



**MAKES
EVERY
RUNWAY
SAFER**

**GLOBAL
REPORTING
FORMAT (GRF)**

MOVENTOR

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Antti Puronto

- M.Sc.Eng: Aalto university, Helsinki 1982
- Kone Oyj: Accountable manager for 7 years
- Finnair Oyj: Aircraft performance engineer for 25 years ret.
- Finnair Oyj: A320 captain for 25 years ret.
- TopP Oy: Aircraft performance software provider:
24 transport category aircraft types.
- TopP Oy/Moventor Oy: Runway condition reporting software provider.
- Member of ICAO GRF ATIS task force.
- Member of ICAO GRF Management of Change task force.

2/23

WHO WE ARE

Moventor at your service

- We are a Finnish company specialized on:
 - Runway safety
 - Runway efficiency
 - GRF compliant runway condition reporting
 - Measuring friction

**OUR MOTTO:
“ ... FIRST AIREP
MIGHT BE TOO
LATE ... ”**



GLOBAL REPORTING FORMAT (GRF)

GRF refreshment: goal and means

TWR
ANS PROVIDER



SNOWTAM & ATIS MUST SERVE BOTH TO & LDG

MEANS

1. ACFT. PERF.
2. ACFT. CONTROL

CREW



1. SNOWTAM
2. ATIS

PASSENGER

SNOWTAM IS USED IN FLIGHT PREPARATION. FINAL PERFORMANCE CALCULATIONS ARE BASED ON ATIS

IMPROVED PASSENGER SAFETY

LESSONS LEARNED

Organization point of view

- Do not forget ATIS.
- Pay attention to SNOWTAM syntax.
- GRF SNOWTAM string syntax does not support automatic identification of SNOWTAM logical entities:
 - Automatic validation of SNOWTAM is difficult
 - Automatic ATIS creation: generation rather based on RCR instead of SNOWTAM

ATIS and LFC readouts

Show LFC readout

04L ATIS

RUNWAY 04L CONDITION REPORT AT 05:09 UTC

RUNWAY CONDITION CODES

2, 2, 2

CONTAMINANTS

ALL PARTS 100 PERCENT 05 MILLIMETERS STANDING WATER

TAKEOFF SIGNIFICANT CONTAMINANT STANDING WATER 5

MILLIMETERS

Close

2 RWYCC

SEC B

STANDING WATER 5mm

2 RWYCC

SEC A

STANDING WATER 5mm

LESSONS LEARNED

Inspector's point of view

- RCAM is not “hard wired”! RCAM-RWYCC is the beginning of the assessment, not the end result.
- Runway inspector is assumed understand aircraft performance: to take into account contaminant DRAG effect for TO and RWYCC for LDG.
- Friction values are not part of RCAM, but friction measurements are not forbidden. Friction coefficient is valuable piece of information in RWYCC up- and downgrade assessment and in slippery wet condition monitoring.

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 is wet with water up to 3 mm depth) Up to 3 mm depth: 	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	GOOD
		Braking deceleration and directional control is normal.	GOOD TO MEDIUM
	<ul style="list-style-type: none"> • DRY SNOW • WET SNOW Higher than -15°C outside air temperature: • COMPACTED SNOW 		MEDIUM
2	<ul style="list-style-type: none"> • STANDING WATER • ICE 	Braking deceleration OR directional control is between Medium and Poor.	MEDIUM TO POOR
1	<ul style="list-style-type: none"> • ICE² 	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 ICE² • WATER ON TOP OF COMPACTED SNOW² • DRY SNOW or WET SNOW ON TOP OF ICE² 	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	LESS THAN POOR

ICAO Doc 9981 1.1.3 Operational practices:
Contaminant selection and RWYCC assessment is based upon inspector's judgement considering the effect on airplane performance.

EASA ADR.OPS.B.037(b)
RWYCC ranking is not absolute, as the RCAM by design is landing oriented. In take-off scenario, the ranking could be different due to contaminant drag effects.

GRF IN PRACTICE

Best practices

- Profound training of personnel dealing with GRF.
- Use of reporting software will help:
 - To respect GRF regulations
 - To take airplane performance into account
 - To create accurate ATIS and SNOWTAM content
 - To disseminate ATIS and SNOWTAM real time
- Friction measurements can be part of assessment, but requires discipline: training, respect the device envelope and pragmatic approach in terms of data analysis.

SHORT DEMO OF GRR:
GLOBAL RUNWAY REPORTER SOFTWARE

