EASA Regulations on GRF implementation

(ADR – ATM/ANS – SERA – MET)

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GRF Webinar - 10 March 2021
Overview

- Runway Conditions – Surface contaminants
- Generic Description
- Reporting
- RCAM
- Assessment
- Specially prepared winter runway
- SERA – Air Traffic Services - METAR
Runway conditions (Regulation (EU) 2020/2148 – Definitions)

**Dry**
- the surface of the runway is free of visible moisture and not contaminated within the area intended to be used

**Wet**
- a runway whose surface is covered by any visible dampness or water up to and including 3 mm deep within the area intended to be used

**Contaminated runway**
- a runway whose surface area (whether in isolated areas or not) within the length and width being used is covered in significant part by one or more of the substances listed under the runway surface condition descriptors

**Slippery wet**
- a wet runway whose surface friction characteristics for a significant portion of it have been determined to be degraded

**Specially prepared winter runway**
- a runway with a dry frozen surface of compacted snow or ice, or both, which has been treated with sand or has been mechanically treated to improve runway friction
Surface contaminants

- Water
- Snow
- Slush
- Ice
- Frost
- Anti-icing or de-icing chemicals or other contaminants
- Snow banks or drifts

(Regulation (EU) 2020/2148 – ADR.OPS.A.060)
Generic Description

→ The process is divided in 4 Steps
→ Step 1: Preparation
→ Step 2: Runway Condition Assessment (Aeroplane performance)
→ Step 3: Additional Assessments (Situational awareness section)
→ Step 4: Reporting
Step 1: Preparation

- Evaluate current information
- Coordinate with other parties involved (e.g. ATS, winter services)
- Obtain access to the runway

Examples of information
- Last RCR
- Significant changes
- Relevant NOTAMs
- AIREPs
- Prevailing weather conditions
- Runway treatments performed
- ...
Step 2: RWY condition assessment

- Collect data for each third of the runway
- Assess the collected data and turn the data into information

Example of information
- Visual observations
- Measurements
- Assessment of contaminant type, depth and coverage for each runway third
- Application of upgrade/downgrade criteria
- Assignment of RWYCC for each runway third
- ...
Step 3: Additional assessments

- Collect additional data for the runway
- Collect data for taxiways and aprons
- Assess the collected data and turn the data into information

Examples of information

- Visual observations
- Measurements
- Drifting snow
- Chemical treatment on the runway
- Loose sand on runway
- Snow banks
- Poor taxiway conditions
- Poor apron conditions
- ...
Step 4: Reporting

- Arrange the collected information in the defined order of the RCR
- Promulgate the RCR

Examples of information:
- ATC
  - Radiotelephony
  - ATIS
- AIS
  - SNOWTAM
Reporting

Runway Condition Report

Aeroplane performance calculation section

- Aerodrome location indicator
- Date and time of the assessment
- Lower runway designation number
- RWYCC for each runway third
- Per cent coverage contaminant for each runway third
- Depth of loose contaminant for each runway third
- Width of runway to which the RWYCC apply if less than the published width

Situational awareness section

- Reduced runway length
- Drifting snow on the runway
- Loose sand on the runway
- Chemical treatment on the runway
- Snowbanks on the runway
- Snowbanks on taxiway
- Snowbanks adjacent to the runway penetrating level/profile set in the aerodrome snow plan
- Taxiway conditions
- Apron conditions
- Plain language remarks
Runway Condition Report

Runway Condition Code (RWYCC) 0 - 6

Contaminant coverage & depth

- COMPACTED SNOW
- DRY
- DRY SNOW
- DRY SNOW ON TOP OF COMPACTED SNOW
- DRY SNOW ON TOP OF ICE
- FROST
- ICE
- SLIPPERY WET
- SLUSH
- SPECIALLY PREPARED WINTER RUNWAY

Description

- STANDING WATER
- WATER ON TOP OF COMPACTED SNOW
- WET
- WET ICE
- WET SNOW
- WET SNOW ON TOP OF COMPACTED SNOW
- WET SNOW ON TOP OF ICE
- CHEMICALLY TREATED
- LOOSE SAND
Reporting (Regulation (EU) 2020/2148 – ADR.OPS.A.065)

→ Aerodromes with multiple runways
   → RCR includes all runways, in case at least one runway is contaminated

→ Dissemination of information by ATS
   → **Always** start from the landing runway designation

→ Friction measurements are **not** reported
Reporting (Regulation (EU) 2020/2148 – ADR.OPS.A.065)

→ Significant changes that trigger a new RCR
    → change in the RWYCC
    → change in the contaminant type
    → change in reportable contaminant coverage
    → change in contaminant depth
    → other information
**Reporting** (Regulation (EU) 2020/2148 – ADR.OPS.A.065)

→ Reported percentage of coverage for contaminants

<table>
<thead>
<tr>
<th>Assessed per cent</th>
<th>Reported per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 25</td>
<td>25</td>
</tr>
<tr>
<td>26 - 50</td>
<td>50</td>
</tr>
<tr>
<td>51 - 75</td>
<td>75</td>
</tr>
<tr>
<td>76 - 100</td>
<td>100</td>
</tr>
</tbody>
</table>
### Reporting (Regulation (EU) 2020/2148 – ADR.OPS.A.065)

→ Depth assessments for contaminants

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Valid values to be reported</th>
<th>Significant change</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDING WATER</td>
<td>04, then assessed value</td>
<td>3 mm</td>
</tr>
<tr>
<td>SLUSH</td>
<td>03, then assessed value</td>
<td>3 mm</td>
</tr>
<tr>
<td>WET SNOW</td>
<td>03, then assessed value</td>
<td>5 mm</td>
</tr>
<tr>
<td>DRY SNOW</td>
<td>03, then assessed value</td>
<td>20 mm</td>
</tr>
</tbody>
</table>
### Runway Condition Assessment Matrix

<table>
<thead>
<tr>
<th>RWYCC</th>
<th>Runway surface description</th>
<th>Aero plane deceleration or directional control observation</th>
<th>Special air report of runway braking action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>DRY</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>FROST</td>
<td>Braking deceleration is normal for the wheel braking effort AND directional control is normal</td>
<td>GOOD</td>
</tr>
<tr>
<td></td>
<td>WET Up to and including 3 mm depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SLUSH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DRY SNOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WET SNOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SPECIALLY PREPARED WINTER RUNWAY (not in ICAO)</td>
<td>Braking deceleration OR directional control is between good and medium</td>
<td>GOOD TO MEDIUM</td>
</tr>
<tr>
<td></td>
<td>-15°C and lower outside temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPACTED SNOW</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Runway Condition Assessment Matrix

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Downgrade Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWYCC</td>
<td>Runway surface description</td>
</tr>
<tr>
<td></td>
<td>Aeroplane deceleration or</td>
</tr>
<tr>
<td></td>
<td>directional control</td>
</tr>
<tr>
<td></td>
<td>Special air report of</td>
</tr>
<tr>
<td></td>
<td>runway braking action</td>
</tr>
<tr>
<td>3</td>
<td>SLIPPERY WET</td>
</tr>
<tr>
<td></td>
<td>DRY SNOW or WET SNOW (any</td>
</tr>
<tr>
<td></td>
<td>depth) ON TOP OF COMPACTED</td>
</tr>
<tr>
<td></td>
<td>SNOW</td>
</tr>
<tr>
<td><strong>More than 3 mm</strong></td>
<td>Braking deceleration is</td>
</tr>
<tr>
<td><strong>depth</strong></td>
<td>noticeably reduced for the</td>
</tr>
<tr>
<td></td>
<td>wheel braking effort</td>
</tr>
<tr>
<td></td>
<td>applied OR directional</td>
</tr>
<tr>
<td></td>
<td>control is noticeably</td>
</tr>
<tr>
<td></td>
<td>reduced</td>
</tr>
<tr>
<td></td>
<td>MEDIUM</td>
</tr>
<tr>
<td>2</td>
<td>STANDING WATER</td>
</tr>
<tr>
<td></td>
<td>WET SNOW</td>
</tr>
<tr>
<td></td>
<td>COMPONENT SNOW</td>
</tr>
<tr>
<td><strong>More than 3 mm</strong></td>
<td>Braking deceleration OR</td>
</tr>
<tr>
<td><strong>temperature</strong></td>
<td>directional control is</td>
</tr>
<tr>
<td></td>
<td>between medium and</td>
</tr>
<tr>
<td></td>
<td>poor</td>
</tr>
<tr>
<td></td>
<td>MEDIUM TO POOR</td>
</tr>
</tbody>
</table>
### Runway Condition Assessment Matrix

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<tbody>
<tr>
<td>RWYCC</td>
<td>Runway surface description</td>
</tr>
<tr>
<td></td>
<td>Aeroplane deceleration or</td>
</tr>
<tr>
<td></td>
<td>directional control observation</td>
</tr>
<tr>
<td></td>
<td>Special air report of runway</td>
</tr>
<tr>
<td></td>
<td>braking action</td>
</tr>
<tr>
<td>1</td>
<td>• ICE</td>
</tr>
<tr>
<td></td>
<td>Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced</td>
</tr>
<tr>
<td>0</td>
<td>• WET ICE</td>
</tr>
<tr>
<td></td>
<td>• WATER ON TOP OF COMPACTED</td>
</tr>
<tr>
<td></td>
<td>• DRY SNOW or WET SNOW ON TOP OF ICE</td>
</tr>
<tr>
<td></td>
<td>Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain</td>
</tr>
</tbody>
</table>
### Assessment – RCAM – Simplified

(Regulation (EU) 2020/2148 – ADR.OPS.B.037)

<table>
<thead>
<tr>
<th>Restoration Code</th>
<th>Runway surface description</th>
<th>Aeroplane deceleration or directional control observation</th>
<th>Special air report of runway braking action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 DRY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth)</td>
<td>Braking deceleration is normal for the wheel braking effort AND directional control is normal</td>
<td>GOOD</td>
<td></td>
</tr>
<tr>
<td>4 SLIPPERY WET</td>
<td>Braking deceleration OR directional control is between good and medium</td>
<td>GOOD TO MEDIUM</td>
<td></td>
</tr>
<tr>
<td>3 SLIPPERY WET</td>
<td>Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced</td>
<td>MEDIUM</td>
<td></td>
</tr>
</tbody>
</table>
## Runway Condition Assessment Matrix

<table>
<thead>
<tr>
<th>RWYCC</th>
<th>Assessment Criteria</th>
<th>Downgrade Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Runway surface description</td>
<td>Aeroplane deceleration or directional control observation</td>
</tr>
<tr>
<td>2</td>
<td>More than 3 mm: • STANDING WATER</td>
<td>Braking deceleration OR directional control is between medium and poor</td>
</tr>
<tr>
<td>1</td>
<td>Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced</td>
<td>POOR</td>
</tr>
<tr>
<td>0</td>
<td>Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain</td>
<td>LESS THAN POOR</td>
</tr>
</tbody>
</table>
RCAM process (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

**STEP 1: RCAM Applicability**

- Is there water, snow, slush, ice or frost on the runway third (winter conditions)?
  - NO: Process A
  - NO: Process B

- Is there water not associated with winter conditions on any runway third?
  - NO: No report created
**STEP 2: Apply coverage criteria**

- Assess percentage of coverage of runway contamination for each runway third

  **Is 10% or more of any RWY third surface contaminated?**
  - YES
  - NO

  **Is more than 25% of any runway third surface contaminated?**
  - YES ➔ Step 3
  - NO ➔ No report created

**Reported information**

- No report created
- Report contaminants and RWYCC 6 via the RCR for that particular RWY third

**RCAM – Process A** (Regulation (EU) 2020/2148 – ADR.OPS.B.037)
STEP 3: Apply assessment criteria

From Step 2

Assess and determine the type and depth of contaminants present for each third and assign RWYCC

Is RWYCC downgrade or upgrade action required?

YES

Step 4

NO

Reported information

Report contaminants and RWYCC via the RCR
RCAM – Process A (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

STEP 4: Apply downgrade/upgrade criteria

- Determine downgrade or upgrade using all pertinent information available

Reported information

- Report contaminants and RWYCC via the RCR

Examples of pertinent information:
- Prevailing weather conditions
- Observations and measurements
- AIREPs
- Experience (local knowledge)
- Results from friction measurements
- Vehicle deceleration or directional control
- All other available information
STEP 2: Apply coverage criteria

Assess percentage of runway contamination by water for each runway third

Is more than 25% of any runway surface wet?

YES

Step 3

NO

Reported information

No report created RWYCC 6/6/6 for all runway thirds maybe used to indicate that the runway is no longer wet
STEP 3: Apply assessment criteria

From Step 2

Assess and determine the Depth of water present for each third and assign RWYCC

Is the water depth more than 3 mm (standing water)?

YES

NO

Is RWYCC downgrade action required?

YES

NO

Step 4

Reported information

Report wet conditions using the RCR through ATS only

Report standing water and RWYCC 2 via the RCR

Assessment criteria
Water depth
Is ‘slippery wet’ NOTAM issued and relevant?
Corresponding RWYCC for each runway third
RWYCC identified by all runway surface description categories

Is the water depth more than 3 mm (standing water)?

YES

NO

Is RWYCC downgrade action required?

YES

NO

Step 4
STEP 4: Apply downgrade/upgrade criteria

From Step 3

Determine downgrade or upgrade using all pertinent information available

Examples of pertinent information:
- Prevailing weather conditions
- Observations and measurements
- AIREPs
- Experience (local knowledge)
- Results from friction measurements
- Vehicle deceleration or directional control
- All other available information (e.g. ponding)

Report Standing water and RWYCC via the RCR

Reported information
Assessment (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

→ Single contaminant
Assessment (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

→ Multiple contaminants

→ If coverage is more than 25%, but no single contaminant covers more than 25% of any runway third, the RWYCC is based on the contaminant that will most likely be encountered by the aeroplane and its likely effect on the aeroplane performance.

→ Typically this is the most widespread contaminant
Assessment – Upgrade/Downgrade (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

→ RWYCC 5 4 3 or 2 cannot be upgraded
→ RWYCC 1 or 0 cannot be upgraded beyond RWYCC 3
  → only supported by assessments
  → frequent assessments to ensure that runway surface condition does not deteriorate below the assigned code
→ Downgrade should be done by considering all available means of assessing runway slipperiness, including special air reports
Assessment - Use of special air reports (Regulation (EU) 2020/2148 – ADR.OPS.B.037)

→ Special air reports trigger:
  → re-assessment of runway surface condition if RWYCC 2 or better has been reported and two consecutive special air reports of POOR runway braking action are received
  → re-assessment of runway surface condition and possible suspension of operations on the runway when one pilot has reported a LESS THAN POOR runway braking action
Specially prepared winter runway (Regulation (EU) 2020/2148 – ADR.OPS.B.036)

→ Not included in ICAO

→ EU specific:

  → accommodates operations on runways which are covered for very long periods with compacted snow or ice

  → associated primarily with RWYCC 4

  → requires prior approval by the Competent Authority, subject to certain conditions
Specially prepared winter runway (Regulation (EU) 2020/2148 – ADR.OPS.B.036)

→ Conditions
  → establishment of specific procedures
    → surface treatment
    → monitoring meteorological parameters
    → management of loose contaminants
    → assessment of achieved results
  → collection and analysis of aeroplane stopping performance data to demonstrate the capability to establish runway condition code in accordance with a given RWYCC
  → Maintenance programme of equipment used to achieve consistent performance
Specially prepared winter runway (Regulation (EU) 2020/2148 – ADR.OPS.B.036)

→ Conditions

→ programme to monitor the continuous effectiveness of the procedure
→ use of braking action reports from aeroplane data which are compared with the reported runway conditions

→ evaluation of winter operations after the end of the winter period in order to identify necessity for:
→ additional training requirements
→ update of the procedures
→ additional or different equipment and material
SERA (Regulation (EU) 2020/469)

→ SERA.12005 Special aircraft observations
  → The runway braking action encountered is not as good as reported
→ AMC1 SERA.14001 General
  → Adaptation of 1.1.11 Aerodrome information in accordance with GRF
Air Traffic Services - METAR

→ Regulation (EU) 2020/469
  → ATS.OR.520 Information on aerodrome conditions and the operational status of associated facilities
  → ATS.OR.530 Forwarding of braking action information
    → If an air traffic services provider receives by a voice communication a special air-report concerning braking action which does not correspond to what was reported, it shall inform without delay the appropriate aerodrome operator
→ Removal of runway surface information from the METAR format
Thank you very much for your attention
aerodromes@easa.europa.eu
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIREP</td>
<td>Air Report</td>
</tr>
<tr>
<td>AIS</td>
<td>Aeronautical Information Service</td>
</tr>
<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
</tr>
<tr>
<td>ATS</td>
<td>Air Traffic Service</td>
</tr>
<tr>
<td>ATM/ANS</td>
<td>Air Traffic Management/Air Navigation Services</td>
</tr>
<tr>
<td>MET</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>METAR</td>
<td>Meteorological Terminal Air Report</td>
</tr>
<tr>
<td>NOTAM</td>
<td>Notice To Airmen</td>
</tr>
<tr>
<td>RCAM</td>
<td>Runway Condition Assessment Matrix</td>
</tr>
<tr>
<td>RCR</td>
<td>Runway Condition Report</td>
</tr>
<tr>
<td>RWYCC</td>
<td>Runway Condition Code</td>
</tr>
<tr>
<td>SERA</td>
<td>Standardised European Rules of the Air</td>
</tr>
<tr>
<td>SNOWTAM</td>
<td>A special series NOTAM given in a standard format, which provides a surface condition report notifying the presence or cessation of conditions due to snow, ice, slush, frost or water, associated with snow, slush, ice, or frost on the movement area</td>
</tr>
</tbody>
</table>