

# Contaminated runways: reporting braking action

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STAC

Direction générale de l'Aviation civile - Service technique de l'Aviation civile

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# Plan

Once upon a time

Reasons for a change

Logic of the change

Amendment 11 to ICAO Annex 14

Principles

Details

Back to the future



# ONCE UPON A TIME (1)

- SNOWTAM provided estimated friction and coefficients
- ATC phraseology referred to braking action and braking coefficient
- Confusion between braking action and friction
- Measured friction values given to pilots
- Table A1 establishes correspondence between CFMEs
- On board uncertified software used friction values to determine landing distances
- *Based on the assumption that friction values measured with ground equipment were representative of aircraft braking action*
- Slippery when wet : so what ?



## ONCE UPON A TIME (2)

- Vast majority of runway overruns occur on contaminated runways
- 70% of these on wet runways
- Several accidents demonstrate that use of measured friction values for operational purpose are misleading
- Tentatives to review the infamous Table A1 fail
- 2005 is the beginning of concern within the ICAO Aerodromes Panel operations and services WG
- 2008 establishment of the Friction Task Force by the Aerodromes Panel
- FTF Terms of Reference are multidisciplinary and comprehensive : Annex 3, 6, 8, 11, 14, 15, PANS-OPS, PANS-ATM, soon to come PANS-ADR and supporting guidance material

# REASONS FOR CHANGE

No direct relationship between ground measurement with CFMEs and aircraft braking action

Great variability of measurements even with devices of the same brand

Uncertainty of measures remains even with rigorous protocols

Ground measurements shall be made by trained and competent personnel

Ground measured friction values shall not be used on board as quantitative information for calculation of operational distances

Inconsistency between Annex 6, 8 and 14 provisions

Address the slippery when wet issue

# LOGIC OF THE CHANGE (1)

Eliminate dangerous practices

Start from the operational need

- Nature of contaminant

- Depth of contaminant

- Best available information on runway surface friction characteristics according to local conditions

Delineate roles and responsibilities

- Aerodrome operators provide the best information they have from the ground

- Aircraft manufacturers provide the most accurate information for operational distance calculations and operational limits

- Aircraft operators and pilots use this information with care and discretion

- States sets the standards for maintenance and reporting

# LOGIC OF THE CHANGE (2)

Improve maintenance and drainage of runway surfaces

Improve competence

Improve assessments : devices, methods,...

Recognize that demonstration of runway friction performance, for aircraft certification, and for operational procedures do not pertain to the same techniques

Phased approach as it is a long road

Do not throw the baby with the bath

Build confidence

# AMENDMENT 11 TO ANNEX 14

## principles

Promulgated with ICAO Stale Letter 20/2013

Approved by Aerodromes Panel at AP/2 (October 2010)

Applicable November 2013

Resolve immediate safety issues

Set the standards for aerodromes based on existing best practices

Pave the way for the future



# AMENDMENT 11 TO ANNEX 14

## reporting and action

Standards 2.9.1, 2.9.2, Annex 15 (SNOWTAM format) and PANS-ATM (ATC phraseology)

Clarification of standards with regard to reporting and corrective/mitigation action

Deletion of friction measurements

Alignment of wet characteristics on Annex 6

# AMENDMENT 11 TO ANNEX 14

## competence

### Recommendation 2.9.3A

*“Personnel assessing and reporting runway surface conditions required in 2.9.2 and 2.9.7 should be trained and competent to meet criteria set by the State.”*

# AMENDMENT 11 TO ANNEX 14

## wet conditions

Recommendation 2.9.4, Standards 2.9.5 and 2.9.6

Align definition of wet conditions on Annex 6

Slippery when wet is when the friction level is below the Minimum Friction Level fixed by the State

Replacement of friction measurements by friction level (e.g. Measurement by assessment)

# AMENDMENT 11 TO ANNEX 14

## Winter conditions

Recommendation 2.9.9 becomes a Standard 2.9.7, focus on assessment and reporting on operational runways and delete the requirement for measurement

**2.9.7A Recommendation.** — *Runway surface friction measurements made on a runway that is contaminated by slush, wet snow or wet ice **should not be reported unless the reliability of the measurement relevant to its operational use can be assured.***

**2.9.8 (ex 2.9.10) Recommendation.**— *When friction measurements are taken as part of the assessment, the performance of the friction measuring device on compacted snow- or ice-covered surfaces should **meet the standard and correlation criteria set or agreed by the State***

Recommendation 2.9.9 specifies the information to be reported on contaminants.

# AMENDMENT 11 TO ANNEX 14

## maintenance

Recommendation 10.1.1 for a maintenance programme becomes a Standard

Standard 10.2.3 “A paved runway shall be maintained in a condition so as to provide surface friction characteristics at or above the minimum friction level specified by the State. “

Standard 10.2.4 (ex 10.2.3) ” **Runway surface** friction characteristics for **maintenance purposes** shall be periodically measured with a continuous friction measuring device using self-wetting features and documented. **The frequency of these measurements shall be sufficient to determine the trend of the surface friction characteristics of the runway.**”

Standard 10.2.5 (ex 10.2.4) ” Corrective maintenance action shall be taken **to prevent** the runway surface friction characteristics for either the entire runway or a portion thereof **from falling** below a minimum friction level specified by the State.”

# AMENDMENT 11 TO ANNEX 14

## removal of contaminants

New section 10.3 on removal of contaminants to differentiate from the maintenance of the intrinsic friction characteristics of the runway, e.g. Day-to-day operations versus planned maintenance

Standard 10.3.1 focusses the removal on the runways **in use**

Recommendation 10.3.4 gives flexibility for the removal of contaminants from the other paved surfaces

# BACK TO THE FUTURE

## Implementation of amendment 11

- Guidance

- Exchange of information on best practices

- Anticipation of future changes

## Next Phase

- Continuation of the logic of the change

- Global Reporting Format

- TALPA ARC approach taken into consideration

- 12th meeting of the Friction Task Force this week in London

- Next round of amendments to be presented at AP/3 in april 2014

Thank you for your attention

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