Belize Department of Civil Aviation

ADVISORY CIRCULAR

Subject:	Safety Procedures for Determination of Wet Runway Conditions and ATS Notification	**Date:**	04/10/2018
Initiated by:	HWP_AGA	**AC No.:**	BDCA AGA-004-2018
		Revision:	001

Purpose: Safety Procedures for Determination of Wet Runway Conditions and ATS Notification

1. THE PURPOSE OF THIS ADVISORY CIRCULAR.

Provides private or public aerodrome operators (Directors or Maintenance Management) guidance in defining the condition of the runway when is wet or flooded and how to inform air traffic control (ATS), and these in turn to pilots. Also it provides a procedure of transferring information of the runway conditions under these circumstances.

2. WHAT THIS AC CANCELS

This AC cancels the revision 00 AC-004-2013.

3. WHO THIS AC AFFECTS.

Operations and maintenance managers, for national and international aerodromes, public or private.

4. WHERE TO GET A COPY OF THIS AC. You can get a Copy of this AC in the Technical Library of the BDCA

DEPT. OF CIVIL AVIATION BELIZE

Lindsay Garbutt

Director, Belize Department of Civil Aviation

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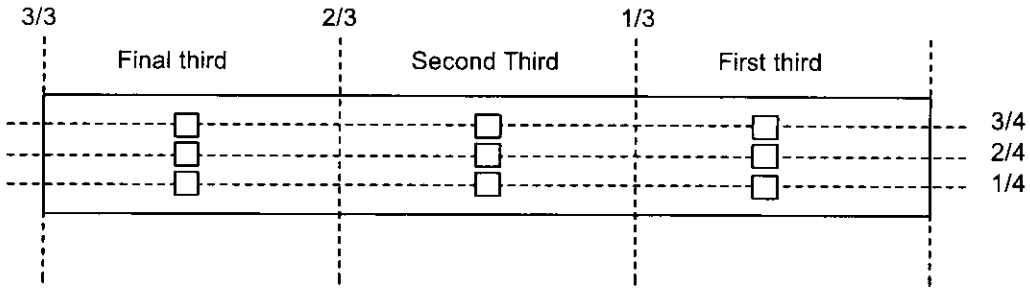
INSPECTOR'S NAME:	
AERODROME:	**ORGANIZATION:**
DATE	**TIME:**

INSPECTION AREA. (Mark with an X)



ORIENTACION MEASURING: **THRESHOLD** ➡ **END** _____ _____

	Length m	Width	Area m^2	Depth mm
STANDING WATER:				

WET RUNWAY (EXPLAIN):

AMOUNT OF RUBBER

LOW: _____ **MODERATE:** _____ **INTENSE:** _____

_____ _____

INSPECTOR'S SIGNATURE **OPERATIONS SIGNATURE**

1 SUBJECT

This circular provides private or public aerodrome operators (Directors or Maintenance Management) guidance in defining the condition of the runway when is wet or flooded and how to inform air traffic control (ATS), and these in turn to pilots. Also it provides as well a procedure of transferring information of the runway conditions under these circumstances.

2 DEFINITIONS

Pavement (Pavement Structure): Combination of Sub-base, Base and coating placed on a subgrade to support the traffic load and distribute it to the subgrade.

Composite Pavement: Pavement layers consisting of flexible and rigid layers, granular layers cone without separation.

Flexible pavement: pavement structure that maintains intimate contact with the subgrade and distributed loads on it and as far as stability is concerned, depends on the interlocking or entanglement of aggregates, friction and cohesion of the particles.

Rigid pavement: pavement structure that distributes loads to the subgrade, through a slab of Portland cement concrete with a relatively high bending strength.

Pavement surface: The top layer of pavement structure.

Wet Runway: The surface is soaked with no standing water

Standing Water: For purposes of the performance of an aircraft, more than 25% of the pavement surface area of the runway is covered with more than three (3) millimetres of water (continuous area or isolated parts of it) within the length and widths required for operations.

Runway strip. A defined area including the runway and stop way, if provided, intended:

a) to reduce the risk of damage to aircraft running off a runway; and
b) to protect aircraft flying over it during take-off or landing operations.

Shoulder. An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

Runway. A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft

Main Runway: Runway that is used in preference to others whenever conditions permit.

Threshold. The beginning of that portion of the runway usable for landing.

Displaced Threshold: Threshold that is not located at the end of a runway.

Hydroplaning: Effect that results when the tire cannot compress more fluid layer below it, rising from the runway. Produces a partial or total loss of friction coefficient by reducing contact. Affects the direction of the nose and braking. It always happens in runways with some degree of contaminants like sand, dust or fluids.

Sub-base layer: Layer asphalt pavement structure located immediately below the base layer.

Cross Slope: Slope perpendicular to the longitudinal axis of a runway.

Coefficient of Friction: The classic definition of coefficient of friction is the ratio of the tire friction force of the tire and the vertical load.

3 General Aspects

3.1 The terms: Contaminants and Debris.

- **Contaminants.** These are the materials deposited on the runway (e.g. standing water, mud, dust, sand, oil and rubber) and disfavours the friction characteristics of the pavement surface.

- **Debris is** the fragment of loose materials (e.g., sand, stones, paper, wood, metal and fragments of pavements.

3.2 Friction in wet runway

The friction of a wet paved runway should be measured for:

- Check the friction characteristics of new or resurfaced runway when wet.
- Periodically evaluate to what extent paved runways are slippery when wet.
- To determine the effect on friction when drainage characteristics are poor.
- Determine the friction of the runways that become slippery under unusual conditions.

4 Water on Runway.

When water is present on a runway, should be provided a description of the conditions of the surface, using the following terms:

4.1 WET:

Wet surface with no standing water.

4.2 STANDING WATER:

For purposes of performance of an aircraft, more than 25% of the surface area of the runway is covered with more than 3 mm of water (continuous or isolated areas) within the length and/or width required for operations.

5 Procedure

5.1 Subdividing the runway

Divide into three equal parts longitudinally of the runway, regardless of where it occurs the landing or take off operation.

5.1.1 Longitudinal Marks:

Mark the longitudinal track into thirds, placing the marks off the shoulder with frangible plastic beacons.

5.1.2 Cross Marks:

At the edges of both heads off the pavement structure will be divided into four equal parts and identify and noted as follows: 1/4, 2/4 and 3/4 from left to right.

Such signs must be placed outside the pavement structure of the runway, so that does not cause confusion with permanent signage. Use for example waterproof wood stakes 50 x 50x 500 mm o frangible plastic beacons. The idea is that they will be easily identifiable by the inspector performing the activity, as is reflected in the diagram in Annex No. 1.

5.1.3 Inspection.

- For measurement use a ruler with units in millimetres and a tape, whose edges coincide with zero millimetres.

- Staff who evaluates and reports the condition of the runway surface should be trained and competent in order to comply with state regulations. Also must be aware of the concepts: WET RUNWAY and STANDING WATER. To the make the measurement must enter the ruler at the zero marking millimetre and whether the measure is equal to or greater than three (3) millimetres, register in the data in the Measurements Sheet and locate the site using the form added in Annex 2.

- This procedure must be met in special conditions such that, when in the opinion of maintenance area, Operations or ATS is suspected that due to the high rainfall over 25% of the

runway, has standing water. The operations department will be responsible for ordering the execution of this procedure.

- Upon completion of the inspection and the results of the calculation performed in the SHEET FIELD MEASUREMENTS (Annex 3), report that 25% of the runway has standing water, it shall transfer the results of the evaluation to the area of operations for the notify these air traffic control who in turn must **notify** to the pilots. Finally operations send a copy of the measurements made and the results to the BDCA

- In case that the evaluation results reflect that there is no standing water percentage that represents a safety hazard, the Inspector who carried out the activity will forward the information to notify those operations Air Traffic Control which in turn should COMMUNICATE pilots results indicating that the runway is suitable for use, operations also send a copy of ANNEX 2 to the BDCA, attach a rainfall intensity METAR of the lasts 4 hours.
- This procedure terminates upon cessation of high rainfall on the aerodrome.

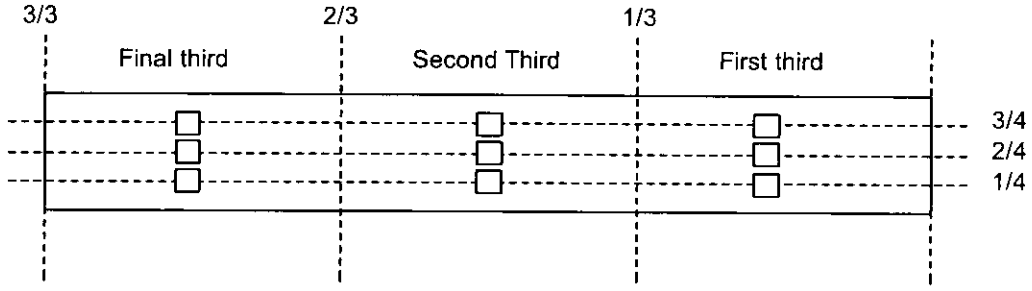
ANNEX 2. WET RUNWAY. CHECK LIST

INSPECTOR'S NAME:

AERODROME: | **ORGANIZATION:**

DATE | **TIME:**

INSPECTION AREA. (Mark with an X)



ORIENTACION MEASURING: THRESHOLD ➡ END

STANDING WATER:	Length m	Width	Area m^2	Depth mm

WET RUNWAY (EXPLAIN):

AMOUNT OF RUBBER

LOW: _____ **MODERATE:** _____ **INTENSE:** _____

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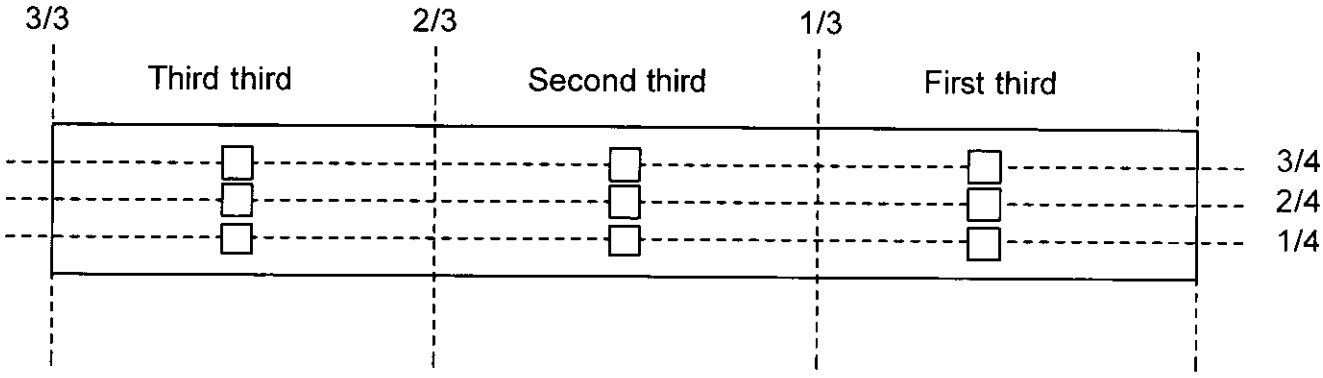
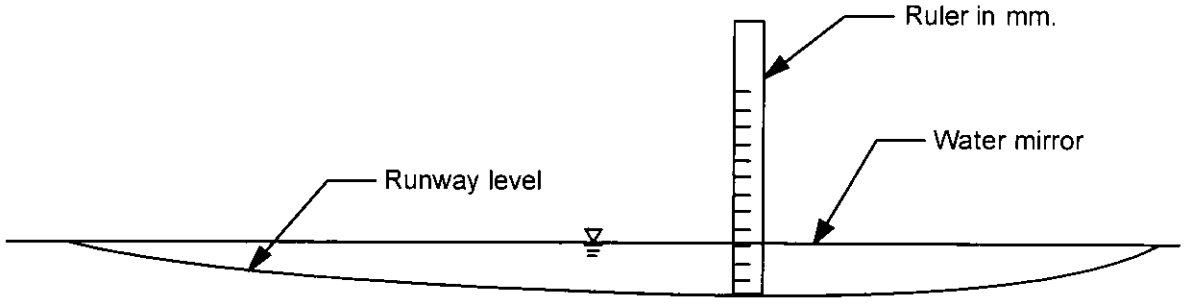
ANNEX 1. DIAGRAM OF THE RUNWAY SECTORING





Measurement Diagram

ANNEX 3 SPREAD SHEET

First Third **Second Third** ..... **Final Third**

No.	Length m.	Width m.	Depth mm.	No.	Length m.	Width m.	Depth mm.	No.	Length m.	Width m.	Depth mm.

$\sum L \times H =$	$\sum L \times H =$	$\sum L \times H =$
$\sum \frac{area \times 100}{L \times H} =$ %	$\sum \frac{areas \times 100}{L \times H} =$ %	$\sum \frac{areas \times 100}{L \times H} =$ %