



Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

Advisory Circular

AC 139-GRFAO-01

**GLOBAL REPORTING FORMAT FOR AERODROME
OPERATORS**

**First Edition
July 2021**

Advisory Circulars (AC) are intended to provide recommendations and guidance, illustrate a means-but not necessarily the only means of complying with regulatory requirements, or to explain certain regulatory requirements by providing interpretative and explanatory materials.

CAAP will generally accept that when the provisions of an Advisory Circular have been met, compliance with the relevant regulatory obligations has been satisfied.

Where an AC is referred to in a “Note” within regulatory documentation, the AC remains as guidance material.

ACs should always be read in conjunction with the referenced regulations.

REFERENCES

This document may refer to portions of the following:

- a) Civil Aviation Regulations governing Aerodromes (CAR-Aerodromes)
- b) Manual of Standards (MOS) for Aerodrome
- c) ICAO Annex 14, 8th Edition, July 2018 – Volume –I: Aerodrome Design and Operations;
- d) ICAO Annex 6, 11th Edition, July 2018: Operation of Aircraft - Part I - International Commercial Air Transport – Aeroplanes
- e) ICAO Annex 11, 15th Edition, July 2018: Air Traffic Services;
- f) ICAO Annex 15, 16th Edition, July 2018: Aeronautical Information Services;
- g) ICAO Doc 4444: Procedures for Air Navigation Services (PANS) - Air Traffic Management
- h) ICAO Doc 9981: Procedures for Air Navigation Services – Aerodromes;
- i) ICAO Doc 10066: Procedures for Air Navigation Services (PANS) — Aeronautical Information Management; and
- j) ICAO Circular 355 AN/211: Assessment, Measurement and Reporting of Runway Surface Conditions;

PURPOSE

The Republic of the Philippines as a Contracting State to the Convention on International Civil Aviation has an obligation to the international community to ensure that civil aviation activities under its jurisdiction are carried out in compliance with the Standards and Recommended Practices contained in the nineteen Annexes to the Convention on International Civil Aviation in order to maintain the required aviation standards.

In accordance with the Annex 14 standards on Global Reporting Format (GRF), the Philippines adapted the standards on GRF in Manual of Standards for Aerodromes (MOS) 5.1.7 and Section 3 Attachment 5.

In the implementation of GRF standards, CAAP developed this circular with the aim of providing guidance on the implementation of this requirement by the Aerodrome Operators. This Advisory circular (AC) introduces and explains the essentials of International Civil Aviation Organization (ICAO) Global Reporting Format (GRF) for runway condition reporting. Aerodrome Operators are expected to take this AC as a reference/guidance material in order to comply with the required regulations and standards for the implementation of GRF. Moreover, all aerodrome personnel involved directly or indirectly with runway condition assessment should also be aware of it and are encouraged to utilize this AC to their specific operations.

The Civil Aviation Authority of the Philippines shall, without any prior notice, change the content of this Advisory Circular as deemed appropriate.

STATUS OF THIS AC

AC's are numbered to reflect the regulatory basis, the serial number of the circular issued for that regulation and the revision status for that AC. In this case, the regulatory bases are CAR-Aerodromes and MOS for Aerodromes. This is the first to be issued combining these regulatory requirements in reference to runway safety.



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Chapter 1: General Overview

1.1 Introduction

The International Civil Aviation Organization (ICAO) has developed an updated and harmonized procedure, known as Global Reporting Format (GRF) for assessment and reporting of runway surface conditions, with the objective of improving runway safety. This new concept eliminates most of the shortfalls in accuracy and timeliness of current procedures through effective communication among all concerned stakeholders like aerodrome operator, aircraft operator, pilot etc., of relevant and reliable information on runway surface condition with respect to the nature of contaminants, the depth and coverage of contamination and their effect on friction between the runway and the aircraft's wheels.

In compliance with the ICAO implementation of Global Reporting Format, it is imperative that airports in the Republic of the Philippines with international and domestic operations implement GRF so that the risk of occurrence of a safety event like runway excursion is further reduced thereby averting untoward consequences in airport. This AC is hereby issued as guidance material to prepare for the GRF, before its implementation no later than 4 November 2021.

1.2 Objective

The purpose of this document is to introduce and provide information pertinent to the implementation of GRF for assessment and reporting of runway surface conditions so that all the concerned stakeholders e.g. aerodrome operators, airlines operators apply it to their respective operations

1.3 Scope

This AC is applicable to all airports with international and domestic operations in the Republic of the Philippines. Air navigation service providers and airline operators may use this AC as supplement to their GRF training needs.

1.4 Expected benefits of the GRF

1.4.1 Reporting of Runway surface condition in a standardized manner

1.4.2 Establish a common language between all stakeholders in the system: aerodrome operators, aircraft operators, pilots, ATC, AIS, MET(PAGASA), aircraft manufacturers, etc.

1.4.3 Allow pilots to accurately determine aeroplane take-off and landing performance.

1.5 Definitions and Abbreviations

1.5.1 Definitions

The following definitions are used in this document:

Contaminant. A substance that is collected on a surface, e.g. standing water.

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 substances listed in the runway surface condition descriptors.

Dry. A surface condition that is free of visible moisture, and has no observed contaminants.

Paved surface. A surface of asphaltic concrete (flexible) or Portland cement concrete (rigid).

Percent coverage of contaminant. The estimated amount of contaminant present on the surface of the runway and reported as percentage of the assessed surface.

Runway Condition Assessment Matrix. A matrix allowing for the assessment of runway condition code, using associated procedures, from a set of observed runway surface condition(s).

Runway Condition Code (RWYCC). A number describing the runway surface condition to be used in the runway condition report.

Runway Surface Condition. A description of the condition(s) of the runway surface used in the runway condition report which establishes the basis for the determination of the runway condition code for aeroplane performance purposes.

Significant change. A change in the magnitude of a hazard, which leads to a change in the safe operation of the aircraft.

Slippery wet runway. A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.

Standing water. Water of depth greater than 3 mm.

Wet Runway. The runway surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.

1.5.2 Abbreviations

The following abbreviations are used in this document:

AC	Advisory Circular
AIS	Aeronautical Information Service
ATC	Air Traffic Controller
GRF	Global Reporting Format
ICAO	International Civil Aviation Organization
MET	Meteorological

NOTAM	Notice to airman
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
RCAM	Runway Condition Assessment Matrix
RFI	Runway Friction Index
RWY	Runway
RWYCC	Runway Condition Code
TWY	Taxiway

Chapter 2: Assessment of Runway Surface Condition

2.1 Runway Condition Assessment Matrix (RCAM)

2.1.1 The RCAM (Table 2.1-1) is the tool to be used by airport operators in assessing runway surface conditions when contaminants are present. It clearly identifies the factors that influence aircraft takeoff and landing performance, particularly its braking performance. It relates these factors to RWYCC that can be used by flight crews to interpret the runway conditions and support their pre-landing and pre-departure assessments. RCAM is a matrix that allows the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report of braking action.

RUNWAY CONDITION ASSESSMENT MATRIX (RCAM)			
Assessment criteria		Downgrade assessment criteria	
Runway condition code (RWYCC)	Runway surface description	Aeroplane deceleration or directional control observation	Pilot report of runway braking action
6	• DRY	---	---
5	• WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth)	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	GOOD
4		Braking deceleration OR directional control is between Good and Medium.	GOOD TO MEDIUM
3	• WET ("slippery wet" runway)	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	MEDIUM
2	<i>More than 3 mm depth of water:</i> • STANDING WATER	Braking deceleration OR directional control is between Medium and Poor.	MEDIUM TO POOR
1		Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	POOR
0		Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	LESS THAN POOR

Note. — An RWYCC 5, 4, 3 or 2 cannot be upgraded.

Table 2.1-1 Runway Condition Assessment Matrix (RCAM)
(source: PANS-Aerodromes, ICAO Doc 9981, 2nd Ed.)

- 2.1.2 The ICAO GRF requires airport operators to assess and collect data on each runway third and use the RCAM to generate RWYCCs for each runway third.
- 2.1.3 The RCAM applies only to paved (asphalt and Portland cement concrete) runway surfaces, and does not apply to unpaved or partially paved surfaces.
- 2.1.4 The first column of RCAM represents the RWYCC that is associated with the relevant runway surface description based on the type of contaminant on the runway and its depth.
- 2.1.5 Runway Condition Codes represent the runway condition description based on defined terms and increments. Use of these codes harmonizes with ICAO Annex 14, providing a standardized “shorthand” format for reporting runway condition, which can be used by pilots to determine landing performance parameters.
- 2.1.6 The second column, Runway Surface Description, describes runway surface conditions and contaminants that are directly correlated to aeroplane takeoff and landing performance.

2.2 Determination of RWYCC:

When the runway third contains a single contaminant, the RWYCC for that third is based directly on that contaminant in the RCAM (Table 2.2-1 and 2.2-2) as follows:

% Coverage	% Reported As
< 10	NR
10 - 25	25
26 - 50	50
51 - 75	75
76 - 100	100

If in doubt as to which category to report, always err on the side of safety and report the higher.

Table 2.2-1

- 2.2.1 If the contaminant coverage for that third is less than 10 per cent, a RWYCC of 6 is to be generated for that third and no contaminant is to be reported. If all thirds have less than 10 percent contaminant coverage, no report is generated; or

- 2.2.2 If the per cent contaminant coverage for that third is greater than or equal to 10 percent and less than or equal to 25 per cent, a RWYCC of 6 is to be generated for that third and the contaminant reported at 25 per cent coverage; or

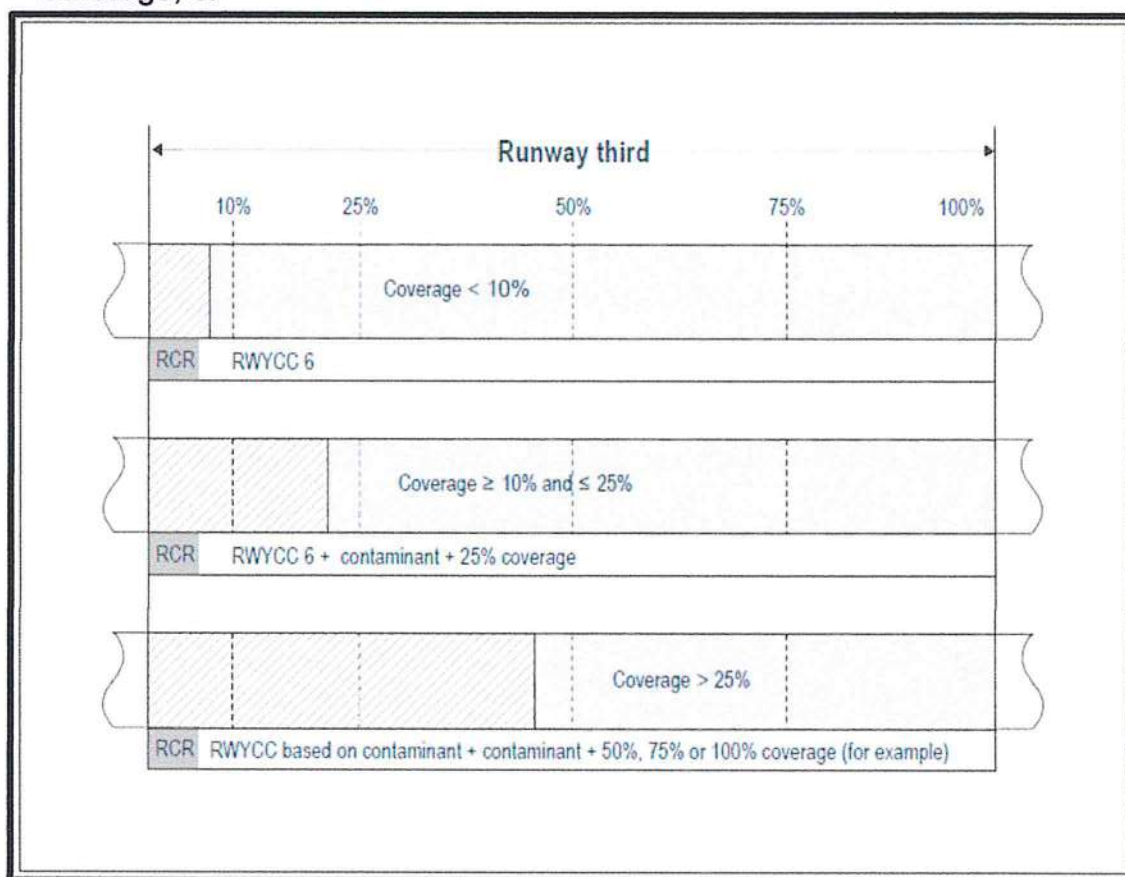


Table 2.2.2

- 2.2.3 If the per cent contaminant coverage for that third is greater than 25 per cent, the RWYCC for that third shall be based on the contaminant present;

2.3 Downgrade Assessment Criteria

- 2.3.1 The RWYCC is initially determined through use of the RCAM.
- 2.3.2 The aerodrome operator should consider downgrading a RWYCC when the measured friction level falls below the relevant minimum friction level values in MOS Table 10.15-1 (if available), pilot reports or other observations reveal that the runway surface is more slippery than the RWYCC that was initially determined.
- 2.3.3 The aerodrome operator should exercise vigilance and downgrade the RWYCC when appropriate so that flight crews are provided with a RWYCC that best reflects the actual slipperiness of the runway.

- 2.3.4 A pilot report of braking action should be taken into consideration for downgrading purposes.
- 2.3.5 When previous pilot braking action reports have indicated GOOD or MEDIUM braking action, two consecutive pilot braking action reports of POOR indicates that surface conditions may be deteriorating. In this situation, the airport or aerodrome operator should conduct a runway assessment prior to the next operation.
- 2.3.6 When two consecutive pilot reports of runway braking action of POOR if a RWYCC of 2 or better was previously reported, the airport or the aerodrome operator should conduct another runway assessment.
- 2.3.7 One pilot has reported a runway braking action of LESS THAN POOR. This information should be disseminated, and the aerodrome operator should consider suspending operations on that runway.
- 2.4 **Upgrade Assessment Criteria** – This assessment criteria are not applicable in the Republic of the Philippines

Chapter 3: Chapter 3: Runway Condition Reporting – RCR

The Runway condition Reporting comprises of two sections: (i) Aeroplane Performance Calculation Section (ii) Situational awareness section

3.1 Aeroplane Performance Calculation Section

This section basically consists of eight elements that are described by the block diagram as shown in Figure 3.1.

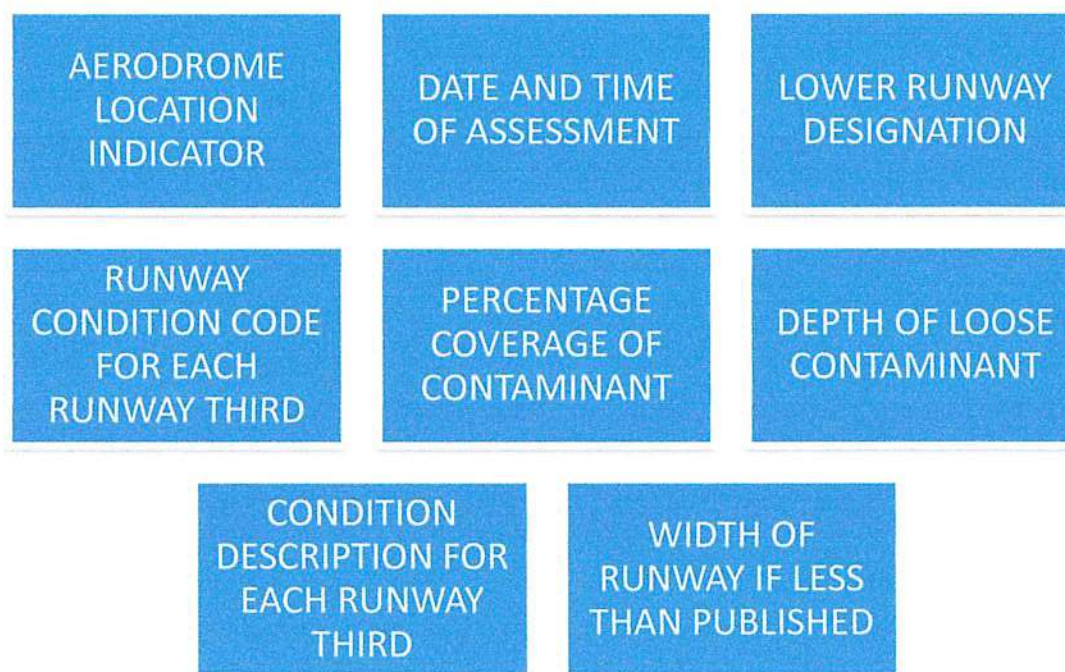


Figure 3.1

3.1.1 Aerodrome Location Indicator

This is the first element of RCR that clearly specifies the Aerodrome for which the RCR is prepared. A four-letter ICAO location indicator assigned to the aerodrome is provided to this element of RCR. For example, RPLL, RPVM, and RPLC for Ninoy Aquino International Airport, Mactan-Cebu International Airport, and Clark International Airport, respectively.

3.1.2 Date and time of Assessment

This is the second element of RCR to which Coordinated Universal Time (UTC) is provided complying the time frame 'mm/dd/hhmm'. For example, if the Runway Condition is assessed at 8:00 am on July 12 at NAIA, the corresponding RCR up to 2nd element shall be as follows:

RCR RPLL 07120000☑

Note: Philippine time is 8 hours ahead of UTC time. Date shall be corresponding to UTC.

3.1.3 Lower Runway Designation

The Runway shall be considered to be of three equal segments and the runway condition shall be assessed for each third of the runway considering the assessment from lower runway designation side.

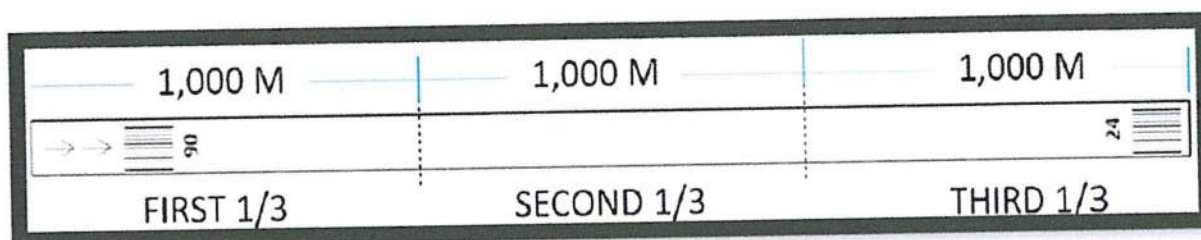


Figure 3.2

3.1.4 Runway Condition Code for each Runway Third

After assessment of condition for each runway third, a corresponding Runway Condition code (RWYCC) shall be assigned to them from Runway Condition Assessment Matrix (RCAM) and shall be separated by slash '/'. For example, if 1st, 2nd and 3rd Runway third from lower designation is dry, Wet and slippery wet, this element of RCR shall be described as: 6/5/3.

3.1.5 Percent Coverage Contaminant for each Runway Third

For assessed percent of coverage of contamination for each runway third, a corresponding value in column B of the Table 3.1 shall be reported to this fifth element of RCR. The value for each Runway Third shall be separated by slash '/'.

% Coverage	% Reported As
< 10	NR
10 – 25	25
26 – 50	50
51 – 75	75
76 – 100	100

If in doubt as to which category to report, always err on the side of safety and report the higher percentage.

Table 3.1

reported, the reporting of the same shall be NR for the First and Second Runway Third. Hence, the RCR for this case will be as follows:

RCR RPLL 07120000 02 6/6/2 25/NR/50 NR/NR/5 WET/DRY/STANDING WATER

3.2 Situational Awareness Section

This section provides information on various eleven elements that have been identified as applicable to Philippine setting. List of elements to be considered in the Situational Awareness section are shown in the table below. The information to be provided must be in the order of listed elements.

SITUATIONAL AWARENESS SECTION	
1	REDUCED RWY LENGTH
2	DRIFTING SNOW ON THE RWY
3	CHEMICAL TREATMENT ON THE RWY
4	TWY CONDITIONS
5	APRON CONDITIONS
6	STATE-APPROVED AND PUBLISHED USE OF MEASURED FRICTION
7	PLAIN LANGUAGE REMARKS

Table 3.3

Note: Since State is not exposed to ice or snow and, therefore, may consider only Taxiway conditions and Apron conditions for reporting. The reporting format shall be as follows:

Situational Awareness Format: TWY name POOR. APRON name POOR

Example

TWY C POOR. APRON T2POOR

Chapter 4: Chapter 4: Training**4.1 Requirement**

- 4.1.1 Aerodrome operators shall ensure that their personnel are adequately trained to perform their duties.
- 4.1.2 This training program shall include: i) Initial Training and ii) Annual Recurrent training

4.2 Initial Training

- 4.2.1 It is recommended that aerodrome operators develop a training program for all personnel who will assess and report runway conditions.
- 4.2.2 For the purpose of Initial Training, aerodrome operators should utilize the information in this AC to develop and conduct training which includes both: a review of the theoretical concepts and practical exercises.
- 4.2.3 The training syllabus should include initial and periodic recurrent training in the following areas: (compare these requirements with MOS attachment A, 3.8)
- 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 Matrix Components (RCAM)
 - o) Determination along with Downgrade and Upgrade of RWYCC
 - p) Runway Condition Reporting (RCR)
 - q) Measurement technique and assessment

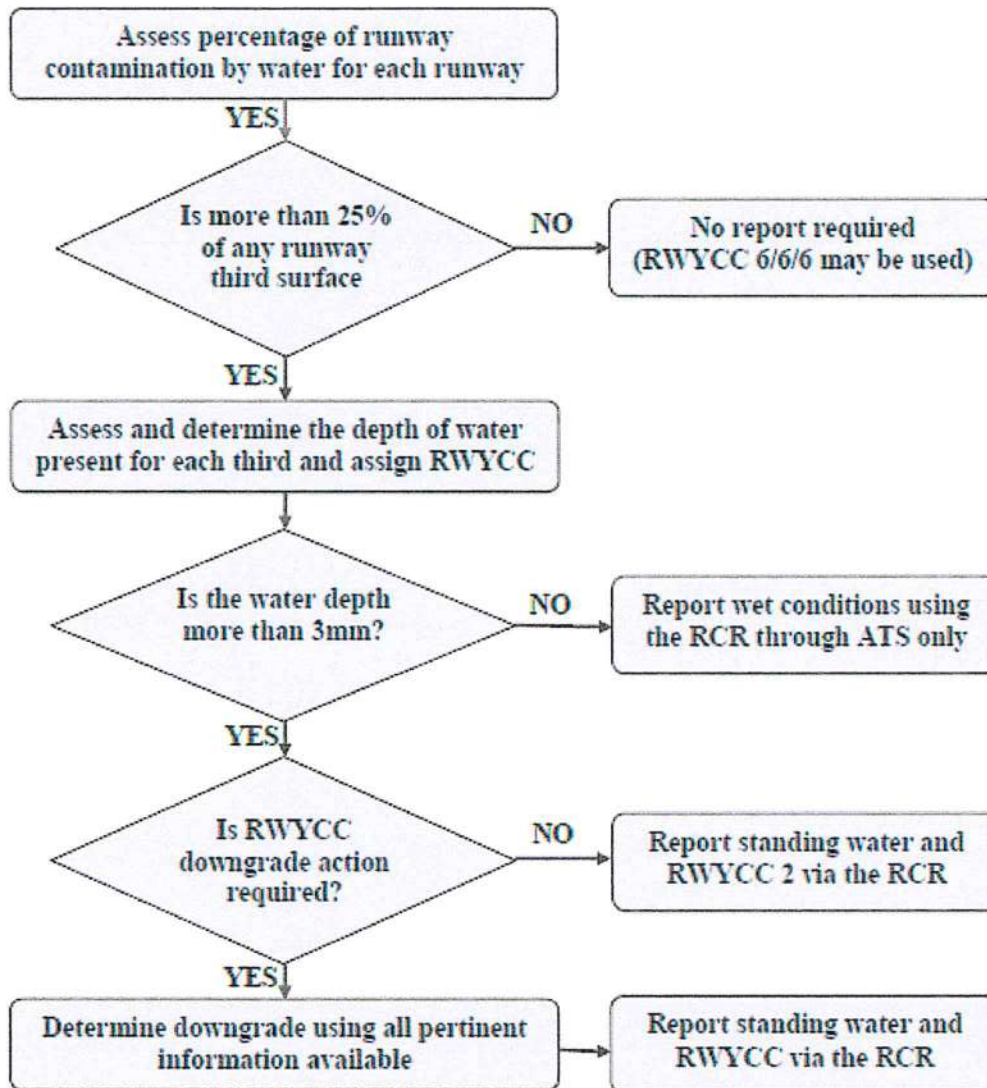
Practical exercises may include series of dry runs on the runways, taxiways, and/or aprons. This may be done in groups, in cycles, or in phases with the aim of ensuring that aerodrome relevant personnel are able to measure, record and report runway condition to ATC and/or AIS, as appropriate.

4.3 Annual Recurrent Training

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

- 4.3.1 focuses primarily on the practical aspects of runway condition assessment and reporting; and
- 4.3.2 incorporates "lessons learned" from the previous year(s) operations.

APPENDIX A



Process Flowchart for Runway Surface Condition Assessment

APPENDIX B

Runway Condition Assessment Worksheet

Aerodrome

Date/Time (UTC) of assessment (MMDDhhmm)

Lower Runway Designator

Initials

Is more than 25% of any runway third surface wet or contaminated?

Yes - assign Runway Condition Codes for each third and complete RWY Condition Report (Blue Box)

No - No report created

Note: RWYCC 6/6/6 for all runway thirds may be used to indicate that the runway is no longer wet

1st RWY Third <small>For coverage 25% or less enter Code 6</small>	2nd RWY Third <small>For coverage 25% or less enter Code 6</small>	3rd RWY Third <small>For coverage 25% or less enter Code 6</small>
<p><input type="checkbox"/> RWYCC</p> <ul style="list-style-type: none"> - Identify % coverage if more than 25% of the RWY third - Identify depth (if applicable) - Identify Runway Condition Code - Record the most restrictive code in the box to the right 	<p><input type="checkbox"/> RWYCC</p> <ul style="list-style-type: none"> - Identify % coverage if more than 25% of the RWY third - Identify depth (if applicable) - Identify Runway Condition Code - Record the most restrictive code in the box to the right 	<p><input type="checkbox"/> RWYCC</p> <ul style="list-style-type: none"> - Identify % coverage if more than 25% of the RWY third - Identify depth (if applicable) - Identify Runway Condition Code - Record the most restrictive code in the box to the right
<p>Dry <input type="text" value="6"/> % Cov. <input type="text"/></p>	<p>Dry <input type="text" value="6"/> % Cov. <input type="text"/></p>	<p>Dry <input type="text" value="6"/> % Cov. <input type="text"/></p>
<p>Wet (Damp) <input type="text" value="5"/> % Cov. <input type="text"/></p> <p>Slippery Wet (Below Min Friction Level Classification) <input type="text" value="3"/> % Cov. <input type="text"/></p>	<p>Wet (Damp) <input type="text" value="5"/> % Cov. <input type="text"/></p> <p>Slippery Wet (Below Min Friction Level Classification) <input type="text" value="3"/> % Cov. <input type="text"/></p>	<p>Wet (Damp) <input type="text" value="5"/> % Cov. <input type="text"/></p> <p>Slippery Wet (Below Min Friction Level Classification) <input type="text" value="3"/> % Cov. <input type="text"/></p>
<p>Standing water <input type="text" value="2"/> x3m</p> <p>% Cov. <input type="text"/></p> <p>Depth: <input type="text" value="4mm"/> Assessed depth (mm): <input type="text"/></p> <p style="font-size: x-small;">For Standing water 4mm depth have to be reported as Minimum</p>	<p>Standing water <input type="text" value="2"/> x3m</p> <p>% Cov. <input type="text"/></p> <p>Depth: <input type="text" value="4mm"/> Assessed depth (mm): <input type="text"/></p> <p style="font-size: x-small;">For Standing water 4mm depth have to be reported as Minimum</p>	<p>Standing water <input type="text" value="2"/> x3m</p> <p>% Cov. <input type="text"/></p> <p>Depth: <input type="text" value="4mm"/> Assessed depth (mm): <input type="text"/></p> <p style="font-size: x-small;">For Standing water 4mm depth have to be reported as Minimum</p>

Situational Awareness Section / Notes

RWY Reduced length LDA m

TWY Poor

Apron Poor

Other

State approved

CFME Braking coefficient

Must not be transmitted in RWY Condition Report

Adjusted RWYCC

ONLY if Downgrade/ Upgrade Assessments used

Downgrade/ Upgrade Criteria AREP CFME Other

RCR

Aerodrome: Date & Time: RWY: RWYCC: % Coverage: Depth in mm:

Contaminant Type 1st third: / Contaminant Type 2nd third: / Contaminant Type 3rd third:

Please language remarks:

Reduced RWY width in m (if applicable):

APPENDIX C

Advisory Circular Feedback

"If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by sending this form to Division Chief, Aerodrome Registration, Certification and Inspection Division, Aerodrome and Air Navigation Safety Oversight Office, Civil Aviation Authority of the Philippines, Old Mia Road, Pasay City 1300 or email it to aansoo_asid@caap.gov.ph."

Subject: AC 139-GRFAO-01

Date: _____

Please check all appropriate line items:

An error (procedural or typographical) has been noted in paragraph _____ on page _____.

Recommend paragraph _____ on page _____ be change as follows:

In a future change of this AC, please cover the following subject (*briefly describe what you want to be added*):

Other comments:

I would like to discuss the above. Please contact me at:

Phone Number: _____ Email Address: _____

Submitted by: _____ **Date:** _____