

The Global Voice of Pilots



IFALPA

GRF : Global Reporting Format

Nontawat (Non) Tawewatanasarn

GRF - Are you ready?



- Useful information for performance calculations and situational awareness for pilots.
- Implementation of GRF on 12 August 2021 by EASA and Canada, and on 4 November 2021 worldwide.
- Training is important so we all know the meaning of the information given.

Runway Condition Report (RCR)



How do you use it?

- Information in the RCR is vital to the performance calculation (Aeroplane Performance Calculation section).
- Situational Awareness section also give useful information.
- Pilots need to understand what they are looking for and how to use it.

Runway Condition Report (RCR)



LFPG

02170135 08L 5/2/2 100/75/75 NR/06/06 WET/SLUSH/SLUSH 40

RWY 08L REDUCED TO 2800. DRIFTING SNOW. RWY 08L LOOSE SAND. RWY 08L CHEMICALLY TREATED. RWY 08R SNOWBANK R20 FM CL. TWY A SNOWBANK. RWY 08R ADJACENT SNOWBANKS. TWY B POOR. APRON NORTH POOR.

Runway Condition Report (RCR)

EXAMPLE



GOOD MORNING DONLON ATIS INFORMATION OSCAR AT 0245

ILS APPROACH

RUNWAY IN USE 24

TRANSITION LEVEL 60

METAR DONLON AT 0220

WIND 350 DEGREES 8 KNOTS VARIABLE BETWEEN 320 AND 060 DEGREES

VISIBILITY 10 KILOMETRES OR MORE

SCATTERED 3 THOUSAND FEET

TEMPERATURE MINUS 1

DEWPOINT MINUS 3

QNH 1014 HECTOPASCALS

NOSIG

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RUNWAY 24 CONDITION REPORT AT 0230

RUNWAY CONDITION CODES: 5, 2, 4 DOWNGRADED

FIRST PART 100 PERCENT, WET

SECOND PART 50 PERCENT, 4 MILLIMETERS, SLUSH

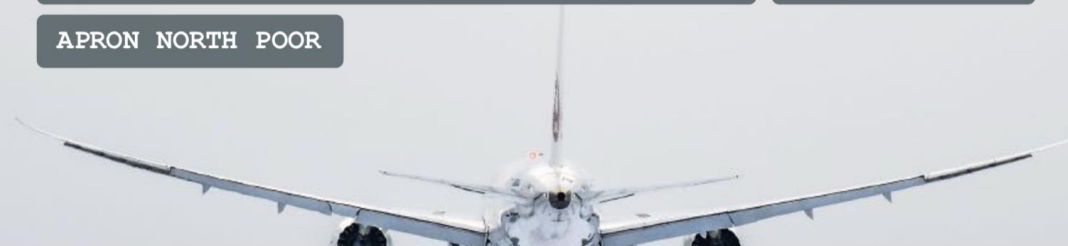
THIRD PART 50 PERCENT, 3 MILLIMETERS, SLUSH

RUNWAY WIDTH 35 METERS

SNOW BANK LEFT 20 METERS FROM CENTER LINE

TAXIWAY B POOR

APRON NORTH POOR



Runway Condition Report (RCR)



RUNWAY 24 CONDITION REPORT AT 0230

RUNWAY CONDITION CODES: 5, 2, 4 DOWNGRADED.

FIRST PART 100 PERCENT, WET. SECOND PART 50 PERCENT, 4 MILLIMETERS, SLUSH. THIRD PART 50 PERCENT, 3 MILLIMETERS, SLUSH.

RUNWAY WIDTH 35 METERS. SNOW BANK LEFT 20 METERS FROM CENTERLINE. TAXIWAY B POOR. APRON NORTH POOR.

Runway Condition Code (RWYCC)



- Each RWYCC reflects the runway braking capability as a function of the surface conditions, where 6 is best and 0 is worst.
- Runway Condition Assessment Matrix (RCAM) for non-winter condition aerodromes is different from that of those with winter condition.
- EASA has regulation on “Specially prepared Winter Runway”, where RWYCC 4 can be used instead of the normal RWYCC 3.

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 | <ul style="list-style-type: none"> • DRY | --- | --- |
| 5 | <ul style="list-style-type: none"> • FROST • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) <p>Up to and including 3 mm depth:</p> <ul style="list-style-type: none"> • SLUSH • DRY SNOW • WET SNOW | Braking deceleration is normal for the wheel braking effort applied AND directional control is normal. | GOOD |
| 4 | <p>-15°C and Lower outside air temperature:</p> <ul style="list-style-type: none"> • COMPACTED SNOW | Braking deceleration OR directional control is between Good and Medium. | GOOD TO MEDIUM |
| 3 | <ul style="list-style-type: none"> • WET ("slippery wet" runway) • DRY SNOW or WET SNOW (any depth) ON TOP OF COMPACTED SNOW <p>More than 3 mm depth:</p> <ul style="list-style-type: none"> • DRY SNOW • WET SNOW <p>Higher than -15°C outside air temperature¹:</p> <ul style="list-style-type: none"> • COMPACTED SNOW | Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced. | MEDIUM |
| 2 | <p>More than 3 mm depth of water or slush:</p> <ul style="list-style-type: none"> • STANDING WATER • SLUSH | Braking deceleration OR directional control is between Medium and Poor. | MEDIUM TO POOR |
| 1 | <ul style="list-style-type: none"> • ICE ² | Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced. | POOR |
| 0 | <ul style="list-style-type: none"> • WET ICE ² • WATER ON TOP OF COMPACTED SNOW ² • DRY SNOW or WET SNOW ON TOP OF ICE ² | Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain. | LESS THAN POOR |



RCAM



| Runway Surface Conditions | | Observations on Deceleration and Directional Control | Related Landing Performance | | Maximum Crosswind (Gust included) |
|---|-----------------|---|-----------------------------|----------------|-----------------------------------|
| Runway State or / and Runway Contaminant | ESF* or PIREP** | | Code | Level | |
| Dry | - | - | 6 | DRY | 38kt |
| Damp | Good | Braking deceleration is normal for the wheel braking effort applied. Directional control is normal. | 5 | GOOD | 38kt |
| Wet Up to 3 mm (1/8") of water | | | | | |
| Slush Up to 3 mm (1/8") | | | | | |
| Dry snow Up to 3 mm (1/8") Wet snow Up to 3 mm (1/8") Frost | | | | | |
| Compacted Snow OAT at or below -15°C | Good to Medium | Braking deceleration and controllability is between Good and Medium. | 4 | GOOD TO MEDIUM | 29kt |
| Dry Snow More than 3 mm (1/8"), up to 100 mm (4") Wet Snow More than 3 mm (1/8"), up to 30 mm (6/5") Compacted Snow OAT above -15°C Slippery when wet | Medium | Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be reduced. | 3 | MEDIUM | 25kt |
| Water More than 3 mm (1/8"), up to 12.7 mm (1/2") Slush More than 3 mm (1/8"), up to 12.7 mm (1/2") | Medium to Poor | Braking deceleration and controllability is between Medium and Poor. Potential for Hydroplaning exists. | 2 | MEDIUM TO POOR | 20kt |
| Ice (cold & dry) | Poor | Braking deceleration is significantly reduced for the wheel braking effort applied. Directional control may be significantly reduced. | 1 | POOR | 15kt |
| Wet ice Water on top of Compacted Snow Dry Snow or Wet Snow over ice | Nil | Braking deceleration is minimal to non-existent for the wheel braking effort applied. Directional control may be uncertain. | - | - | - |

*ESF: Estimated Surface Friction

**PIREP: Pilot Report of Braking Action

Upgrading/Downgrading RWYCC



- Downgrading and upgrading is an integral part of the assessment process and is essential to making relevant reports of the prevailing runway surface conditions.
- When all other observations, experience and local knowledge indicate to trained aerodrome personnel that the primary assignment of the RWYCC based on RCAM values does not accurately reflect the prevailing conditions, a downgrade or upgrade can be made.

Upgrading/Downgrading RWYCC



Aspects to be considered:

- Prevailing weather conditions (stable below freezing temperature, dynamic conditions, active precipitation).
- Observations (information and source).
- Measurements (friction measurements, vehicle behavior, shoe scraping)
- Experience (local knowledge)
- AIREPs

Downgrading RWYCC



- When the aerodrome personnel suspect that the RWYCC associated with the type of contaminant present on the runway is inaccurate, a downgrade of the RWYCC is done. AIREPs will also trigger an assessment of the runway condition.



Upgrading RWYCC

- Only RWYCC 0 or 1 can be upgraded, but only up to RWYCC 3.
- When the RWYCC 0 or 1 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
- If sand or other treatments are used, the runway surface is assessed frequently to ensure the continued effectiveness of the treatment.

AIREPs



How do pilot reports affect the operation?

- It is mandatory for pilots to report the braking action of the runway if it is worse from the one reported.
- Pilots reports of runway braking action is taken into consideration for downgrading process.
- For upgrading process, pilot reports and other information are used in combination.

AIREPs



How do pilot reports affect the operation?

- 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.

Braking action



Too subjective?

- Braking action only considers the availability of wheel braking.
- Aerodynamic drags and use of thrust reversers are highly effective during the high speed portion of the landing. The lower speed portion is where the deceleration is created by wheel brakes.

Braking action



Too subjective?

- Skidding occurs when the brake demands exceeds the braking action available.
- Modern aircrafts are equipped with an anti-skid system which regulate brake pressure to prevent skidding from occurring.
- Usually, no indication is presented for the pilots whether the anti-skid is active.
- Skidding may not occur on all wheels simultaneously.

Braking action



Too subjective?

- Training for pilots so they will be able to identify different level of braking action. This will enable them to make a much more accurate AIREP, and in turn, assist the operation of the aerodromes better.

Braking action

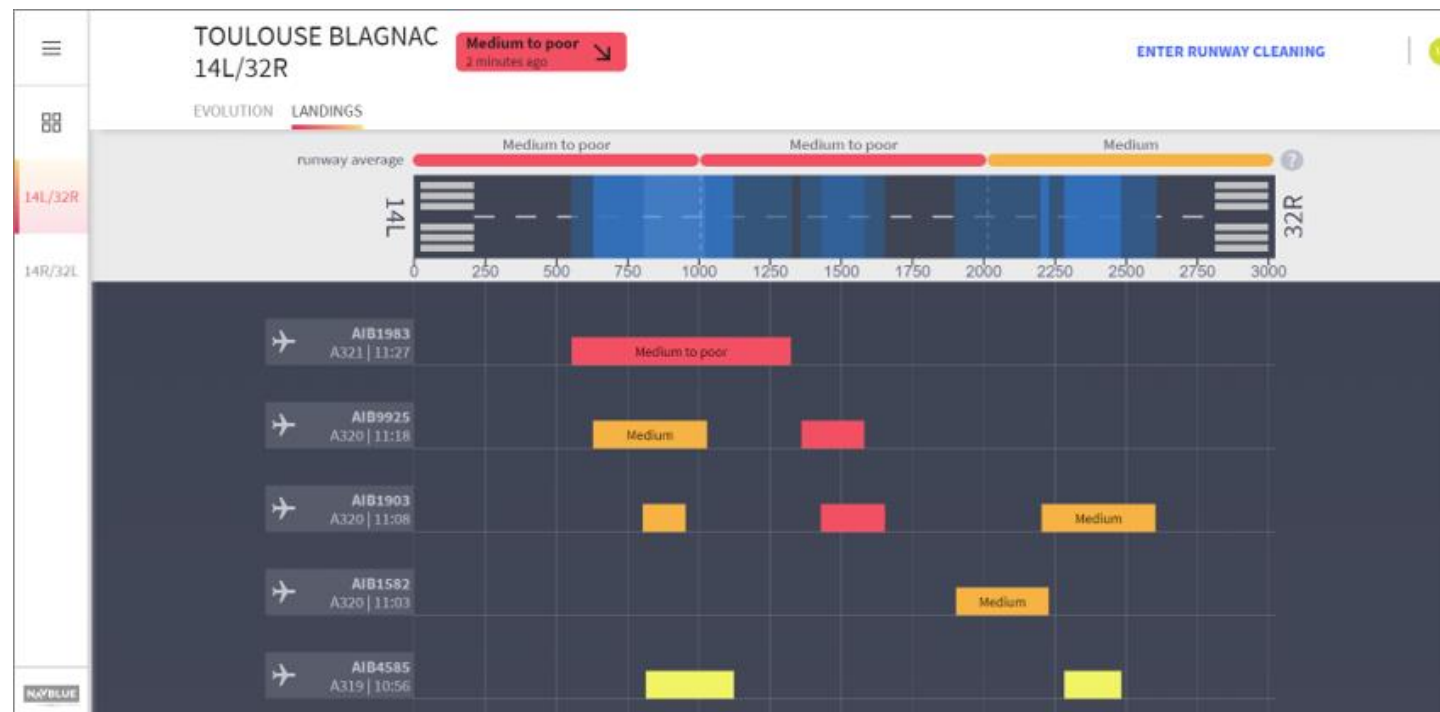


| Description of vehicle deceleration, or directional control observation | Pilot reported braking action | Runway Condition Code (RWYCC) |
|--|-------------------------------|-------------------------------|
| | N/A | 6 |
| Braking deceleration is normal for the wheel braking effort applied AND directional control is normal | GOOD | 5 |
| Braking deceleration OR directional control is between good and medium | GOOD TO MEDIUM | 4 |
| Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced | MEDIUM | 3 |
| Braking deceleration OR directional control is between medium and poor | MEDIUM TO POOR | 2 |
| Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced | POOR | 1 |
| Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain | LESS THAN POOR | 0 |

Automatic Braking Action Report



- Airbus has developed a Braking Action Computation Function (BACF). This is a useful tool in providing accurate information.



Summary



- GRF is a harmonised reporting system allowing global interoperability.
- Information from RCR is used to determine takeoff and landing assessment (lowest RWYCC). Pilots should perform another assessment for a possible worsen scenario. In case of a probable unfavorable performance, pilots can prepare their next course of action.
- It is mandatory for pilots to report braking action in case of worse than the report.

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