

Take Off and Landing Performance Assessment (TALPA) - Friends and Partners in Aviation Weather

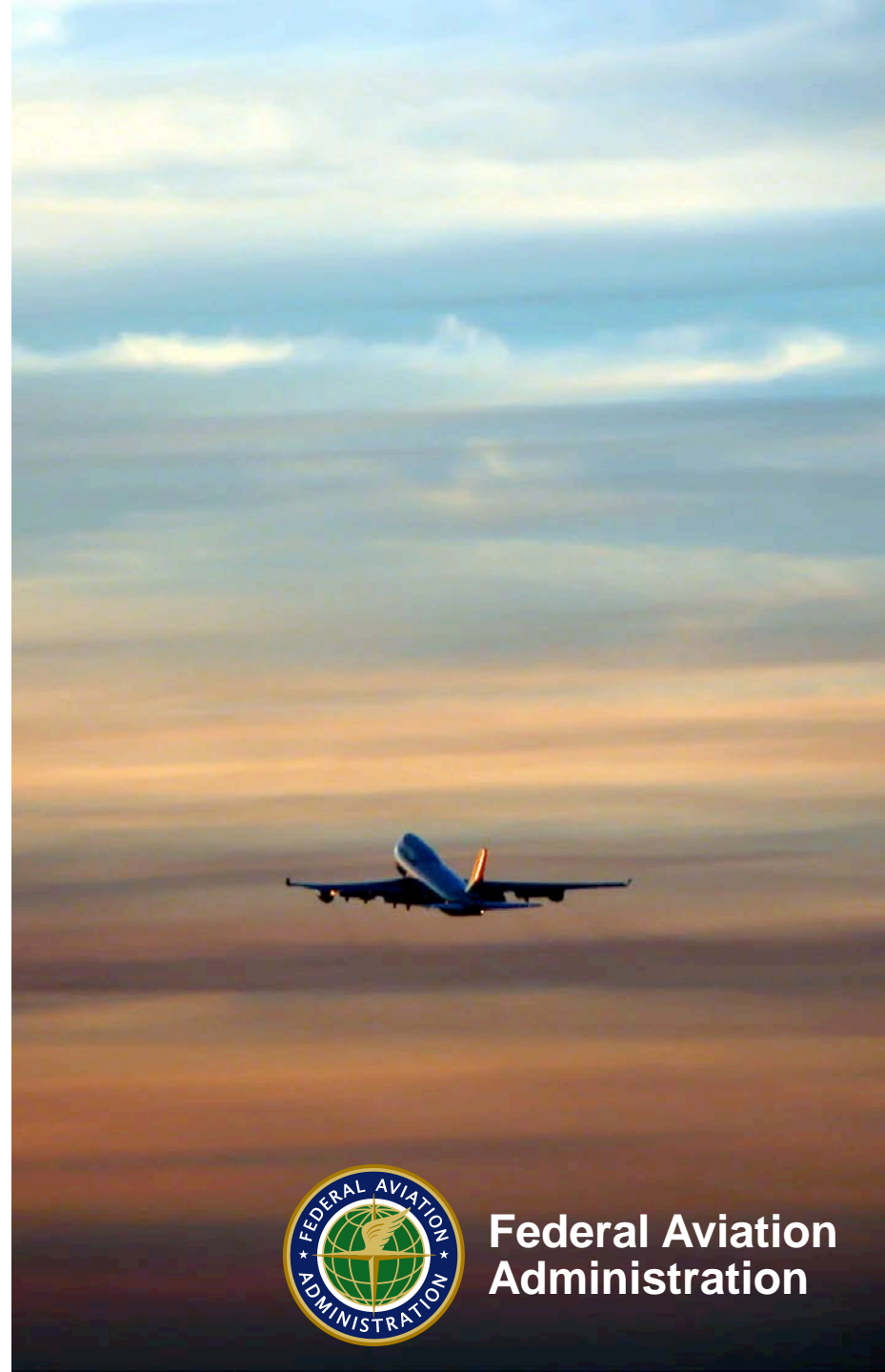
Presented to: NBAA Webinar

By: Tom Lahovski, AFS-280

Date: November 3, 2016



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Administration**



Why TALPA?

- **As result of 737 overrun at MDW December, 2005, the FAA convened the Takeoff and Landing Performance Assessment (TALPA) Aviation Rulemaking Committee (ARC)**
- **TALPA Work Group Charter:**
 - Implement the ARC Recommendations
 - for voluntary use by industry



Airport Field Condition Assessments and Winter Operations Safety - AC No: 150/5200-30D



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Airport Field Condition Assessments
and Winter Operations Safety

Date: 7/29/2016

AC No: 150/5200-30D

Initiated By: AAS-300

1 **PURPOSE.**

This advisory circular (AC) provides guidance to assist airport operators in developing a snow and ice control plan, assessing and reporting airport conditions through the utilization of the Runway Condition Assessment Matrix (RCAM), and establishing snow removal and control procedures.



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AC 150/5200-30D

- **Use of the specifications in this AC is mandatory for projects funded under the Airport Improvement Program (AIP) or with revenue from the Passenger Facility Charge (PFC) program**



Guidance Information: Snow & Ice Control Plans (SICP)

- Current way airport operators accomplish assessment is not changing
 - RCAM tool makes the process more objective and standardized
- No change on how an airport clears snow and ice from surfaces
- Reporting DOES change
- RwyCCs replace “Mu” numbers
 - Mu still useable for actions associated with trends on taxiway(s), aprons, holding bays, etc.
 - Mu can be considered ***by airport operator*** for upgrading/downgrading RwyCCs
- Primary changes are on reporting contaminant information through the Federal NOTAM System
 - Via NOTAM Manager, ENII, and Flight Service Stations
 - NOTAM Mgr. has drop-down menus, can input FICON NOTAM direct from notepad/tablet/iPad with internet access.



Guidance Information: Airport RCAM

- No plans to add other contaminants to the RCAM
- Up to two contaminants types for each runway third....from published standardized contaminant list
- Although designed for runways, RCAM terminology can also be used on other paved airport surfaces
- Certified Friction Measurement Equipment and Decelerometers can still be used as a tool in the airport's toolbox for trend identification
- RwyCC's are generated only when overall length and width of the usable runway is contaminated more than 25%

Assessment Criteria		Downgrade Assessment Criteria		
Runway Condition Description	Code	Mu (μ) ¹	Vehicle Deceleration or Directional Control Observation	Pilot Reported Braking Action
<ul style="list-style-type: none"> • Dry 	6	40 or Higher	---	---
<ul style="list-style-type: none"> • Frost • Wet (Includes Damp and 1/8 inch depth or less of water) 1/8 inch (3mm) depth or less of: <ul style="list-style-type: none"> • Slush • Dry Snow • Wet Snow 	5		Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
5° F (-15°C) and Colder outside air temperature: <ul style="list-style-type: none"> • Compacted Snow 	4	39 to 30	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
<ul style="list-style-type: none"> • Slippery When Wet (wet runway) • Dry Snow or Wet Snow (Any depth) over Compacted Snow Greater than 1/8 inch (3mm) depth of: <ul style="list-style-type: none"> • Dry Snow • Wet Snow Warmer than 5° F (-15°C) outside air temperature: <ul style="list-style-type: none"> • Compacted Snow 	3	29 to 21	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 (3mm) inch depth of: <ul style="list-style-type: none"> • Water • Slush 	2	20 or Lower	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
<ul style="list-style-type: none"> • Ice² 	1		Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
<ul style="list-style-type: none"> • Wet Ice² • Slush over Ice • Water over Compacted Snow² • Dry Snow or Wet Snow over Ice² 	0		Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil



Reporting Airport Condition Information

- **Runway Condition Codes are disseminated via one or more of the following methods:**
 - Federal NOTAM System (FNS), preferably through NOTAM Manager or equivalent system(s);
 - Airport Traffic Control Facility (corresponding Tower, Center, Tracon, etc.);
 - Flight Service Station (FSS) (as applicable); and
 - Directly from airport operator via Common Traffic Advisory Frequency (as applicable).



Example NOTAMs

- **Old Format:** !JFK JFK RWY 9/27 PATCHY THIN SLUSH
- **New format:** !JFK JFK RWY 9 20% 1/8 INCH SLUSH

Translation: JFK Runway 9 is 20% covered with 1/8 inch of slush

- **Old Format:** !JFK JFK RWY 1/19 ½ INCH WET SNOW
- **New format:** !JFK JFK RWY 19 5/5/3 70% 1/8 INCH WET SNOW, 70% 1/8 INCH WET SNOW, 90% ½ INCH WET SNOW

Translation: JFK Runway 19 runway condition code of 5/5/3, Touchdown and Midpoint runway thirds are 70% covered with 1/8 inch of wet snow; the Rollout third is 90% covered with ½ inch wet snow.



Wet Runways...

- Not Required, but highly encourage reporting of Wet Runways
- Retain Wet runway reporting capability in NOTAM manager
- Busy commercial airports with runways shorter than 7,000 feet should always report wet runways



Federal Aviation Administration National Part 139 CertAlert

AdvisoryCautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**

Date: 09/30/2016 No. 16-06
To: All Title 14 CFR Part 139 Airport Operators
Subject: Announcement of the Take Off and Landing Performance Assessment (TALPA) Initiative Implementation Date and Time
Point of Contact: Phil Davenport, AAS-300, 202-267-7072
Email: Phillip.Davenport@faa.gov

1. **Purpose.** To remind airport operators that the TALPA initiative will be implemented effective 01 Oct 2016 at 0900 UTC.
2. **Background.** The recently published Advisory Circular 150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety*, dated 29 July 2016, provided updated information assessing and reporting airport surface condition information through the use of a new assessment tool called the Runway Condition Assessment Matrix. To facilitate this change, the Federal NOTAM System (FNS) will incorporate these reporting procedures beginning October 1, 2016. This will standardize the terminology and method by which this information is disseminated.
3. **Guidance Change.** The FAA will change Advisory Circular 150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety*, to remove the current requirement to report runway "wet" conditions (1/8th inch or less of water) when it is the only contaminant present. Instead, because of the impact on performance of some aircraft, the FAA will **highly encourage** airports to report "wet" conditions (1/8th inch or less of water) when it is the only condition present on the runway.
4. **Action.** Airport operators will continue to use the FNS to submit field condition NOTAMs (FICONs), but now the FNS will be able to generate Runway Condition Codes (RwyCC) based on the contaminant inputs by the airport operator. RwyCCs will take the place of Mu values in the FICON, and airport operators should no longer provide Mu values to pilots. Additionally, Mu values will no longer be accepted in the FNS. Airport operators can find additional information and resources on the TALPA webpage at www.faa.gov/about/initiatives/talpa/.

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Questions?

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TALPA scope

➤ Airplane Operators:

- Applies to *any* airplane operating on a contaminated, paved runway (14 CFR Parts 91, 91K, 125, 135, 121).
- May conduct TALPA performance assessments (for landing and/or departing) on a voluntary basis.
 - Not regulatory



Flt. Stds. Guidance on TALPA

- **Published:**

- AC 91-79A: Mitigating the Risks of a Runway Overrun Upon Landing (revised 4/28/2016)
- FAA Order 8900.1 Vol. 4, Chap. 3, Sec. 1 – Guidance to ASIs and operators on developing TALPA procedures and computations.
- Notice 8900.375, Procedures for Reducing the Risk of Runway Overrun (TALPA)
- SAFO 16009, Runway Assessment and Condition Reporting, Effective October 1, 2016



AC 91-79A, rev. 1, April 28, 2016

- Provides operators with detailed information to develop company standard operating procedures (SOP) and training programs related to TALPA.
- Provides guidance to the pilot/operator in the absence of specific landing performance data provided by the airplane's manufacturer.
- Focus is primarily on non-turbojet operations.
- Turbojet operations are covered in SAFO 06012



AC 91-79A, Rev. 1, April 28, 2016

- **Pilot Braking Action Terms are now:**
 - Good
 - Good to Medium
 - Medium
 - Medium to Poor
 - Poor
 - Nil
- **Changed to match ICAO Terms, except for “Nil”**
 - ICAO uses “Less Than Poor”.



OPERATIONAL RUNWAY CONDITION ASSESSMENT MATRIX (RCAM)

BRAKING ACTION CODES AND DEFINITIONS

Assessment Criteria		Control/Braking Assessment Criteria	
Runway Condition Description	RwyCC	Deceleration or Directional Control Observation	Pilot Reported Braking Action
<ul style="list-style-type: none"> Dry 	6	---	---
<ul style="list-style-type: none"> Frost Wet (Includes damp and 1/8 inch depth or less of water) <p>1/8 inch (3mm) depth or less of:</p> <ul style="list-style-type: none"> Slush Dry Snow Wet Snow 	5	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
<p>-15°C and Colder outside air temperature:</p> <ul style="list-style-type: none"> Compacted Snow 	4	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
<ul style="list-style-type: none"> Slippery When Wet (wet runway) Dry Snow or Wet Snow (any depth) over Compacted Snow <p>Greater than 1/8 inch (3 mm) depth of:</p> <ul style="list-style-type: none"> Dry Snow Wet Snow <p>Warmer than -15°C outside air temperature:</p> <ul style="list-style-type: none"> Compacted Snow 	3	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
<p>Greater than 1/8 inch(3 mm) depth of:</p> <ul style="list-style-type: none"> Water Slush 	2	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
<ul style="list-style-type: none"> Ice 	1	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
<ul style="list-style-type: none"> Wet Ice Slush over Ice Water over Compacted Snow Dry Snow or Wet Snow over Ice 	0	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil



Braking Action Terms and Deceleration or Directional Control Observation

- **More standardized, objective reporting of braking action**



“Good”

- **Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.**



“Good to Medium”

- **Braking deceleration is between normal and noticeably reduced for the wheel braking effort applied**
- **OR**
- **Directional control is between normal and noticeably reduced.**



“Medium”

- **Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.**



“Medium to Poor”

- **Braking deceleration is between noticeably reduced and significantly reduced for the wheel braking effort applied**
- **OR**
- **Directional control is between noticeably reduced and significantly reduced.**



“Poor”

- **Braking deceleration is significantly reduced for the wheel braking effort applied**
- **OR**
- **Directional control is significantly reduced.**



“Nil”

- **Braking deceleration is minimal to non-existent for the wheel braking effort applied**
- **OR**
- **Directional control is uncertain.**



TALPA Is Not Just for Cold Weather Airports!

- Also applies to warm weather airports
- “Wet” runway condition is a factor for overruns also



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Cert. Alert No. 16-06

- The FAA will change Advisory Circular 150/5200-30D, Airport Field Condition Assessments and Winter Operations Safety, to remove the current requirement to report runway “wet” conditions (1/8th inch or less of water) when it is the only contaminant present.
- Instead, because of the impact on performance of some aircraft, the FAA will highly encourage airports to report “wet” conditions (1/8th inch or less of water) when it is the only condition present on the runway.



AC 91-79A, Appendix 3, Page 3

- If there is no clear report of runway condition(s), but the pilot knows rain has been in the area, that pilot should assume the runway is wet.
- If there is rain actively falling on the runway, standing water should be assumed.
- a wet runway increases the landing distance over a dry runway by approximately 26%.
- Standing water increases the landing distance approximately 52 percent.



Runway Condition Codes – Examples

- **RwyCC, not RCC**
 - RCC = Rescue Coordination Center
 - RwyCC aligns with ICAO.



“Slippery When Wet “ NOTAM

- **Issued when:**
 - The runway has failed to meet the minimum friction level criteria, as outlined in the pavement maintenance Advisory Circular, AND
 - it is Wet (contamination of 1/8 inch or less of water).
- **Cancelled when the runway returns to a dry condition.**
 - The airport operator also has the option to downgrade the RwyCCs. In the case of “Slippery When Wet”, the code will always be the same for all thirds (i.e., 3/3/3, 2/2/2, 1/1/1), because the entire runway is considered “Slippery When Wet”.



“Slippery When Wet “ NOTAM

- Used only on runways
- Only FICON that is described using both runway ends.
- **EXAMPLE-**
 - ...RWY 02/20 FICON 3/3/3 SLIPPERY WHEN WET...
 - NOTE – May be downgraded to 2/2/2 or 1/1/1 with **all numbers matching.**
 - Source: N JO 7930.107



RwyCC EXAMPLES - Runways

- !LGA LGA RWY 13 FICON 1/1/1 100 PRCT WET ICE OBSERVED AT 1701040230. CONDITIONS NOT MNT 1701040300-1701061045. 1701040253-1701061115
- *Runway 13 is the landing runway and is 100% covered by wet ice but the Runway Condition Code (RwyCC) has been upgraded to a 1 for all of the runway thirds. The field conditions are not monitored from January 4, 2017 0300UTC January 6, 2017 1045UTC. The airport operator expects to have a new NOTAM submitted by January 6, 2017 1115UTC.*
- Source: N JO 7930.107



Snow and Ice Contaminants

- **...RWY 31 FICON 25 PRCT WET ICE...**
 - Runway 31 is the landing runway and has 25% coverage of wet ice. The RwyCC is not displayed because there is ≤25% total surface coverage by the contaminant.
 - Source: N JO 7930.107



Braking Action (BA) NOTAM (APRONS, TWYs and Non-Paved RWYs).

- ***EXAMPLE-***
- *...TWY A FICON BA GOOD TO MEDIUM...*
...TWY A FICON 75 PRCT 1/8IN WET SN BA MEDIUM...



RwyCCs Are Currently Not Planned for Takeoff Performance Use

- RwyCCs reflect the various levels of braking action for which operational landing performance is provided by the manufacturers.
- TALPA ARC considered expanding the takeoff cases to include a bigger variety of braking actions.
- Cost/Benefit Analysis did not yield sufficient results
- Contaminated takeoff performance determined by type and depth of contaminant, not RwyCC.
- Operator may provide procedures on using RwyCCs for takeoff.



FAA Order 8900.1, Vol. 4, Chap. 3, Sec. 1, July 18, 2016

- **Provides Operations Inspectors with guidance for accepting GOM procedures and approving Trng. Prgms.:**
 - Contaminated Runway Considerations for Takeoff
 - Type and Depth of Contaminant, not RwyCC (AC 25-31)
 - Best Practices for Landing Distance Assessments
 - Part 25 generic factors to apply to available data if appropriate performance data not available
 - Considerations in short field situations: Proc. & Trng.
 - TALPA is a risk indicator
 - Declared distances – AIM Section 4-3-6



TALPA and Displaced Thresholds - JFK 22R

- **Total RwyCC Runway: 12079'**
 - RwyCC thirds: 4026.33'
- **TORA:12079 TODA:12079 ASDA:11219**
- **Displaced Threshold: 3425'**
- **LDA: 7795'**
 - Runway thirds: 2598'
- **RwyCCs 22R**



Notice 8900.375, Procedures for Reducing the Risk of Runway Overrun (TALPA) – Aug. 1, 2016

- **Provides more specific guidance to FAA inspectors on accepting TALPA procedures in General Operations Manuals (GOMs) and approving training programs.**
 - Determining the effects of contaminated runways on takeoff performance.
 - Landing Distance Assessments just prior to arrival



SAFO 16009, Runway Assessment and Condition Reporting, Published August 24, 2016

- **Notifies operators, pilots, training providers and other personnel of changes in runway condition reporting when a runway is other than dry.**
- **Provides a list of 12 reference documents for TALPA.**



Chief TALPA Elements for Pilots and Operators

- **Landing Distance Assessment**
- **ATIS: RwyCCs only. FICON on NOTAMs**
- **Develop your minimum RwyCCs to land**
 - Alternate plans if not met, e.g. MAP & hold or divert
 - Briefed during Approach Briefing, for example
- **New Braking Action Terms and their definitions**



Summary

- TALPA is not regulatory, but to your benefit.
- It is a risk-assessment tool
 - decision-supporting, not decision-making.
- If TALPA doesn't address a specific situation, operate as before.
- Pilots: You get numbers (RwyCCs), you give braking action reports (words) only.
 - Know your minimum acceptable RwyCCs before commencing the approach.
 - Top of Descent (TOD) recommended



More Information, Feedback

- TALPA Is Evolving
- TALPA Website:
 - <http://www.faa.gov/about/initiatives/talpa/>
- Comments, Questions on TALPA:
 - TALPA e-mail address: 9-awa-TALPA@faa.gov

