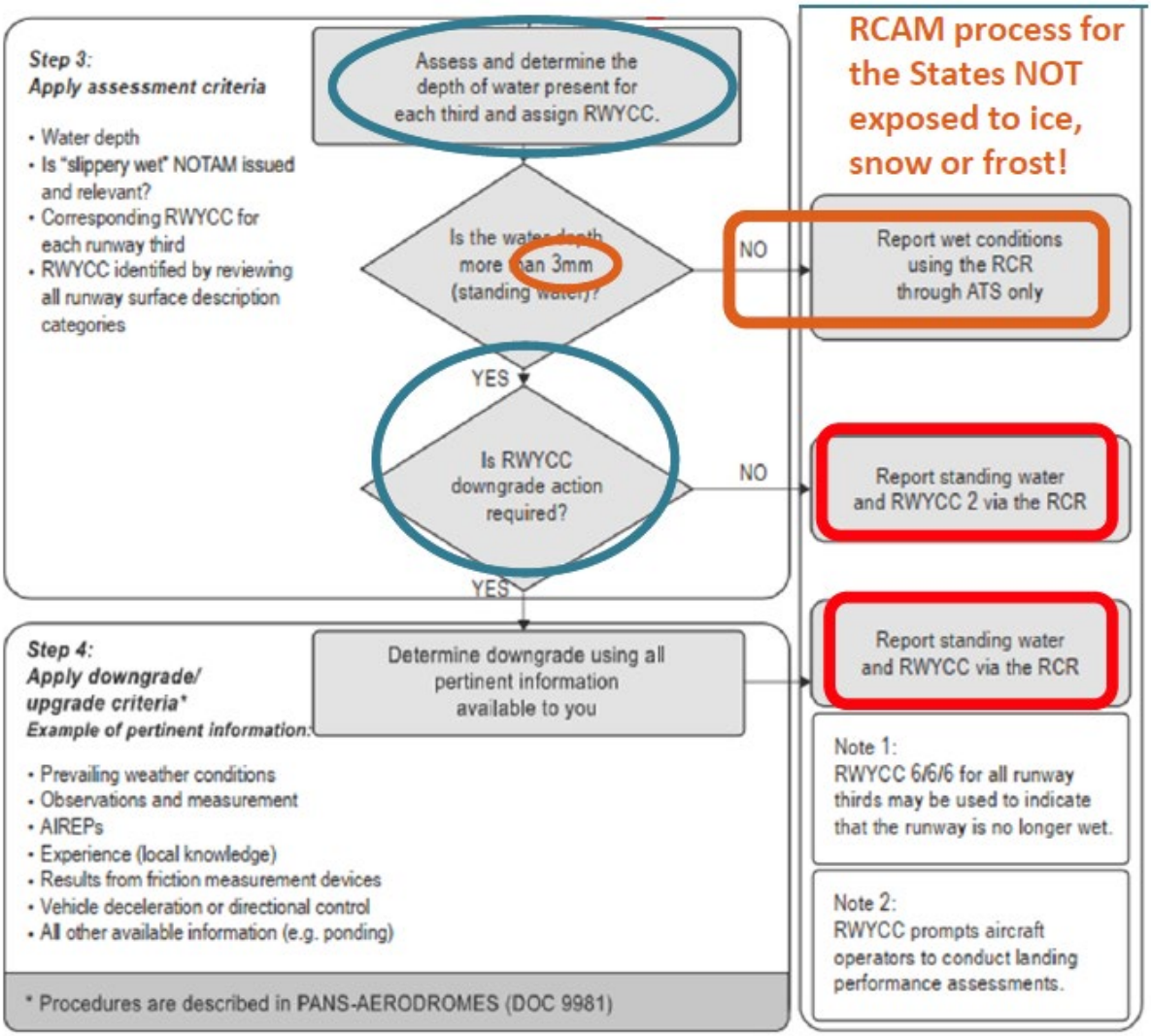


Figure 11. The basic RCAM flowchart process (B), Part 2.

6.7.1 Continuous monitoring of condition

The airport operator should develop monitoring procedures which may include:

- Monitoring pavement physical conditions including temperatures, contaminants types and depths;
- Monitoring air traffic and pilot communications related to pilot reports of the portion of the runway used;
- Monitoring weather patterns;
- Increased self-inspections (reducing intervals between inspections).

6.7.2 Final closing RCR

A final “closing” RCR shall be made stating that the runway is no longer contaminated:

- When the runway is no longer contaminated;
- When there is less than 10 % coverage, by any form of visible moisture (in frozen, liquid or damp state).

Example: when the runway surface has dried up to such extent that there is less than 10 % visible moisture left, the final RCR to be issued would be: 6/6/6 NR/NR/NR NR/NR/NR DRY/DRY/DRY.

7. RUNWAY SURFACE CONDITIONS REPORTING

7.1 ICAO Reporting Formats

ICAO's methods of reporting and promulgating information are as follows:

1. Aeronautical information publications (AIPs);
2. Aeronautical information circulars (AICs);
3. Notice to Airmen (NOTAM);
4. SNOWTAM;
5. AIREPs;
6. Automatic terminal information services (ATIS); and
7. Air traffic control (ATC) communications.

7.1.1 Aeronautical Information Publication (AIP)

Friction issues in the AIP are related to:

- Seasonal availability clearing (AD 2.7)
- Runway physical characteristics (AD 2.12, remarks); and
- Snow plan (AD 1.2.2.) – a brief description of general snow plan and related friction issues:
    - measuring methods and measurements taken;
    - system and means of reporting;
    - cases of runway closure; and
    - distribution of information about snow, slush or ice conditions

7.1.2 Aeronautical Information Circulars (AICs)

- Whenever it is necessary to promulgate aeronautical information that does not qualify for inclusion in an AIP or a NOTAM.
- Related friction issues include the advance seasonal information on the snow plan.

7.1.3 Notice to Airmen (NOTAM)

- When information is of a temporary nature and of short duration or
- When operationally significant permanent changes or temporary changes of long duration are made at short notice.
- This applies to the friction issues related to the:
    - physical characteristics published in the AIP; and
    - presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice or water on the movement area.

7.1.4 SNOWTAM

A special series NOTAM given in a standard format providing a surface condition report notifying the presence or cessation of hazardous conditions due to snow, ice, slush, frost, standing water or water associated with snow, slush, ice, or frost on the movement area.

- Metric units shall be used.
- The unit of measurement (e.g. mm, cm, m, etc.) should not be reported.
- The maximum validity of SNOWTAM is 8 hours.
- A new SNOWTAM automatically cancels the previous SNOWTAM.
- The letters used to indicate items (A to T) should not be included in the messages.
- The direction for listing the runway thirds shall be in the direction from the lower designation number.

7.1.5 Reporting from flight crew to ATS (AIREP)

- The pilot-in-command shall (Annex 6) report the runway braking action special air-report (AIREP) when the runway braking action encountered is not as good as reported.
- When receiving special AIREP by voice communications, ATS units shall forward it without delay to the appropriate aerodrome operator (regulated by SLA).
- Less subjective AIREPs may be generated by automated systems processing aeroplane data recorded during the deceleration phase.

7.1.6 Automatic Terminal Information Service (ATIS)

In addition to normal operational and weather information, the following information should be provided whenever runway is not dry (RWYCC 6):

- Performance section:
  - operational runway in use at time of the issuance;
  - RWYCC for operational RWY for each third in the operational direction;
  - condition description, coverage and depth (for loose contaminant);
  - width of the operational RWY to which RWYCC apply if less than published;
  - reduced length if less than published;
- Situational awareness section:
  - loose sand;
  - RWY exits, taxiways and apron if POOR; and
  - any other remarkable information in short plain language.

7.1.6 Air Traffic Control (ATC)

- Provides timely information of operational significance relating to runway conditions, from the aerodrome operator to the flight crew, if different from the ATIS.
- Information may contain additional information: weather observed and forecasted by MET personnel (even before it is available on ATIS), information gathered by other flight crews (braking action reports).
- ATC can provide the flight crew, at very short notice, with their own immediate observations, such as a rapid change in rainfall intensity or the presence of snow (unofficial information).
- The information is to be reported in the operational direction (1st, 2nd and 3rd third).

Reporting of RWYCC from ATS to flight crew

- Reporting of RWYCC from ATC to flight crew for runway thirds:

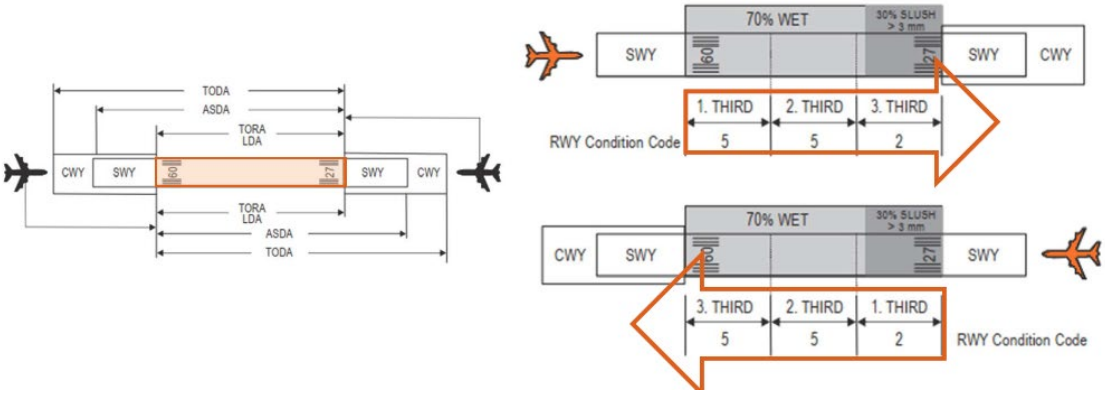


Figure 12. Reporting of RWYCC from ATC to flight crew for runway thirds.

- Reporting of RWYCC from ATS to flight crew for runway thirds on a runway with displaced threshold:

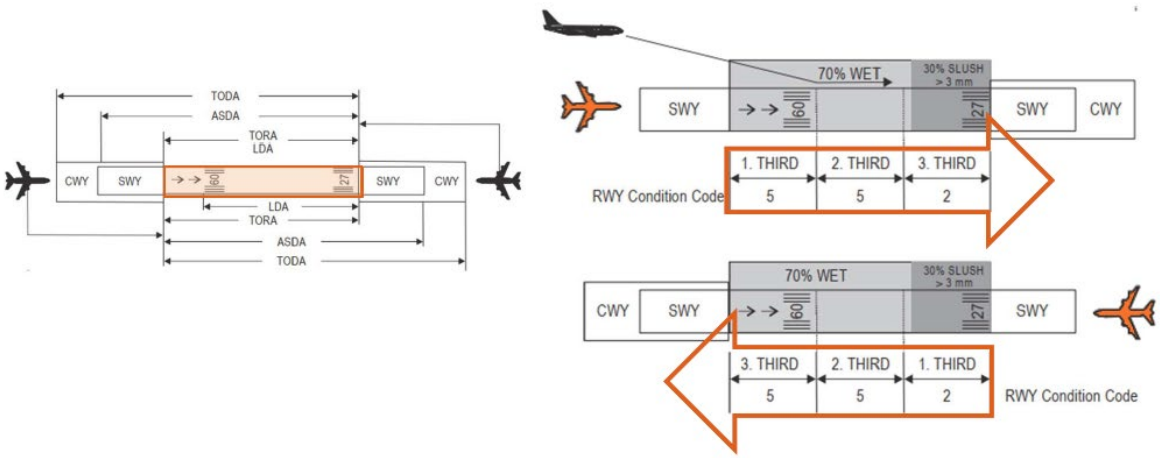


Figure 13. Reporting of RWYCC from ATC to flight crew for runway thirds on a runway with displaced threshold.

8. NOTAM

8.1 Introduction

The basic purpose of NOTAM is the distribution of information in advance of the event to which it relates, except in cases of unserviceable facilities or services, volcanic activity, or the release of radioactive material and toxic chemicals that cannot be foreseen. Thus, the end user, e.g. flight crew or airline, must receive a NOTAM in enough time to take any required action to realize its purpose. The value of a NOTAM lies in its up-to-date content.
NOTAM is intended to supplement AIP and serves as a fast medium for distributing aeronautical information at short notice. NOTAM is originated, issued and distributed:

a) when the information is of a temporary nature, unplanned and of short duration; or
b) when operationally significant permanent changes, or temporary changes of long duration are made at short notice.

The information of short duration containing extensive text or graphics is published as an AIP supplement.

Note 1. - Requirements addressing the duration of NOTAM are specified in the PANS-AIM, 6.1.4.

Note 2. - The information to be promulgated by NOTAM is specified in Annex 15, 6.3.2.3.

Note 3. - The information not to be promulgated by NOTAM is specified in Annex 15, 6.3.2.4.

8.2 NOTAM Format

The NOTAM format consists of two parts:

a) the part for the communication service handling the AFS message, i.e. the part containing the priority indicator, addresses, date and time of filing and the originator's indicator (see Chapter 9); and
b) the part containing the NOTAM information.

The part containing the NOTAM information consists of the following:

a) message series, number and identifier which provide information about the NOTAM series (identified by a letter from A to Z, excluding letters S and T), the NOTAM number (a consecutive four-digit number based on the calendar year, followed by a stroke and a two-digit number for the year) and the type of NOTAM (i.e. NOTAMN, NOTAMR or NOTAMC);
b) item Q) encodes the information in a set of predefined qualifiers, namely:
    i. FIR;
    ii. NOTAM Code;
    iii. Traffic;
    iv. Purpose;
    v. Scope;
    vi. Lower and Upper Limits; and
    vii. Coordinates and Radius.

c) Item A) provides information about the affected area;
d) Item B) provides information about the start of the activity;
e) Item C) provides information about the end of the activity;
f) Item D) provides information about the time schedule of the activity, if needed;
g) Item E) provides information about a NOTAM in plain language (i.e. uniform abbreviated phraseology and, where necessary, ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, digits and plain language);
h) Item F) provides information about the lower limit of the affected area, if needed; and
i) Item G) provides information about the upper limit of the affected area, if needed.

Item Q): *is presented in the form of "Q) FFFF/Qsscc/TT/PPP/SS/LLL/UUU/NNNNNEEEEEErrr". Each field is represented by a qualifier. All Item Q) qualifiers must be given a value for easy filtering for pre-flight information service; default values should be used where appropriate.*

Item A): *identifies the ICAO location indicator of the aerodrome or FIR in which the facility, airspace or condition reported on is located.*

Item B): *specifies the beginning of the occurrence or activity in a ten-digit date-time group (year, month, day, hours, minutes) in UTC. The beginning of a day is specified by 0000.*

Item C): *specifies the end of the occurrence or activity in a ten-digit date-time group (year, month, day, hours, minutes) in UTC.*

If applicable, Item D): *specifies the time schedule or the period(s) during which an occurrence takes place between the date-time groups in Items B) and C). If Item D) exceeds 200 characters, such information should be provided in a separate, consecutive NOTAM.*

Item E): *specifies text of NOTAM in plain language. It is composed of uniform abbreviated phraseology (decoded NOTAM Code), complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, digits and plain language.*

Item F): *is the lower limit expressed as an altitude either in meters or feet above mean sea level (AMSL), a height above ground level (AGL), a flight level (FL), surface (SFC) or ground level (GND).*

Item G): *is the upper limit expressed as an altitude either in meters or feet above mean sea level, a height above the ground, a flight level, or as unlimited (UNL) if applicable.*

For more information regarding Item Q), A), B), C), D), E), F), G), see ICAO 8126 "Aeronautical Information Services Manual", Chapter 6 "NOTAM", 6.3.3 -6.3.10.

The NOTAM format standardizes the presentation of the different types of information promulgated by NOTAM in order to facilitate understanding of the message by the addressee. In developing this format, the need for transcription of the information in the form of AFS messages has been taken into account. Therefore, the format includes the special symbols that are used in composing the message (i.e. carriage return, line change, blank space, opening parentheses before message identification and closing parentheses).

Note. - The NOTAM format is specified in the PANS-AIM, Appendix 3.

8.3 Specification for NOTAM

The format and the manner of specifying data must be closely adhered to.

Each NOTAM must be as brief as possible and so compiled that its meaning is clear without the need to refer to another document. Each NOTAM must address only one subject and one condition concerning the subject.

The text should be composed by the NOTAM office (NOF) in such a way that it will serve for PIB entry without requiring additional processing by the receiving unit.

In many instances, AIS need to amplify, supplement or complete the NOTAM Code by addition of appropriate significations and uniform abbreviated phraseology assigned to the NOTAM Code and abbreviations, frequencies, call signs, identifiers, designators, etc., in order to convey the essential information. This recognized procedure is used in keeping with the concept of the NOTAM Code and aeronautical telecommunication procedures, in preference to plain language. Refer to the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) for commonly used abbreviations.

Note. - Since the three letter Q-code (QDM, QFE, etc.) is primarily designed for air and ground request or reply communications, it should be used with caution and only when there is no chance that the message might be misunderstood.

When errors occur in a NOTAM, a NOTAM with a new number to replace the erroneous NOTAM is issued or the erroneous NOTAM is cancelled, and a new NOTAM issued. A corrected version of NOTAM must not be issued.

When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM must be indicated. The series, location indicator and subject of both NOTAM are the same. If the subject is slightly changed, then a NOTAMC and a NOTAMN with the new subject should be issued (instead of a NOTAMR). A NOTAM only cancels or replaces one NOTAM at a time.

The guidance and specifications below should be closely followed when completing the NOTAM format.

8.3.1 Message series, number and identifier

Each NOTAM must be allocated a series identified by a letter and a four-digit number, followed by a stroke and a two-digit number for the year so that addressees may check continuity. The number must be consecutive and based on the calendar year. Each series starts on 1 January with number 0001. If more than one series of NOTAM is issued, each series must be separately identified by a letter. Letters A to Z, apart from S and T, may be used to identify a NOTAM series. Renumbering of existing NOTAM (i.e. containing identical information, but with a new number) is not allowed, nor are NOTAM to be renumbered at the beginning of each year.

In order to reduce distribution to meet different requirements of States, it may be found useful to arrange for promulgation of NOTAM in two or more series to allow for selective distribution. For example, NOTAM may be classified as follows:

Series A. Information on general rules, en-route navigation and communication facilities, airspace restrictions and activities taking place above FL245, including information concerning major international aerodromes.

Series B. Information on airspace restrictions, on activities taking place below FL245 and on other international aerodromes at which IFR flights are permitted.

Series C. Information on other international aerodromes at which only visual flight rules (VFR) flights are permitted.

Series D. Information on national aerodromes.

Series E. Information on heliports.

The allowed message identifiers are as follows:

a) NOTAMN refers to a NOTAM containing new information;
b) NOTAMR refers to a NOTAM replacing a previous NOTAM, followed by the series, number and year of the NOTAM replaced (e.g. A0125/20 NOTAMR A0123/20);
c) NOTAMC refers to a NOTAM cancelling a previous NOTAM, followed by the series, number and year of the cancelled NOTAM (e.g. A0460/20 NOTAMC A0456/20).

NOTAMR and NOTAMC are issued in the same series as the NOTAM to be replaced or cancelled. In the following example, a new NOTAM (A0135/20) is replaced by NOTAM (A0137/20), and subsequently cancelled by another NOTAM (A0139/20) prior to its end date and time.

Examples

A0135/20 NOTAMN

A0137/20 NOTAMR A0135/20

A0139/20 NOTAMC A0137/20

8.3.2 Period of validity

Information must be provided on the duration of the reported hazard, change in the normal status of operation or condition of the facilities being reported on. NOTAM notifying unserviceable aids to air navigation, facilities or communication services should give the time at which restoration of service is expected or an estimate of the unserviceability period.

The duration of a circumstance should be expressed clearly to avoid any misunderstandings.

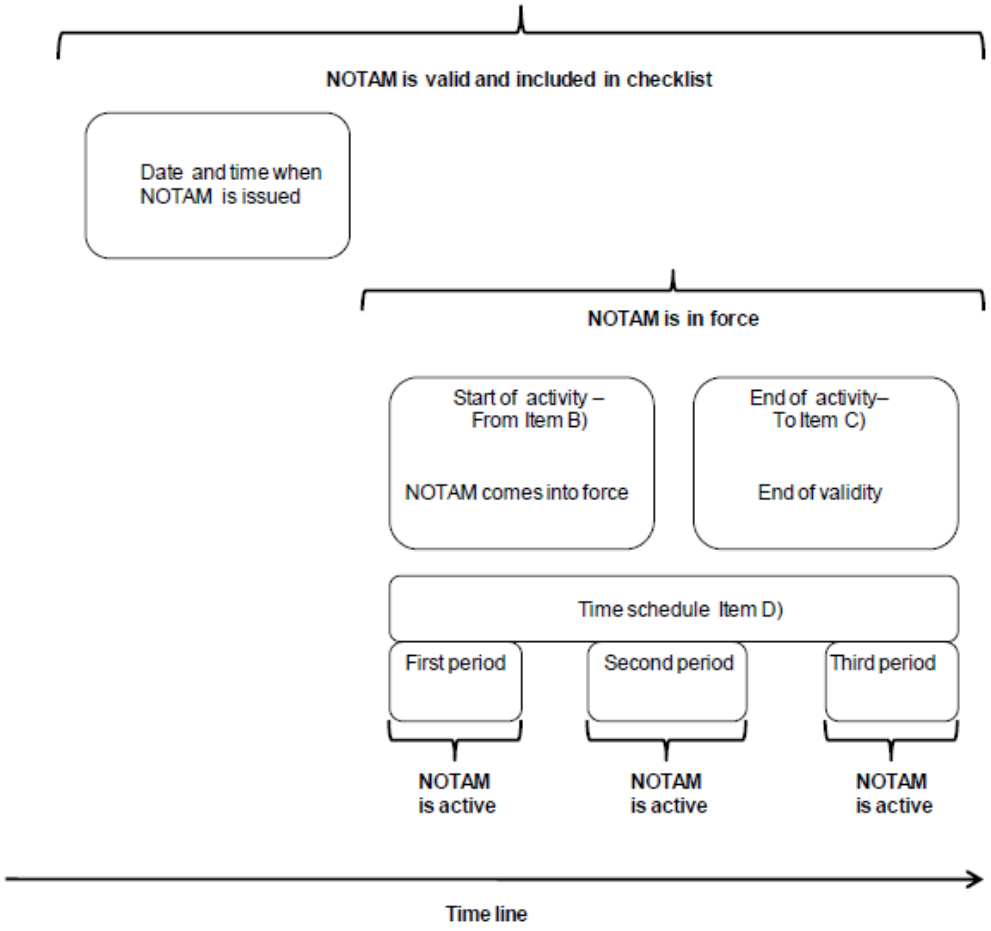


Figure 14. Relationship between the time-related expressions used in the NOTAM.

8.3.3 Cross-reference to AIP or AIP Supplement

When a NOTAM contains permanent or temporary information of long duration, the text must include an appropriate cross-reference to the affected AIP or AIP supplement and an annotation must be made accordingly. This informs the user of the AIP or AIP supplement that there is information outstanding against a particular entry (e.g. REF. AIP EADB AD 2.19).

When a NOTAM contains temporary information of short duration, AIP references should not be annotated in the NOTAM. This informs the user of the NOTAM that the text of the NOTAM is conveying the totality of the information.

8.3.4 Naming of Locations

Location indicators included in the text of NOTAM must be those contained in *Location Indicators* (Doc 7910) and curtailed forms of these indicators must not be used. In NOTAM that contains information concerning a location that has not been assigned an ICAO location indicator, the name of the location must be given in plain language, spelled in conformity with local usage and transliterated where necessary into the ISO basic Latin alphabet.

8.3.5 Examples of NOTAM using the NOTAM format

The following examples of NOTAM are for illustrative purposes only and do not have any operational value:

a) At DONLON/International from the 1st day of April 2020 at 0000 UTC until the 1st day of April 2020 at 0600 UTC, the distance measuring equipment will be unserviceable.

NOTAMN

Q) EACC/QNMAS/IV/BO/AE/000/999/5222N03222W025

A) EADD B) 2004010000 C) 2004010600

E) VOR/DME BOR 116.900MHZ/CH102X, DME U/S

b) At DONLON/International the VHF omnidirectional radio range on 116.400 MHz will be out of service until approximately the 13th day of November 2019 at 0900 UTC.

NOTAMN

Q) EACC/QNVAS/IV/BO/AE/000/999/5226N03200W025

A) EADD B) 1911020615 C) 1911130900EST

E) VOR DON 116.400MHZ U/S

c) At SIBY/Bistok the non-directional beacon on 243 kHz will be permanently withdrawn from service on 1 May 2020 at 0600 UTC. Add reference to AIP.

NOTAMN

Q) EACC/QNBAW/IV/BO/AE/000/999/4740N02942W025

A) EADB B) 2005010600 C) PERM

E) NDB BOR 243KHZ WITHDRAWN REF. AIP EADB AD 2.19

d) In the Amswell FIR gun firing will take place on the 21st day of February 2020 from 0800 hours UTC until 1100 hours UTC within an area of 10 NM around the location 53°04' North 25°05' West from the surface up to an altitude of 6 100 meters MSL.

NOTAMN

Q) EACC/QWMLW/IV/BO/W/000/200/5304N02505W010

A) EACC B) 2002210800 C) 2002211100

E) GUN FIRING WILL TAKE PLACE RADIUS 10NM CENTRE 5304N02505W

F) SFC G) 6100M AMSL

e) If a danger area EAD4 located at 4300N03800W with a radius of 50 NM (and affecting two FIR) is to be activated up to 40 000 ft MSL on 3, 7, 12, 21, 24 and 28 April 2020, daily from 0730 to 1500 UTC and

up to 30 000 ft MSL on 19 and 20 April 2020 daily from 0730 to 1500 UTC, two NOTAM will be required, as follows:

(A0623/20 NOTAMN

Q) EAXX/QRDCA/IV/BO/W/000/400/4300N03800W050

A) EACC EABB B) 2004030730 C) 2004281500

D) 03 07 12 21 24 28 0730-1500

E) DANGER AREA EAD4 ACT

F) GND G) 40000FT AMSL)

(A0624/20 NOTAMN

Q) EAXX/QRDCA/IV/BO/W/000/300/4300N03800W050

A) EACC EABB B) 2004190730 C) 2004201500

D) 19 20 0730-1500

E) DANGER AREA EAD4 ACT

F) GND G) 30000FT AMSL)

f) At DONLON/International on the 27th day of November 2019, basic GNSS is not available for NPA from 1723 to 1754 UTC, SBAS is not available for APV from 1731 to 1748 UTC and GBAS is not available from 1735 to 1746 UTC.

(B0116/19 NOTAMN

Q) EACC/QGAAU/I/NBO/A/000/999/5222N03155W005

A) EADD B) 1911271723 C) 1911271754

E) BASIC GNSS NOT AVAILABLE FOR NPA 1723-1754 UTC

SBAS NOT AVAILABLE FOR APV 1731-1748 UTC

GBAS NOT AVAILABLE 1735-1746)

g) SBAS is not available for all APV operations in an area around DONLON/International with radius 25 NM from 14 December 2019 at 2135 hours UTC until 15 December 2019 at 2135 hours UTC (estimated).

(A2500/19 NOTAMN

Q) EACC/QGWAU/I/NBO/AE/000/999/5222N03155W025

A) EADD B) 1912142135 C) 1912152135EST

E) SBAS NOT AVAILABLE FOR APV)

h) Basic GNSS, SBAS and GBAS will be unavailable for all en-route and aerodrome operations in an area around DONLON/International with radius 460 km (250 NM) on 16 October 2019 at 1815 hours UTC until 2315 hours UTC.

(A3546/19 NOTAMN

Q) EACC/QGWAU/I/NBO/AE/000/999/5222N03155W250

A) EADD B) 1910161815 C) 1910162315

E) BASIC GNSS SBAS AND GBAS NOT AVAILABLE)

Examples of completed NOTAM formats are given in Figures 13 and 14, and the meanings of the NOTAM messages are included below together with the associated examples of AFS messages.

a) NOTAM Series A number 0068 replacing NOTAM Series A number 0062 of the current year. HOLMSTOCK/Landa aerodrome closed for maintenance on the runway from 2300 hours UTC on the 8th day of May 2020 to approximately 0100 UTC on the 9th day of May 2020.

Priority Indicator	GG
Address	EHZZNNLX EBZZNNLX EDZZNINX EKZZNIDX... (etc.)
Date and time of filing	021432
Originator's Indicator	EADDYNYX

Message Series, Number and Identifier

NOTAM containing new information	..... (series and number/year)	NOTAMN
NOTAM replacing a previous NOTAM	A0068/20 ..... (series and number/year)	NOTAMR A0062/20 (series and number/year of NOTAM to be replaced)
NOTAM cancelling a previous NOTAM	..... (series and number/year)	NOTAMC..... (series and number/year of NOTAM to be cancelled)

Qualifiers

FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius
Q) EACC	Q FALC	IV	NBO	A	000	999	5222N03155W005

Identification of ICAO location indicator in which the facility, airspace or condition reported on is located	A) EADS

Period of Validity

From *(date-time group)*	B)	2	0	0	5	0	8	2	3	0	0	
To *(PERM or date-time group)*	C)	2	0	0	5	0	9	0	1	0	0	EST* ~~PERM*~~
Time Schedule *(if applicable)*	D)											

Text of NOTAM; Plain-Language Entry (using ICAO Abbreviations)

E) AD CLSD

Lower Limit	F)
Upper Limit	G))
Signature	

*Delete as appropriate

Figure 15. Example 1 of a completed NOTAM format.

AFS message

GG EHZZNNLX EBZZNNLX EDZZNINX EKZZNIDX

021432 EADDYNYX

(A0068/20 NOTAMR A0062/20

Q) EACC/QFALC/IV/NBO/A/000/999/5222N03155W005

A) EADS B) 2005082300 C) 2005090100EST

E) AD CLSD)

b) In the Amswell FIR, hot air balloon flying will take place in an area bounded by the following points 43 00 N 40 40 W, 42 40 N 040 30 W, 42 36 N 040 030 W and 42 36 N 040 54 W. The flying will be held during VMC only up to an altitude of 2 000 m above mean sea level during the following days and times:

In 2020, May 31 19h30 – June 1 09h30, June 6 19h30 – June 7 09h30, June 7 19h30 – June 8 09h30, June 13 19h30 – June 14 09h30, June 14 19h30 – June 15 09h30, June 20 19h30 – June 21 09h30, June 21 19h30 – June 22 09h30, June 27 19h30 – June 28 09h30, June 28 19h30 – June 29 09h30.

Or in a more concise form:

In 2020, on the following days: May 31, June 6, 7, 13, 14, 20, 21, 27 and 28 at periods starting at 19h30 and ending at 9h30 the next day.

Priority Indicator	GG
Address	CYZZNBBX KDZZNOKX LFZZNNMX
	NTTOYNYX WMKKYNYX . . . (etc.)
Date and time of filing	301203
Originator's Indicator	EADDYNYX

Message Series, Number and Identifier

NOTAM containing new information	..... (series and number/year)	NOTAMN
NOTAM replacing a previous NOTAM	A0703/20 ..... (series and number/year)	NOTAMR..... (series and number/year of NOTAM to be replaced)
NOTAM cancelling a previous NOTAM	..... (series and number/year)	NOTAMC..... (series and number/year of NOTAM to be cancelled)

Qualifiers

FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius
Q) EAAC	QWLLW	V	M	W	000	066	4248N04042W100

Identification of ICAO location indicator in which the facility, airspace or condition reported on is located	A) EAAC

Period of Validity

From *(date-time group)*	B)	2	0	0	5	3	1	1	9	3	0	
To *(PERM or date-time group)*	C)	2	0	0	6	2	9	0	9	3	0	~~EST~~ ~~PERM~~
Time Schedule *(if applicable)*	D)	MAY 31 JUN 06 07 13 14 20 21 27 28 1930-0930										

Text of NOTAM; Plain-Language Entry (using ICAO Abbreviations)

E) HOT AIR BALLOON FLT IN AREA 4300N04040W - 4240N04030W - 4236N04030W - 4236N04054W - 4300N04040W VMC ONLY

Lower Limit	F) SFC
Upper Limit	G) 2000M AMSL
Signature	

Figure 16. Example 2 of a completed NOTAM format.

AFS message

GG CYZZNBBX KDZZNOKX LFZZNNMX NTTOYNYX WMKKYNYX

301203 EADDYNYX

(A0703/20 NOTAMN

Q) EACC/QWLLW/V/M/W/000/066/4248N04042W100

A) EACC B) 2005311930 C) 2006290930

D) MAY 31 JUN 06 07 13 14 20 21 27 28 1930-0930

E) HOT AIR BALLOON FLT IN AREA 4300N04040W - 4240N04030W - 4236N04030W - 4236N04054W – 4300N04040W VMC ONLY

F) SFC G) 2000M AMSL)

9. RUNWAY SURFACE CONDITION (RSC) NOTAM

9.1 General

A complete RSC NOTAM includes the following information:

a) NOTAM information;
b) RSC information including:
   i. Runway in use designator, when reporting by thirds (e.g. RSC 33), or
   ii. Full runway designator, when reporting by full runway length (e.g. RSC 07/25);
c) Surface conditions for each runway, as applicable:
   i. Runway condition code for each runway third (if applicable);
   ii. Condition or contaminant(s) within the cleared width: percent coverage, depth (if applicable), and condition or type of contaminant for each third of the runway (if applicable);
   iii. Condition of unpaved and partially paved runways: graded, packed and/or scarified (if applicable);
   iv. Cleared width (if applicable);
   v. Snow drifts, windrows and/or snowbanks on the runway (where applicable);
   vi. Localized conditions (when applicable);
   vii. Treatments (when applicable);
   viii. Conditions for remaining width (when applicable);
   ix. Snowbanks adjacent to runway (when applicable);
   x. Runway remarks (when applicable);
   xi. RSC validity time.
d) RFI Header: ADDN NON-GRF/TALPA INFO;
e) RFI readings for each runway as applicable;
f) Taxiway conditions;
g) Apron conditions;
h) General remarks, including next scheduled time of observation (where applicable).

9.2 Runway Surface Condition (RSC) information

The RSC information will be provided in one of two possible formats:

a) Runway in use designator, when reporting by thirds (e.g. RSC 33), or
b) Full runway designator, when reporting by full runway length (e.g. RSC 07/25).

When reporting by thirds:

a) The RSC NOTAM will include two reports; one for each runway direction (i.e. RSC RWY 07 and RSC RWY 25);
b) When two or more runways are included in an RSC NOTAM, the RSC is listed in ascending order starting with the lowest runway designator, with the corresponding reciprocal runway direction immediately following. (e.g. RSC 07; RSC 25; RSC 14 and RSC 32).

c) When parallel runways are reported, the ascending order begins with the left runway having the lowest runway designator (RSC 05; RSC 23; RSC 06L; RSC 24R, RSC 06R; RSC 24L; RSC 15L; RSC 33R; RSC 15R and RSC 33L).
d) The report for each runway will be separated by a line (break) to ensure that the information is presented clearly.

When reporting by full runway length:

a) A single report will be issued for a runway as per the previous practice (i.e. RSC RWY 07/25).
b) When two or more runways are included in an RSC NOTAM, the RSC information is listed in ascending order starting with the lower runway designator. (e.g. RSC 04/22 and RSC 12/30).
c) When parallel runways are reported, the ascending order begins with the left runway having the lower runway designator. (e.g. (RSC 05/23; RSC 06L/24R; RSC 06R/24L; RSC 15L/33R and RSC 15R/33L)
d) The report for each runway will be separated by a line (break) to ensure the information is presented clearly.

9.3 Runway surface conditions

The reported runway surface conditions include:

a) Runway condition code for each runway third (if applicable);
b) Condition or contaminant(s) within the cleared width including:
    a. percent coverage
    b. depth (if applicable); and
    c. runway surface description (condition or type of contaminant);
c) Cleared width (if applicable);
d) Snow drifts, windrows and/or snowbanks on the runway (where applicable);
e) Localized conditions (when applicable);
f) Treatments applied to the runway surface (when applicable);
g) Conditions on remaining width of runway (when applicable);
h) Snowbanks adjacent to runway (when applicable);
i) Runway remarks (when applicable);
j) RSC validity time.

9.4 Runway condition code (RWYCC)

The runway condition code (RWYCC) is a number, from 0 to 6, which represents the slipperiness of a specific third of a runway and provides a standardized “shorthand” for reporting this information. A RWYCC of 0 corresponds to an extremely slippery runway and 6 corresponds to a dry runway. RWYCCs can be used by pilots to make a time of arrival landing performance assessment.
RWYCCs are only reported if:

a) the runway condition information is reported by runway thirds; and

b) the runway surface is paved.

A RWYCC is reported for each runway third, with each third separated by a forward slash (e.g. 5/5/5).

In the event the full width of the runway is not cleared, the runway condition code will be determined based on the contaminants present in the cleared portion of the runway (typically the centre 100 feet).

The runway condition assessment matrix (RCAM) is used to determine a RWYCC from a set of observed runway surface condition(s).

9.5 Condition or contaminant(s) within the cleared width

Flight crews utilize the reported runway surface description (condition or type and depth of contaminant) when determining their airplane's expected take-off performance.
Runway surface descriptions (condition or type and depth of contamination) are also used to determine landing performance:

a) When RWYCCs are not issued; and/or
b) For airplanes which do not have TALPA-based performance information.

The condition or contaminant(s) within the cleared width of the runway is presented in the following order:

a) Percentage coverage;
b) Depth (when applicable); and
c) Runway surface description.

9.6 Percent coverage

The percentage of coverage is reported in increments of ten and twenty-five percent as shown in the Table below. If the assessed percent coverage is between increments, it is rounded up as indicated.

Table 12. Percent coverage increments

Assessed percent coverage	Reported percent coverage
1-10	10 PCT
11-20	20 PCT
21-25	25 PCT
26-30	30 PCT
31-40	40 PCT
41-50	50 PCT
51-60	60 PCT
61-70	70 PCT
71-75	75 PCT
76-80	80 PCT
81-90	90 PCT
91-100	100 PCT

Where some sections of the runway or sections of a runway third are not wet or contaminated (i.e. are DRY), the reported runway contaminants are no longer required to add up to 100%. (i.e. “Dry” is not reported). For example:

a) If 50% of the runway third is covered with ½ inch DRY SNOW and the other 50% is DRY, this will be reported as “50 PCT 1/2IN DRY SNOW”.
b) If 50% of the runway third is covered with ½ inch DRY SNOW, 25% is covered with ICE and the remaining 25% is DRY, this will be reported as “50 PCT 1/2IN DRY SNOW AND 25 PCT ICE.”

9.7 Contaminant depth

Contaminant depth will continue to be reported in inches and fractions of inches, as illustrated in Table below.

Table 13. Contaminant depth increments

Assessed depth	Reported depth
1/8 inch or less	1/8IN
> 1/8 inch to and including 1/4 inch	1/4IN

> 1/4 inch to and including 1/2 inch	1/2IN
> 1/2 inch to and including 3/4 inch	3/4IN
> 3/4 inch to and including 1 inch	1IN
> 1 inch to and including 1 ½ inches	1 1/2IN
> 1 ½ inches to and including 2 inches	2IN

9.8 Number of runway surface descriptors that may be reported

The number of runway surface descriptions that may be reported for each runway third is limited to two. Similarly, when the runway is reported by full runway length, the number of contaminant types runway surface descriptions reported for the entire runway is also limited to two.

Note: If more than two runway surface descriptions are present in a runway third, only the two most prevalent in that third are reported. Other factors that may be taken into consideration in determining which two contaminants runway surface descriptions to report, include:

a) the location of the condition or contaminant on the runway; and
b) the slipperiness of the condition or contaminant, which is reflected in the corresponding RWYCC.

Commas separate each runway third and a period denotes the end of this portion.

Examples:

a) Reporting by thirds with a single condition in all three thirds:
   90 PCT WET, 90 PCT WET, 90 PCT WET.
b) Reporting by thirds with a single contaminant in all three thirds:
   60 PCT 1/8IN DRY SNOW, 50 PCT 1/4IN DRY SNOW, 40 PCT 1/4IN DRY SNOW.
c) Reporting by thirds with two contaminants in all three thirds;
   50 PCT 1/8IN DRY SNOW AND 25 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW AND 30 PCT 1/4IN DRY SNOW, 25 PCT COMPACTED SNOW AND 25 PCT 1/4IN DRY SNOW.
d) Reporting by full runway length with a single condition:
   50 PCT WET
e) Reporting by full runway length with a single contaminant:
   50 PCT COMPACTED SNOW
f) Reporting by full runway length with two contaminants:
   50 PCT 1/8IN DRY SNOW AND 25 PCT COMPACTED SNOW

9.9 Condition of unpaved and partially paved runways

The following additional information can be reported for unpaved and partially paved runways:

g) Graded (levelling of the runway surface);
h) Packed (compaction of the runway surface); and/or

i) Scarified (cutting of longitudinal grooves in the ice or compacted snow surface to improve directional control).

Note: A paved runway which is covered by ice may also be scarified.

Example: RSC 32 … PACKED AND SCARIFIED.

9.10 Cleared width

If the cleared width is less than the published width, the width for which the runway conditions and RWYCCs apply is reported in feet.
Example: RSC 32 … 160FT WIDTH.

Figure below illustrates various possibilities for cleared width.

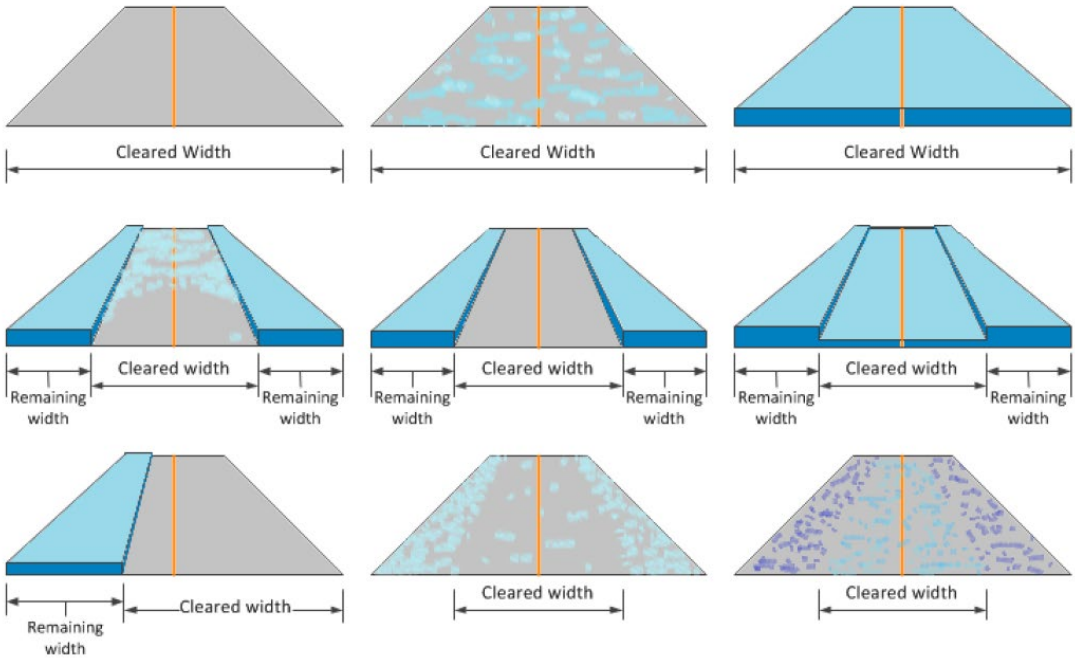


Figure 17. Cleared width and remaining width.

If the cleared width is not symmetrical about the runway centreline, the cardinal (or inter-cardinal) direction of the offset from the runway's centreline is to be included in the RSC report.

Example: RSC 32 … 160FT WIDTH OFFSET NORTH.

Figure below depicts runways with an asymmetric cleared width.

Note: Example a) is provided for comparison purposes.

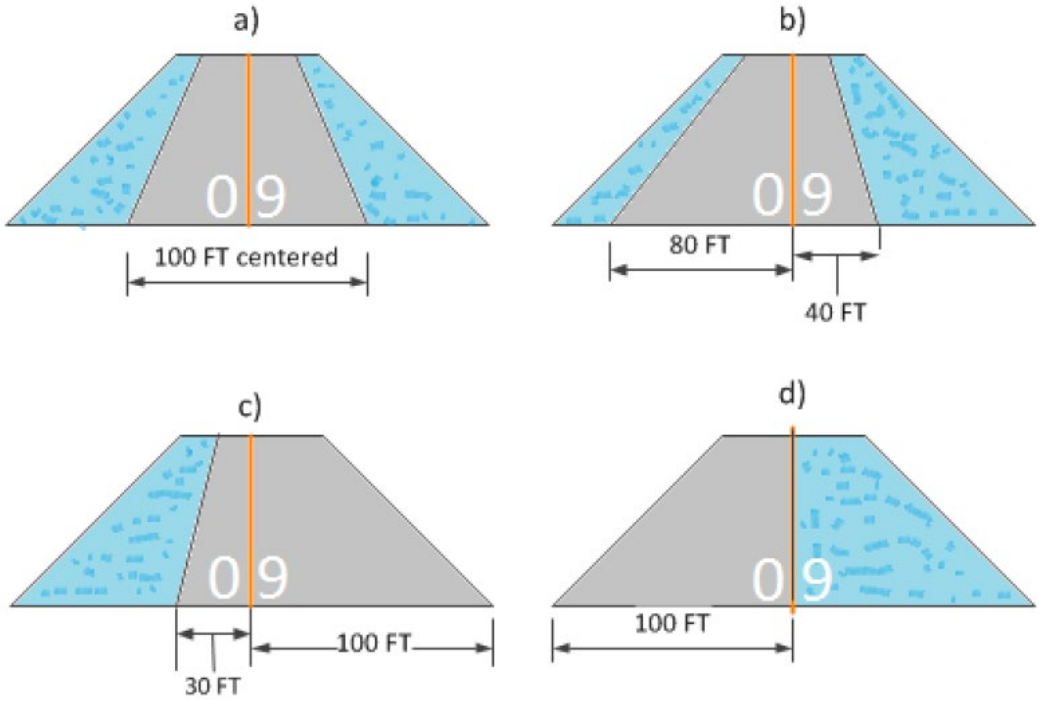


Figure 18. Cleared width offset.

Examples of reports corresponding to the illustrations in Figure 3 appear below:

a) RSC 09… 100FT WIDTH.
b) RSC 09… 120FT WIDTH OFFSET NORTH.
c) RSC 09… 130FT WIDTH OFFSET SOUTH.
d) RSC 09… 100FT WIDTH OFFSET NORTH.

9.11 Localized conditions

Localized conditions that reduce the friction locally are reported by indicating the distance in feet from the nearest threshold (in 100-foot increments).
These localized conditions are reported in addition to the runway surface descriptions (that serve as assessment criteria in the RCAM) and provide additional situational awareness. These localized conditions include:

a) ice patches;
b) compacted snow patches; and
c) standing water patches.

Example: RSC 04 … STANDING WATER PATCHES 1600FT FROM THR 22

9.12 Treatments applied to the runway surface

Treatments applied to the runway surface are reported using up to two of the following terms as applicable:

a) CHEMICALLY TREATED;
b) LOOSE SAND.

Note: Runway treatments can temporarily result in more slippery conditions.

The time that the treatment was applied may also be listed but is not mandatory.

Examples:

a) RSC 02 … CHEMICALLY TREATED AT 1200

b) RSC 02 … LOOSE SAND APPLIED AT 1200

9.13 Conditions on remaining width of the runway

The conditions on the un-cleared portion of the runway (i.e. remaining width) will continue to be reported by full runway length (i.e. not by runway thirds).
Only one type of surface condition and corresponding depth if applicable, will be reported for the un-cleared width of the runway.

Example: RSC 07… REMAINING WIDTH COMPACTED SNOW

While contaminant depths may vary from the center cleared portion to the remaining portions or edges of the runway, the condition of the outlying portions should not present an operational hazard.

9.14 Runway remarks

Runway remarks serve to capture any other operationally significant information related to a given runway, which is not otherwise described. These remarks serve an important function by enhancing situational awareness.
When a RWYCC has been downgraded or upgraded this information needs to be included in the runway remarks as follows:

a) RWYCC DOWNGRADED; or
b) RWYCC UPGRADED.

When RWYCCs are reported for a runway which is deemed as having low friction (e.g. due to rubber accumulation, surface texture degradation, etc.) the phrase: “RWYCC DUE RWY SLIPPERY WHEN WET” is to be included in the runway remarks.

9.15 RSC validity period

The RSC NOTAM contains the information from multiple AMSCRs (one for each runway).
The validity period stated in the RSC NOTAM:

a) reflects the validity period for each AMSCR; and
b) should not exceed the published operating hours for an airport or aerodrome, unless the surface conditions are being monitored.

For airports, the maximum validity period for an AMSCR is 8 hours.

For aerodromes reporting RWYCCs, the maximum validity period for an AMSCR is 8 hours.

For aerodromes not reporting RWYCCs, the maximum validity period for an AMSCR is 24 hours.

The validity period is reported as: month, day and time, as shown in the example below:

VALID NOV 14 1457 – NOV 14 2257.

9.16 Taxiway and apron conditions

Where contaminants are present on taxiways and aprons that may be of “operational significance” to aircrews, the airport operator is required to include these conditions in the report. Aerodrome operators should also report these conditions.
Only one type of surface condition and corresponding depth, if applicable, is reported for taxiways and aprons. The percentage of contaminants is not to be reported.

If the same conditions apply to several taxiways or aprons, the information may be grouped together. The term ALL TWY or ALL APN can be used to describe the conditions that apply to all taxiways and/or aprons.

Taxiway and apron information can include but is not limited to:

a) type of contaminant and depth;
b) qualitative friction (e.g. “BRAKING ACTION POOR”);
c) presence of snow drifts, windrows and snowbanks; and
d) presence of treatments.

Examples:

a) RMK: TWY E AND F: 8IN WET SNOW
b) RMK: TWY B BRAKING ACTION POOR
c) RMK: TWY A 1FT 6IN SNOWBANKS
d) RMK: APN II AND III ICE COVERED. CHEMICALLY TREATED
e) RMK: ALL TWY 2IN DRY SNOW

9.17 General remarks

This section is used to record:

a) maintenance activities (ploughing, sweeping, etc.); or
b) any unusual contamination conditions such as a contaminant location that is not otherwise be recorded.

Examples include, but are not necessarily limited to:

a) CLEARING/SWEEPING IN PROGRESS; and
b) CONDITIONS CHANGING RAPIDLY.

The next scheduled time of observation is included in general remarks (where applicable).

9.18 Examples of completed RSC NOTAMs

Examples of RSC NOTAMS, together with explanatory notes, are provided below to illustrate the following situations:

a) Reporting by runway thirds for an individual runway;
b) Reporting by full runway length for an individual runway;
c) Reporting by runway thirds for more than one runway;
d) Reporting by full runway length for more than one runway;
e) Reporting one runway(s) by thirds and other runway(s) by full runway length; and
f) Reporting by thirds with additional information such as localized conditions, snowbanks, as well as taxiway and apron remarks.

Example of RSC NOTAM when reporting by runway thirds for an individual runway:

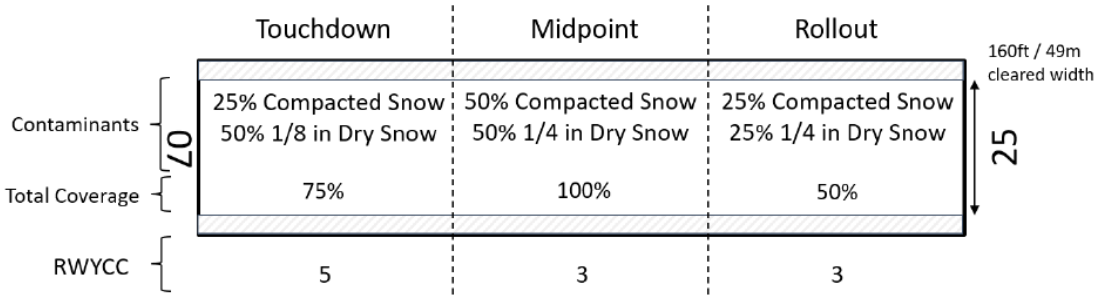


Figure 19. Example of a contaminated runway where operator reports by thirds.

(B1667/20 NOTAMN

A) CAAA B) YY11141505 C) YY11142305

E) RSC 07 5/3/3 50 PCT 1/8IN DRY SNOW AND 25 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW AND 50 PCT 1/4IN DRY SNOW, 25 PCT COMPACTED SNOW AND 25 PCT 1/4IN DRY SNOW. 160FT WIDTH. 6IN SNOW DRIFTS 200FT FM THR 25. REMAINING WIDTH COMPACTED SNOW. VALID NOV 14 1457 – NOV 14 2257.

RSC 25 3/3/5 25 PCT COMPACTED SNOW AND 25 PCT 1/4IN DRY SNOW, 50 PCT COMPACTED SNOW AND 50 PCT 1/4IN DRY SNOW, 50 PCT 1/8IN DRY SNOW AND 25 PCT COMPACTED SNOW. 160FT WIDTH. 6IN SNOW DRIFTS 200FT FM THR 25. REMAINING WIDTH COMPACTED SNOW. VALID NOV 14 1457 – NOV 14 2257.

ADDN NON-GRF/TALPA INFO:

RFI 07 -3C .40/.32/.30 OBS AT 2111141457.

RFI 25 -3C .30/.32/.40 OBS AT 2111141457.

Note: When runway condition information is reported for each third of the runway, the RSC NOTAM will include two reports; one for each runway direction (i.e. RSC RWY 07 and RSC RWY 25).

Example of RSC NOTAM when reporting by full runway length for one runway:

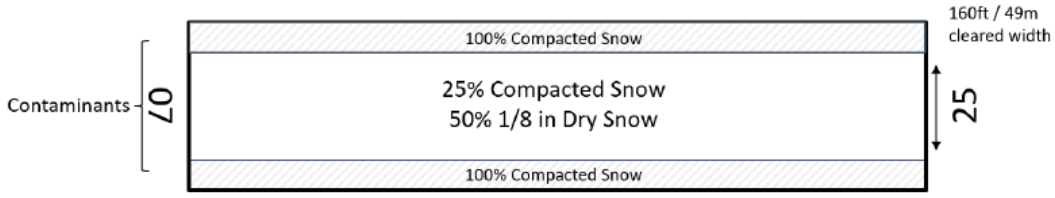


Figure 20. Example of a contaminated runway where operator does not report by thirds.

C1667/20 NOTAMN

A) CAAA B) YY01120025 C) YY01120825

E) RSC 07/25 50 PCT 1/8IN DRY SNOW AND 25 PCT COMPACTED SNOW. 160FT WIDTH. REMAINING WIDTH COMPACTED SNOW. VALID JAN 12 0016 – JAN 12 0816.

ADDN NON-GRF/TALPA INFO:

RFI 07/25 -3C .40 OBS AT 2201120008.

Note: When runway condition information is reported by full runway length (i.e. not in thirds), the NOTAM will provide a single report for the runway pair, as per the previous practice (e.g. RSC RWY 07/25).

Example of RSC NOTAM when reporting by thirds for more than one runway:

(A1667/20 NOTAMN

A) CAAA B) YY01122330 C) YY01130730

E) RSC 07 3/3/3 50 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW. 160FT WIDTH. LOOSE SAND APPLIED AT 2245. REMAINING WIDTH COMPACTED SNOW. VALID JAN 12 2316 – JAN 13 0716.

RSC 25 3/3/3 50 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW, 50 PCT COMPACTED SNOW. 160FT WIDTH. LOOSE SAND APPLIED AT 2245. REMAINING WIDTH COMPACTED SNOW. VALID JAN 12 2316 – JAN 13 0716.

RSC 14 1/1/1 30 PCT ICE, 30 PCT ICE, 30 PCT ICE. CHEMICALLY TREATED AT 2300. VALID JAN 12 2326 – JAN 13 0726.

RSC 32 1/1/1 30 PCT ICE, 30 PCT ICE, 30 PCT ICE. CHEMICALLY TREATED AT 2300. VALID JAN 12 2326 – JAN 13 0726.

ADDN NON-GRF/TALPA INFO:

RFI 07 -3C .40/.32/.30 OBS AT 2101122304.

RFI 25 -3C .30/.32/.40 OBS AT 2101122304.

RFI 14 -3C .20/.18/.22 OBS AT 2101122308.

RFI 32 -3C .22/.18/.20 OBS AT 2101122308.

Notes:

1. When reporting by thirds and two or more runways are included in a RSC NOTAM, the RSC is listed in ascending order starting with the lowest runway designator, with the corresponding reciprocal runway direction immediately following. (e.g. RSC 07; RSC 25; RSC 14 and RSC 32).
2. When parallel runways are reported, the ascending order begins with the left runway having the lowest runway designator (RSC 05; RSC 23; RSC 06L; RSC 24R, RSC 06R; RSC 24L; RSC 15L; RSC 33R; RSC 15R and RSC 33L).
3. The report for each runway will be separated by a line (break) to ensure that the information is presented clearly.
4. When RFI for two or more runways are included in a RSC NOTAM, the same format as described above applies except there is no line (break) separation between runway RFI information.

Example of RSC NOTAM reporting by full length for more than one runway:

(A1667/20 NOTAMN

A) CAAA B) YY02141500 C) YY02142300

E) RSC 04/22 50 PCT 1/4IN DRY SNOW AND 25 PCT 1IN DRY SNOW OVER COMPACTED SNOW. 150FT WIDTH. 3IN SNOW DRIFTS 50FT SOUTHEAST FM CL. ICE PATCHES 1200FT FROM THR 22. LOOSE SAND APPLIED AT 1400. REMAINING WIDTH COMPACTED SNOW. 3FT SNOWBANKS 5FT OUTSIDE SOUTHEAST AND NORTHWEST RWY EDGE. VALID FEB 14 1436 – FEB 14 2236.

RSC 12/30 50 PCT 1/2IN SLUSH AND 40 PCT 1/2IN WET SNOW. 150FT WIDTH OFFSET SOUTHWEST. 8IN WINDROWS ON RWY EDGE. CHEMICALLY TREATED AT 1425. REMAINING WIDTH 3IN WET SNOW. 2FT SNOWBANKS 8FT OUTSIDE SOUTHWEST AND NORTHEAST RWY EDGE. VALID FEB 14 1443 – FEB 14 2243.

ADDN NON-GRF/TALPA INFO:

RFI 04/22 -3C .32 OBS AT 2202141437.

RFI 12/30 -3C .24 OBS AT 2202141456.

Notes:

1. When reporting by full runway length and two or more runways are included in a RSC NOTAM, the RSC information is listed in ascending order starting with the lower runway designator. (e.g. RSC 04/22 and RSC 12/30)
2. When parallel runways are reported, the ascending order begins with the left runway having the lower runway designator. (e.g. (RSC 05/23; RSC 06L/24R; RSC 06R/24L; RSC 15L/33R and RSC 15R/33L)
3. The report for each runway will be separated by a line (break) to ensure the information is presented clearly. All RSC information is presented prior to displaying RFI information.
4. When the RFI for two or more runways are included in a RSC NOTAM, the same format as described above applies except there is no line (break) separation between runway RFI information.
5. At aerodromes with multiple runways if a runway is listed in the AIP as having no winter maintenance that runway is not to be included in the RSC report.

Example of RSC NOTAM reporting one runway(s) by thirds and one runway(s) by full length:

(S1017/20 NOTAMN

A) CAAA B) YY01051000 C) YY01051800

E) RSC 02/20 60 PCT 1/4IN DRY SNOW. 70FT WIDTH. REMAINING WIDTH 1/4IN DRY SNOW ON TOP OF COMPACTED SNOW. VALID JAN 05 0945 – JAN 05 1745.

RSC 06 3/3/3 30 PCT 1/8IN DRY SNOW, 50 PCT 1/8IN DRY SNOW, 40 PCT 1/8IN DRY SNOW. 175FT WIDTH. CHEMICALLY TREATED AT HHMM. REMAINING WIDTH 1/4IN DRY SNOW ON TOP OF COMPACTED SNOW. RWYCC DOWNGRADED, RWY MARKINGS OBSCURED. VALID JAN 05 0900 – JAN 05 1700.

RSC 24 3/3/3 40 PCT 1/8IN DRY SNOW, 50 PCT 1/8IN DRY SNOW, 30 PCT 1/8IN DRY SNOW. 175FT WIDTH. CHEMICALLY TREATED AT HHMM. REMAINING WIDTH 1/4IN DRY SNOW ON TOP OF COMPACTED SNOW. RWYCC DOWNGRADED, RWY MARKINGS OBSCURED. VALID JAN 05 0900 – JAN 05 1700.

RSC 16 5/5/5 30 PCT 1/8IN DRY SNOW, 30 PCT 1/8IN DRY SNOW, 30 PCT 1/8IN DRY SNOW. 190FT WIDTH. CHEMICALLY TREATED AT HHMM. REMAINING WIDTH 1/4IN DRY SNOW ON TOP OF COMPACTED SNOW. VALID JAN 05 0830 – JAN 05 1630.

RSC 34 5/5/5 30 PCT 1/8IN DRY SNOW, 30 PCT 1/8IN DRY SNOW, 30 PCT 1/8IN DRY SNOW. 190FT WIDTH. CHEMICALLY TREATED AT HHMM. REMAINING WIDTH 1/4IN DRY SNOW ON TOP OF COMPACTED SNOW. VALID JAN 05 0830 – JAN 05 1630.

ADDN NON-GRF/TALPA INFO:

RFI 02/20 -8C .30 OBS AT 2201050945.

RFI 06 -8C .32/.33/.30 OBS AT 2201050900.

RFI 24 -8C .30/.33/.32 OBS AT 2201050900.

RFI 16 -8C .39/.40/.40 OBS AT 2201050830.

RFI 34 -8C .40/.40/.39 OBS AT 2201050830.

Note: When reporting one runway(s) by thirds and another runway(s) by full runway length, and two or more runways are included in a RSC NOTAM, the RSC is listed in ascending order starting with the lowest runway designator; with the corresponding reciprocal runway direction immediately following, for those runways reported in thirds. (e.g. RSC 02/20; RSC 06; RSC 24; RSC 16 and RSC 34).

Example of RSC NOTAM reporting by thirds with additional information including snow drifts, localized conditions, snowbanks, as well as taxiway and apron remarks:

(A1667/20 NOTAMN

A) CAAA B) YY02141500 C) YY02142300

E) RSC 04 5/3/3 50 PCT 1/8IN DRY SNOW AND 20 PCT COMPACTED SNOW, 40 PCT 1/4IN DRY SNOW, 25 PCT COMPACTED SNOW AND 25 PCT 1IN DRY SNOW OVER COMPACTED SNOW. 150FT WIDTH. 3IN SNOW DRIFTS 50FT SOUTHEAST FM CL. ICE PATCHES 1200FT FROM THR 22. LOOSE SAND APPLIED AT 1400. REMAINING WIDTH COMPACTED SNOW. 3FT SNOWBANKS 5FT OUTSIDE SOUTHEAST AND NORTHWEST RWY EDGE. VALID FEB 14 1436 – FEB 14 2236.

RSC 22 3/3/5 25 PCT COMPACTED SNOW AND 25 PCT 1IN DRY SNOW OVER COMPACTED SNOW, 40 PCT 1/4IN DRY SNOW, 50 PCT 1/8IN DRY SNOW AND 20 PCT COMPACTED SNOW. 150FT WIDTH. 3IN SNOW DRIFTS 50FT SOUTHEAST FM CL. ICE PATCHES 1200FT FROM THR 22. LOOSE SAND APPLIED AT 1400. REMAINING WIDTH COMPACTED SNOW. 3FT SNOWBANKS 5FT OUTSIDE SOUTHEAST AND NORTHWEST RWY EDGE. VALID FEB 14 1436 – FEB 14 2236.

RSC 12 3/2/2 50 PCT 1/2IN WET SNOW, 40 PCT 1/2IN SLUSH AND 30 PCT 1/2IN WET SNOW, 50 PCT 1/2IN SLUSH. 150FT WIDTH OFFSET SOUTHWEST. 8IN WINDROWS ON RWY EDGE. CHEMICALLY TREATED AT 1425. REMAINING WIDTH 3IN WET SNOW. 2FT SNOWBANKS 8FT OUTSIDE SOUTHWEST AND NORTHEAST RWY EDGE. VALID FEB 14 1443 – FEB 14 2243.

RSC 30 2/2/3 50 PCT 1/2IN SLUSH, 40 PCT 1/2IN SLUSH AND 30 PCT 1/2IN WET SNOW, 50 PCT 1/2IN WET SNOW. 150FT WIDTH OFFSET SOUTHWEST. 8IN WINDROWS ON RWY EDGE. CHEMICALLY TREATED AT 1425. REMAINING WIDTH 3IN WET SNOW. 2FT SNOWBANKS 8FT OUTSIDE SOUTHWEST AND NORTHEAST RWY EDGE. VALID FEB 14 1443 – FEB 14 2243.

ADDN NON-GRF/TALPA INFO:

RFI 04 -3C .40/.32/.30 OBS AT 2202141437.

RFI 22 -3C .30/.32/.40 OBS AT 2202141437.

RFI 12 -3C .32/.22/.24 OBS AT 2202141456.

RFI 30 -3C .24/.22/.24 OBS AT 2202141456.

RMK: TWY A ICE PATCHES, CHEMICALLY TREATED. TWY B, C, D, E 100 PCT COMPACTED SNOW, 2FT SNOWBANKS. TWY F, G 2IN WET SNOW, LOOSE SAND APPLIED. TWY H BRAKING ACTION POOR.

RMK: ALL APN ICE PATCHES, CHEMICALLY TREATED. APN I 1IN WET SNOW.

RMK: CLEARING/SWEEPING IN PROGRESS.

10. TRAINING

10.1 General

Aerodrome operators shall develop a training program for all personnel who will assess and report runway conditions. This training program shall include initial training and recurrent training.

10.2 Initial training

For the purpose of initial training, aerodrome operators shall utilize the information in this document to develop and conduct training which includes both:

a) a review of the theoretical concepts; and
b) practical exercises.

Initial training shall include but not limited to the following topics:

a) Aerodrome familiarization, including aerodrome markings, signs and lightings;
b) Aerodrome procedures as described in the aerodrome manual;
c) Aerodrome Emergency Plan;
d) NOTAM initiation procedures;
e) Aerodrome driving rules;
f) Air traffic control procedures on the movement area;
g) Radiotelephone operating procedures;
h) Phraseology used in aerodrome control, including the ICAO spelling alphabet;
i) Aerodrome inspection procedures and techniques;
j) Assessment and reporting of runway surface friction characteristics;
k) Calibration, maintenance and use of runway friction measurement device;
l) Low Visibility Procedures;
m) Basics of the Global Reporting Format (GRF)
n) Runway Condition Assessment Matric Components (RCAM);
o) Determination along with downgrade and upgrade of RWYCC;
p) Runway Condition Reporting (RCR); and
q) Measurement technique and assessment.

10.3 Recurrent training

For the purpose of Recurrent Training, aerodrome operators shall utilize the information in this guidance material to develop and conduct appropriate training for their personnel which:

a) Focuses primarily on the practical aspects of runway condition assessment and reporting; and
b) Incorporated “lessons learned: from the previous year(s) operations.