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Session 5 – Understanding Runway Condition Assessment Matrix (RCAM)

- End- Objectives

At the end of the session, the participants should be able to :

- Collect data necessary to use RCAM methodology
- Use RCAM to determine runway condition codes including adjustment (when relevant(downgrade))

Outline

- Data to be collected
- Use of RCAM to determine RYCC
- Use of RCAM to adjust RYCC

Data to be collected

- **Why do we need data on runway surface condition ?**
  - Aeroplane performance is considered to be impacted whenever the coverage of any-water based contaminant on each runway third exceeds 25%
  - Data from aircraft manufacturers shows that variances in contaminant type , depth and air temperature can cause specific changes in aircraft braking performances

Data to be collected

- **To use RCAM methodology, the following data need to be collected for each third of the runway(assessment criteria)**:

  - % of each runway third that is covered by contaminant
  - Runway surface condition and type of each contaminant
  - Depth of the contaminant(s)

Data to be collected

- **% of each runway third that is covered by contaminant :**
  - Staff should **assess** the coverage of contaminant for each runway third (percentage) –starting from the lower RWY end designation to the higher

% Coverage assessed	% Coverage reported
< 10	NR (No records)
10 -25	25
26-50	50
51-75	75
76-100	100

Data to be collected

- **% of each runway third that is covered by contaminant:**
  - A runway is considered to be contaminated if the extent of the coverage reported is greater than a quarter of the surface of at least one third of the runway
  - **if Coverage reported is >= 25% for at least one third of the runway : contaminated runway**
  - **if Coverage < 25% for each runway third : dry runway**

Data to be collected

- **% of each runway third that is covered by contaminant:**

Percentages of coverage are to be reported for each runway third

Examples :

1) 100/100/100

- Each runway third is 100% covered by contaminant

2) 25/NR/50

- Contaminant coverage is less than 10% in the middle third

- First third is 25% covered(quarter of the surface is covered) and last third is 50% covered(half the surface is covered)

Data to be collected

- **Runway surface condition**
  - **To describe runway surface condition for each runway third**
  - **Use of standardized runway surface description terminology in RCAM**

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(RCAM)

For aerodromes which never experiences (or report) snow and ice conditions

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

Data to be collected

- **Runway surface condition**

Reported using capital letters for each runway third

Examples :

1) **DRY/DRY/DRY**

2) **WET/DRY/STANDING WATER**

Data to be collected

- **Depth of contaminants**
  - Depth is reported **only** for : Dry snow, Wet Snow , Slush and Standing water
  - For aerodromes which do not experience ice or snow the only contaminant considered is water

- **If depth <= 3mm : Wet runway : depth is not reported**
- **If depth> 3mm : Standing water : depth must be reported**
  - Depth is used to assist flight crew in assessing the impact of the contaminant on aircraft performances

Data to be collected

- **Depth of contaminant**

Depth is reported in mm for each runway third(two- or three-digit number)

Examples :

1) 04/05/06

2) 04/04/04

Where the depth should not be reported, operators should indicate that no information exists by entering NR(No Records)

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Runway condition codes are generated using RCAM assessment criteria :

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Use of RCAM to determine Runway condition codes

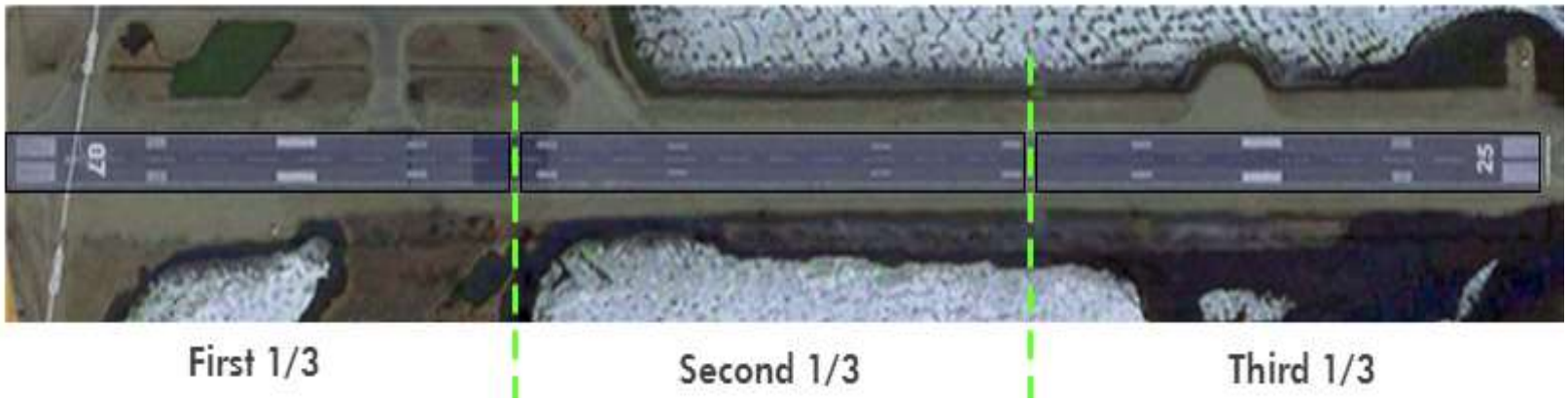
- Assessment criteria

Runway condition description	RWYCC
Dry	6
Wet	5
	4
Slippery wet	3
Standing water (>3mm depth)	2
	1
	0

Use of RCAM to determine Runway condition codes

- RWYCC is reported for each runway third, from the lower runway designation, using a one-digit number

Example : Dry runway to be reported as 6/6/6



Use of RCAM to determine Runway condition codes

- Runway condition assessment should be performed on the entire usable pavement length including displaced thresholds
- RWYCC alone is not enough to describe effectively the effect of runway surface condition on aeroplane performances

RWYCC should be reported with assessment criteria:

- ✓ % coverage of contaminant
- ✓ Type of contaminant
- ✓ Depth of each contaminant

Use of RCAM to determine Runway condition codes

- **Example:**
  - Douala International Airport (FKKD), Cameroon, Runway 12/30
  - July 18, 2018 at 0840 UTC
  - Runway is entirely covered of 6mm standing water

This would be reported as :

FKKD 0718 0840 2/2/2 100/100/100 06/06/06 STANDING WATER/STANDING WATER/STANDING WATER

Use RCAM to adjust Runway condition codes

- In certain circumstances, runway surface conditions could be more slippery or less slippery than the RWYCC assigned by the RCAM process;

This may require to conduct further assessments that may lead to :

- A **downgrade** of the Runway condition Code if conditions are **more slippery** than the RWYCC generated by the primary assessment
- An **upgrade** of the RWYCC if conditions are **less slippery** than the primary assignment

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(RCAM)

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Use RCAM to adjust Runway condition codes

- Upgrading is applicable only when the initial RWYCC is 0 0r 1
  - Initial RWYCC could not be upgraded beyond RWYCC 3

Use RCAM to adjust Runway condition codes

- Initial RWYCC should be downgraded using RCAM downgrading assessment criteria as well as all available means of assessing runway slipperiness

The following elements should be considered to assess runway slipperiness in the downgrading process : :

- Prevailing weather conditions- active precipitation
- Measurements- friction measurement
- Experience – local knowledge
- AIREPs – pilots reports of runway braking action

Pilot report of braking action	Description	RWYCC
N/A		6
GOOD	Braking deceleration is normal for the wheel braking effort AND directional control is normal	5
GOOD TO MEDIUM	Braking deceleration OR directional 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

Use RCAM to adjust Runway condition codes

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

- 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.

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Any Questions?

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