

Trinidad and Tobago
Civil Aviation Authority



TTCAA Advisory Circular

**SUBJECT: GUIDANCE MATERIAL ON ASSESSING AND REPORTING THE
CONDITION OF THE MOVEMENT AREA.**

TTCAA Advisory Circular: TAC- AD008

Date: 06th April, 2017

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Contents

1.	PURPOSE	4
2.	REGULATORY REFERENCES CODES:	4
3.	DEFINITION	4
4.	General	5
5.	Objectives	5
6.	Operational Practices	6
7.	Runway Condition Report	7
a)	Reduced runway length	9
9.	Complete information string	9
	Notam Issue[COM header and Abbreviated header] (Completed by AIS)	9
10.	Assessing a runway and assigning a runway condition code	10
1.	AERODROME MOVEMENT AREA MAINTENANCE	12

Figure 2. Reporting of runway condition code 15

1. PURPOSE

This document provides guidance to aerodrome operators on the conduct of assessing and reporting the condition of the movement area and related facilities in order to provide the flight crew with information needed for safe operation of the aeroplane.

2. REGULATORY REFERENCES CODES:

- Trinidad and Tobago Civil Aviation Regulation No.12
- ICAO Annex 14 – Volume I and Volume II as amended
- ICAO Doc 9774 AN//969 Manual on Certification of Aerodromes.
- ICAO Doc 9859 AN/474 Safety Management Manual (SMM)
- ICAO Annex 15
- ICAO Annex 6
- PANS-Aerodromes (Doc 9981).
- Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444).
- ICAO Circular 329 — Assessment, Measurement and Reporting of Runway Surface Conditions.
- FAA AC 150/5200-3D

3. DEFINITION

- a) 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 of braking action.
- b) Runway condition code (RWYCC). A number describing the runway surface condition to be used in the runway condition report.
- c) Runway condition report (RCR). A comprehensive standardized report relating to runway surface conditions and its effect on the aeroplane landing and take-off performance.
- d) Runway surface condition(s). 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.

Note 1. The runway surface conditions used in the runway condition report establish the performance requirements between the aerodrome operator, aeroplane manufacturer and aeroplane operator.

Note 2. Other contaminants are also reported but are not included in the list of runway surface condition descriptors because their effect on runway surface friction characteristics and the runway condition code cannot be evaluated in a standardized manner.

Note 3. — Procedures on determining runway surface conditions are available in the PANS-Aerodromes (Doc 9981).

- e) Dry runway. A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.
- f) 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.
- g) Slippery wet runway. A wet runway where the surface friction characteristics of a significant portion of the runway has been determined to be degraded.
- h) 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.

Note. — Procedures on determination of contaminant coverage on runway is available in the PANS-Aerodromes (Doc 9981).

- i) Standing water. Water of depth greater than 3 mm.

Note. — Running water of depth greater than 3 mm is reported as standing water by convention.

General

- 3.1. Assessing and reporting the condition of the movement area and related facilities is necessary in order to provide the flight crew with the information needed for safe operation of the aeroplane. The runway condition report (RCR) is used for reporting assessed information.
- 3.2. 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.

Note. — Guidance on methods of assessing runway surface condition is given in PANS-Aerodromes (Doc 9981), Attachment A to Chapter 1

- 3.3. The philosophy of the **RCR** is that the aerodrome operator assesses the runway surface conditions whenever water is 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 aeroplane performance calculations. This format, based on the type, depth and coverage of the contaminant, 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.
- 3.4. The RWYCC reflects the runway braking capability as a function of the surface conditions. With this information, the flight crew can derive, from the performance information provided by the aeroplane manufacturer, the necessary stopping distance of an aircraft on the approach under the prevailing conditions.
- 3.5. Annex 14, Volume I contains high-level SARPs related to the assessment and reporting of runway surface condition. Associated objectives and operational practices are described in 5 and 6.
- 3.6. The operational practices are intended to provide the information needed to fulfil the syntax requirements for dissemination and promulgation specified in Annex 15 — Aeronautical Information Services and the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444).
- 3.7. When the runway is wholly or partly contaminated by standing water, the runway condition report should be disseminated through the AIS and ATS services. When the runway is wet, not associated with the presence of standing water the assessed information should be disseminated using the runway condition report through the ATS only.

Note. — Operationally relevant information concerning taxiways and aprons are covered in the situational awareness section of the RCR.

4. Objectives

- 4.1. The RWYCC shall be reported for each third of the runway assessed.
- 4.2. The assessment process shall include:
- assessing and reporting the condition of the movement area;
 - providing the assessed information in the correct format; and
 - reporting significant changes without delay.

4.3. The information to be reported shall be compliant with the RCR which consists of:

- a) aeroplane performance calculation section; and
- b) situational awareness section.

4.4. The information shall be included in an information string in the following order using only AIS compatible characters:

a) aeroplane performance calculation section:

- i. aerodrome location indicator;
- ii. date and time of assessment;
- iii. lower runway designation number;
- iv. RWYCC for each runway third;
- v. per cent coverage contaminant for each runway third;
- vi. width of runway to which the RWYCCs apply if less than published width.

b) situational awareness section:

- i. reduced runway length;
- ii. taxiway conditions;
- iii. apron conditions;
- iv. State-approved, and published use of, measured friction coefficient; and plain language remarks.

4.5. The syntax for dissemination as described in the RCR template in Annex 15, Appendix 2, is determined by the operational need of the flight crew and the capability of trained personnel to provide the information arising from an assessment

4.6. The syntax requirement in 5.5 shall be strictly adhered to when providing the assessed information through the RCR

5. Operational Practices

Note.— This section covers the specific operational practices and the ways in which they are applied in order to achieve the basic principles defined in 5 — Objectives

5.1. Reporting, in compliance with the runway condition report, shall commence when a significant change in runway surface condition occurs due to water.

5.2. 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.

5.3. A change in the runway surface condition used in the runway condition report is considered significant whenever there is:

- a. any change in the RWYCC;
- b. any change in contaminant type;
- c. any change in reportable contaminant coverage according to Table 1;
- d. any change in contaminant depth according to Table 2; and
- e. any other information, for example a pilot report of runway braking action, which according to assessment techniques used, are known to be significant.

6. Runway Condition Report

The information to be included in this section consists of the following.

- a) Aerodrome location indicator: a four-letter ICAO location indicator in accordance with Doc 7910, Location Indicators.

This information is mandatory.

Format: nnnn

Example: TTPP

- b) Date and time of assessment: date and time (UTC) when the assessment was performed by the trained personnel.

This information is mandatory.

Format: MMDDhhmm

Example: 09111357

- c) **Lower runway designation number:** a two- or three-character number identifying the runway for which the assessment is carried out and reported.

This information is mandatory.

Format: nn[L] or nn[C] or nn[R]

Example: 10

- d) **Runway condition code for each runway third:** a one-digit number identifying the RWYCC assessed for each runway third. The codes are reported in a three-character group separated by a "/" for each third. The direction for listing the runway thirds shall be in the direction as seen from the lower designation number.

This information is mandatory.

When transmitting information on runway surface conditions by ATS to flight crews, the sections are, however, referred to as the first, second or third part of the runway. The first part always means the first third of the runway as seen in the direction of landing or take-off as illustrated in Figures 1 and 2 and detailed in PANS-ATM (Doc 4444).

Format: n/n/n

Example: 5/5/2

Note 1.— A change in RWYCC from, say, 5/5/2 to 5/5/3 is considered significant. (See further examples below).

Note 2.— A change in RWYCC requires a complete assessment taking into account all information available.

Note 3.— Procedures for assigning a RWYCC are available in 10.6 to 10.10

- e) **Per cent coverage contaminant for each runway third:** a number identifying the percentage coverage.

The percentages are to be reported in an up-to-nine character group separated by a "/" for each runway third. The assessment is based upon an even distribution within the runway thirds using the guidance in Table 1. This information is conditional. It is not reported for one runway third if it is dry or covered with less than 10 per cent.

Format [n]nn/[n]nn/[n]nn

Example 25/50/100

NR/50/100 if contaminant coverage is less than 10% in the first third

25/NR/100 if contaminant coverage is less than 10% in the middle third

25/50/NR if contaminant coverage is less than 10% in the last third

With uneven distribution of the contaminants, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report. Where possible, a standardized text should be used.

Note.— When no information is to be reported, insert "NR" at its relevant position in the message to indicate to the user that no information exists (/NR/).

f) **Depth of loose contaminant: dry snow, wet snow, slush or standing water for each runway third:** a two- or three-digit number representing the assessed depth (mm) of the contaminant for each runway third. The depth is reported in a six to nine character group separated by a “/” for each runway third as defined in Table 2. The assessment is based upon an even distribution within the runway thirds as assessed by trained personnel. If measurements are included as part of the assessment process, the reported values are still reported as assessed depths, as the trained personnel have placed their judgment upon the measured depths to be representative for the runway third.

Format: [n]nn/[n]nn/[n]nn

Examples: 04/06/12 [STANDING WATER]

This information is conditional. It is reported only for STANDING WATER.

g) **Example of reporting depth of contaminant whenever there is a significant change**

After the first assessment of runway condition, a **first runway condition report** is generated. The initial report is:

5/5/5 100/100/100 NR/NR/NR WET/WET/WET

Note.— The full information string is not used in this example.

- 1) With continuing precipitation, a new runway condition report is required to be generated as subsequent assessment reveals a change in the runway condition code. A **second runway condition report** is therefore created as:

2/2/2 100/100/100 4/4/4 STANDING WATER/ STANDING WATER / STANDING WATER

- 2) With even more precipitation, further assessment reveals the depth of precipitation has increased from 4 mm to 6 mm along the entire length of the runway. However, a new runway condition report **is not** required because the runway condition code has not changed (change in depth is less than the significant change threshold of 3 mm).
- 3) A final assessment of the precipitation reveals that the depth has increased to 8 mm. A new runway condition code is required because the change in depth from the last runway condition report (**second runway condition code**) i.e. from 4 mm to 8 mm is greater than the significant change threshold of 3 mm. A **third runway condition report** is thus created as below:

2/2/2 100/100/100 08/08/08 STANDING WATER/ STANDING WATER / STANDING WATER

For contaminants other than STANDING WATER the depth is not reported. The position of this type of information in the information string is then identified by /NR/. **Example:** /NR/

When the depth of the contaminants varies significantly within a runway third, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report

Note. In this context a significant variation in depth in the lateral direction is more than twice the depth indicated in column 3 of Table 2. Further information is available in Circular 329 — Assessment, Measurement and Reporting of Runway Surface Conditions.

- h) **Condition description for each runway third:** to be reported in capital letters using terms specified in 2.9.5 of Annex 14, Volume I. These terms have been harmonized with the terms used in the Standards and Recommended Practices in Annexes 6, 8, 11 and 15. The condition type is reported by any of the following condition type descriptions for each runway third and separated by an oblique stroke “/”.

This information is mandatory.

DRY ; STANDING WATER; WET

Format: nnnn/nnnn/nnnn

Example: WET/ WET/ STANDING WATER

- i) Width of runway to which the RWYCCs apply if less than published width is the two-digit number representing the width of cleared runway in metres.

This information is optional.

Format: nn

Example: 30

If the cleared runway width is not symmetrical along the centre line, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report.

7. Runway condition report — Situational awareness section

All individual messages in the situational awareness section end with a full stop sign. This is to distinguish the message from subsequent message(s).

The information to be included in this section consists of the following:

a) Reduced runway length

This information is conditional when a NOTAM has been published with a new set of declared distances affecting the LDA.

Format: Standardized fixed text

RWY nn [L] or nn [C] or nn [R] LDA REDUCED TO [n] nnn

Example: RWY 10 LDA reduced to 1500.

b) Taxiway conditions

This information is optional.

Format: TWY [nn]n POOR

Example: TWY A POOR.

c) Apron conditions

This information is optional.

Format: APRON [nnnn] POOR

Example: APRON NORTH POOR.

d) State-approved and published use of measured friction coefficient

This information is optional.

Format: [State set format and associated procedures]

Example: [Function of State set format and associated procedures].

Plain language remarks using only allowable characters in capital letters . Where possible, standardized text should be developed.

This information is optional.

8. Complete information string

Notam Issue[COM header and Abbreviated header] (Completed by AIS)

[Aeroplane performance calculation section]

TTTP 02170055 10 5/5/5 100/100/100 NR/NR/NR WET/WET/WET

TTTP 02170135 10 5/5/2 100/50/75 NR/NR/06 WET/WET/STANDING WATER

[Situational awareness section]

TWY A POOR. APRON NORTH POOR.

9. Assessing a runway and assigning a runway condition code

9.1. The assessed RWYCC to be reported for each third of the runway is determined by following the procedure described in **10.6 to 10.10**.

Note.— *Guidance on methods of assessing runway surface condition, including the determination of a slippery wet runway, is given in PANS-Aerodromes (Doc 9981). Attachment A to Chapter 1.*

9.2. If 25 per cent or less area of a runway third is wet or covered by contaminant, a RWYCC 6 shall be reported.

9.3. If the distribution of the contaminant is not uniform, the location of the area that is wet or covered by the contaminant is described in the plain language remarks part of the situational awareness section of the runway condition report.

9.4. A description of the runway surface condition is provided using the contamination terms described in capital letters in Table 3 — **Assigning a runway condition code (RWYCC)**.

9.5. If multiple contaminants are present where the total coverage is more than 25 per cent but no single contaminant covers more than 25 per cent of any runway third, the RWYCC is based upon the judgment by trained personnel, considering what contaminant will most likely be encountered by the aeroplane and its likely effect on the aeroplane's performance.

9.6. The RWYCC is determined using **Table 3**.

9.7. The variables, in **Table 3**, that may affect the runway condition code are:

- a) type of contaminant; and
- b) depth of contaminant;

9.8. An assigned RWYCC 5, 4, 3 or 2 shall not be upgraded.

9.9. An assigned RWYCC 1 or 0 can be upgraded using the following procedures (but see also 10.10):

- a) if a properly operated and calibrated State-approved measuring device and all other observations support a higher RWYCC as judged by trained personnel;
- b) the decision to upgrade RWYCC 1 or 0 cannot be based upon one assessment method alone. All available means of assessing runway slipperiness are to be used to support the decision;
- c) when RWYCC 1 or 0 is upgraded, the runway surface is assessed frequently during the period the higher RWYCC is in effect to ensure that the runway surface condition does not deteriorate below the assigned code; and
- d) variables that may be considered in the assessment that may affect the runway surface condition, include but are not limited to:
 - i. any precipitation conditions;
 - ii. changing temperatures;
 - iii. effects of wind;
 - iv. frequency of runway in use; and
 - v. type of aeroplane using the runway

9.10. Upgrading of RWYCC 1 or 0 using the procedures in 10.9 shall not be permitted to go beyond a RWYCC 3.

9.11. The RWYCC determined from **Table 3** should be appropriately downgraded considering all available means of assessing runway slipperiness, including the criteria given in **Table 4**.

9.12. Where available, the pilot reports of runway braking action should be taken into consideration as part of the ongoing monitoring process, using the following principle:

a) a pilot report of runway braking action is taken into consideration for downgrading purposes; and

b) a pilot report of runway braking action can be used for upgrading purposes only if it is used in combination with other information qualifying for upgrading.

Note 1. — The procedures for making special air-reports regarding runway braking action are contained in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), Chapter 4, and Appendix 1, Instructions for air-reporting by voice communication.

Note 2. — Procedures for downgrading reported RWYCC can be found in 10.16 including the use of Table 5 runway condition assessment matrix (RCAM).

9.13. Two consecutive pilot reports of runway braking action of **POOR** shall trigger an assessment if an RWYCC of 2 or better has been reported.

9.14. When one pilot has reported a runway braking action of **LESS THAN POOR**, the information shall be disseminated, a new assessment shall be made and the suspension of operations on that runway shall be considered.

Note 1. — If considered appropriate, maintenance activities may be performed simultaneously or before a new assessment is made.

Note 2. — Procedures for the provision of information to arriving aircraft are contained in Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), Section 6.6.

9.15. **Table 4** shows the correlation of pilot reports of runway braking action with RWYCCs.

9.16. **Table 3** and **Table 4** combined form the runway condition assessment matrix (RCAM) in **Table 5**.

The RCAM is a tool to be used when assessing runway surface conditions. It is not a standalone document and shall be used in compliance with the associated procedures of which there are two main parts:

- a) assessment criteria; and
- b) downgrade assessment criteria.

10. Training

Personnel assessing and reporting runway surface conditions required shall be trained and competent to meet criteria set by the TTCAA to perform their duties.

Note 1. Guidance on training of personnel is given in Attachment A, Section 6.

Note 2. Guidance on criteria is included in the Airport Services Manual (Doc 9137), Part 8, Chapter 7. Information on training for personnel assessing and reporting runway surface conditions is available in the PANS-Aerodromes (Doc 9981).

11. Observed Information Report

1. To ensure that the aerodrome operator receives needed information, Letters of Agreement should be formalized between the aerodrome operator and the air traffic control tower to identify the procedures and responsibilities for coordination and the reporting of runway surfaces conditions. LOA(s) should also specify how all pilot braking action reports (PIREPS) of “POOR” and “NIL” are to be immediately transmitted to the airport operator for action. It should also include agreement on actions by Air Traffic personnel for immediate cessation of operations upon receipt of a “NIL” PIREP. Conversely, to ensure the ATCT receives necessary information from the airport operator, any letter of agreement should include procedures for how NOTAM and RwyCCs are transmitted

2. The aerodrome operator's MANOPs should contain a reference to the signed LOA.
3. All instances of runway contamination observed should be reported by aerodrome operators to the Air Traffic Services using the format detailed in paragraph 9.
4. All reports of runway contamination are passed on to operating aircraft by Air Traffic Services.
5. If the runway condition code (RwyCC) is reduced to 2, the information is submitted by the aerodrome operator to the AIS for the promulgation of a NOTAM.
6. When previous PIREPs have indicated GOOD or MEDIUM braking action, two consecutive POOR PIREPs indicates that surface conditions may be deteriorating. An acceptable action is for the airport operator to conduct a runway assessment prior to the next operation.

12. AERODROME MOVEMENT AREA MAINTENANCE

Table 1 LIST OF TABLES AND FIGURES

Assessed per cent	Reported per cent
STANDING WATER	25
26-50	50
51 – 75	75
76 – 100	100

Table 2. Depth assessment for contaminants

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

Note 1. — For STANDING WATER, 04 (4 mm) is the minimum depth value at and above which the depth is reported. (From 3 mm and below, the runway third is considered WET).

Note 2. — Above 4 mm for STANDING WATER an assessed value is reported and a significant change relates to observed change from this assessed value

Table 3. Assigning a runway condition code (RWYCC)

Runway condition description	Runway condition code (RWYCC)
DRY	6
WET (the runway surface is covered by any visible dampness or water up to and including 3 mm deep)	5
Not Applicable	4
WET ("Slippery wet" runway)	3
STANDING WATER (more than 3 mm depth)	2
	1
	0

Table 4. Correlation of runway condition code and pilot reports of runway braking action

Pilot report of runway braking action	Description	Runway condition code (RWYCC)
N/A		6
GOOD	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal	5
Good TO MEDIUM	Braking deceleration OR directional control is between good and medium	4
MEDIUM	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced	3
MEDIUM TO POOR	Braking deceleration OR directional control is between medium and poor	2

POOR	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced	1
LESS THAN POOR	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain	0

Table 5. Runway condition assessment matrix (RCAM)

Runway condition assessment matrix (RCAM)			
Assessment criteria		Downgrade assessment criteria	
Runway condition code	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	More than 3 mm depth of water (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 ¹
0		Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain	LESS THAN POOR ¹

¹The aerodrome operator may assign a higher runway condition code (but no higher than code 3) for each third of the runway, provided the procedure in 10.9 is followed.

**Figure 1. Reporting of runway condition code from
ATS to flight crew for runway thirds**

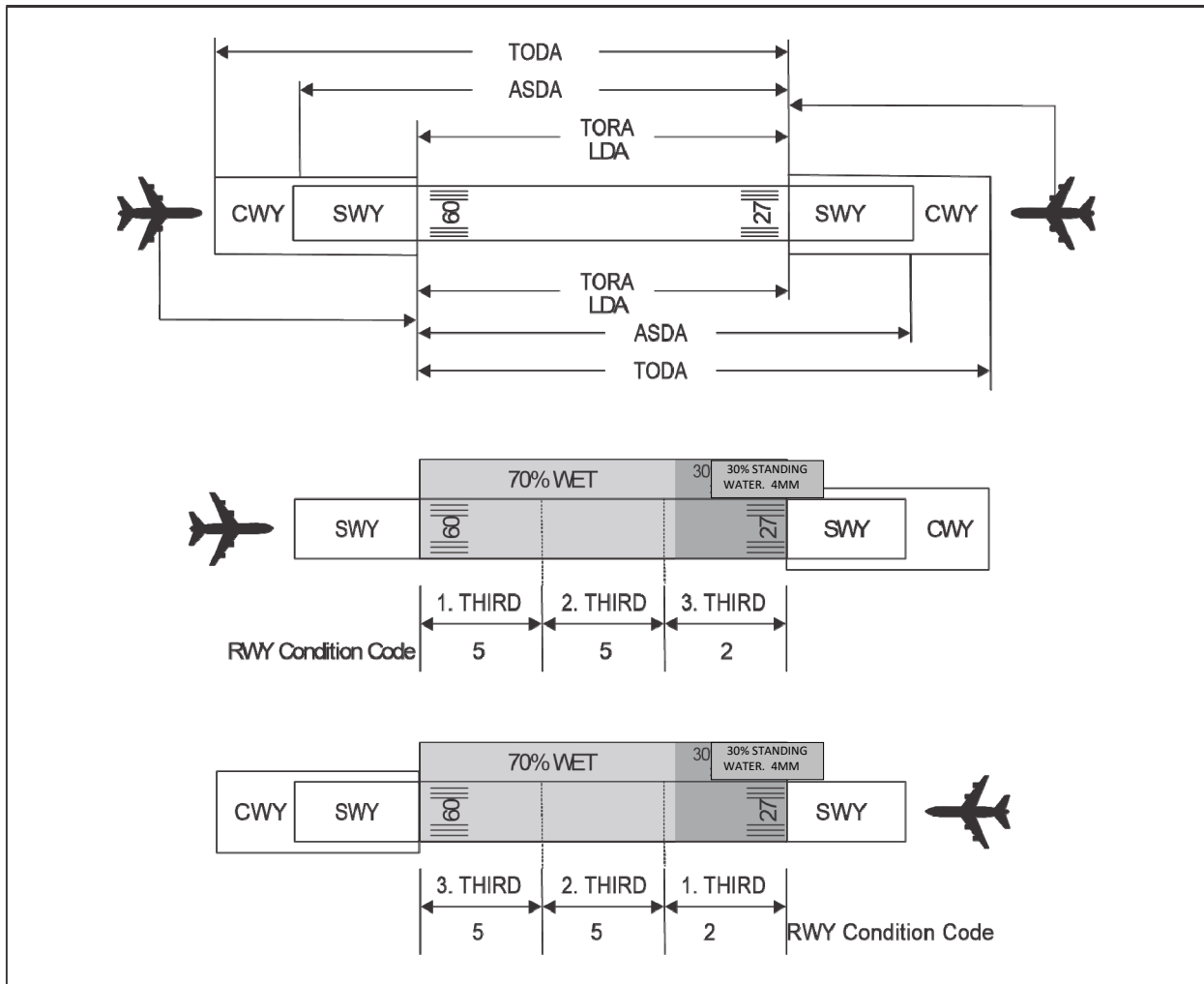
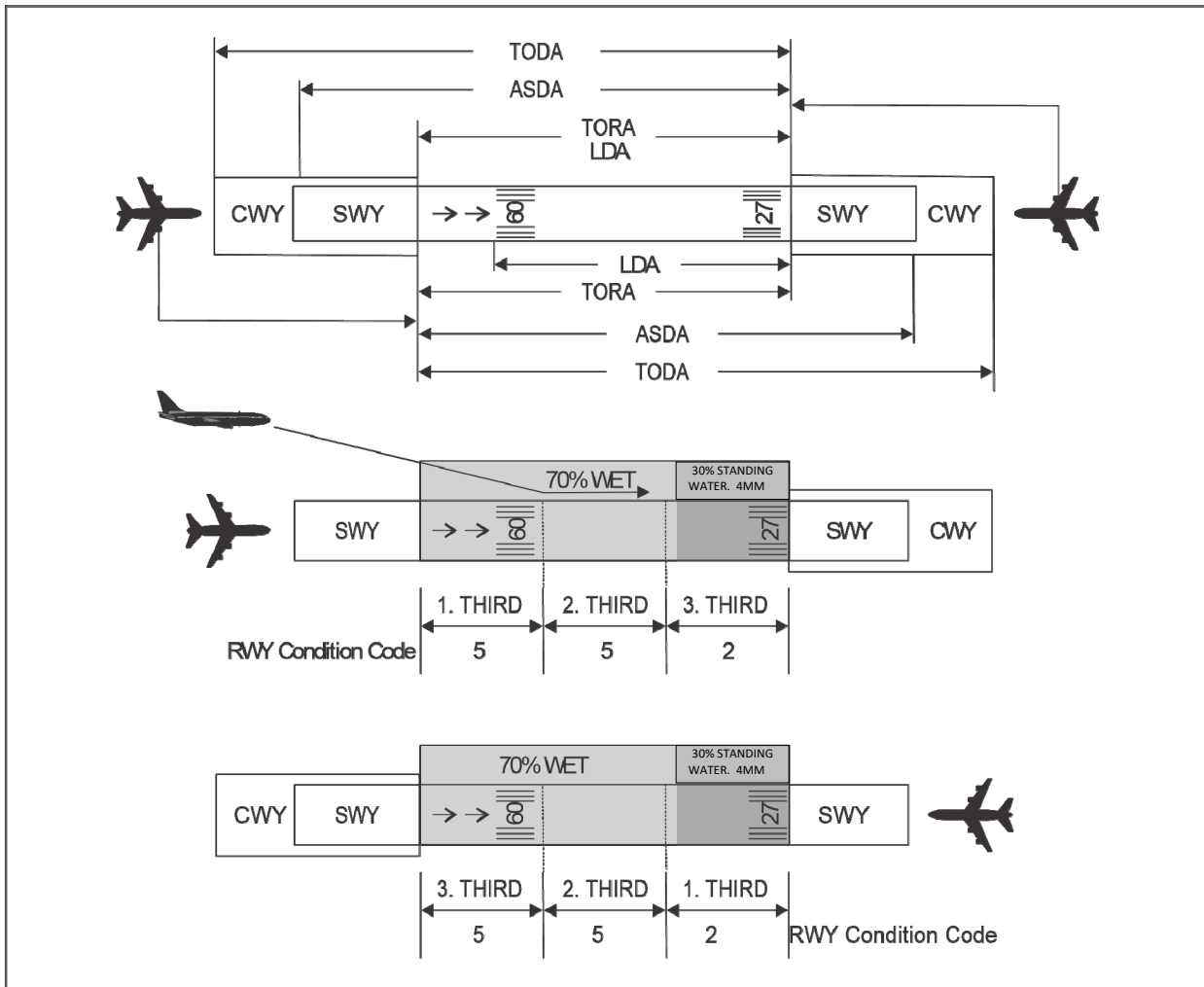


Figure 2. Reporting of runway condition code for runway thirds from ATS to flight crew on a runway with displaced threshold



13. TAC – AD008 Approval by Director General

This “TAC-ADD008 - Guidance material on assessing and reporting the condition of the movement area” is approved by the Director-General for use by the Aviation Industry.

TAC – AD008 Approved by
Original signed by Francis Regis
Francis Regis
Director-General of Civil Aviation

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