

ICAO/ACI Symposium on Implementation of the New Global Reporting Format for Runway Surface Condition (GRF2019)

TALPA IMPLEMENTATION EVOLUTION

Presented to: ICAO/ACI GLOBAL REPORTING FORMAT
(GRF2019) REGIONAL OFFICE CONFERENCE

By: U. S. Federal Aviation Administration

Date:



**Federal Aviation
Administration**



TALPA Evolution

- **History**

- Airplane landing and excursion on contaminated surface
- NTSB set in motion various recommendations
- Originated as a Aviation Rulemaking Committee Initiative
- Implemented via voluntary efforts
- Created tools, guidance documents, and capabilities to assess surface conditions
- Tied assessed condition to airplane performance

TALPA Evolution

Stakeholder Participants

•Regulatory Authorities

- FAA (Airports, Flight Standards, Certification, NOTAMS, Rulemaking, Legal)
- Transport Canada
- Brazilian Certification Authority
- EASA (Limited Participation)



•Other Organizations

- Air Transport Association
- Airline Pilots Association
- Airports Council International
- Allied Pilots Association
- National Air Carrier Association
- National Business Aviation Association
- National Transportation Safety Board
- Neubert Aero Corporation
- Regional Airline Association
- Southwest Airlines Pilot Association
- Allied Pilots Association



•Airplane Operators

•Part 121

- ABX Air
- Alaska
- American Eagle
- American
- Continental
- Delta
- Express Jet
- Federal Express
- Northwest
- Pinnacle
- Southwest
- United
- UPS
- US Airways



•Airports

- Cherry Capital
- Chicago Airport System
- Chicago O'Hare
- Grand Rapids Regional
- Minneapolis/St. Paul Airport System



•Airplane Operators

•Part 91-K/125/135

- Alpha Flying, Inc
- Bombardier Flexjet
- Chantilly Air
- Flight Works
- Jet Solutions
- Conoco Phillips Alaska
- Net Jets
- Pogo Jet, Inc



•Airplane Manufacturers

- Airbus
- Boeing
- Bombardier
- Cessna
- Eclipse
- Embraer
- Gulfstream
- Hawker



TALPA Evolution

Airport Operator RCAM Version

Assessment Criteria		Downgrade Assessment Criteria		
Runway Condition Description	Code	Mu (μ) ¹	Vehicle Deceleration or Directional Control Observation	Pilot Reported Braking Action
• Dry	6	40 or Higher	---	---
• Frost • Wet (Includes Damp and 1/8 inch depth or less of water) 1/8 inch (3mm) depth or less of: • 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: • Compacted Snow	4	39	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
• Slippery When Wet (wet runway) • Dry Snow or Wet Snow (Any depth) over Compacted Snow Greater than 1/8 inch (3mm) depth of: • Dry Snow • Wet Snow Warmer than 5° F (-15°C) outside air temperature: • Compacted Snow	3	30 to 39	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: • Water • Slush	2	29 to 30	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice ²	1	21 to 29	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice ² • Slush over Ice ² • Water over Compacted Snow ² • Dry Snow or Wet Snow over Ice ²	0	20 or Lower	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

Aircraft Operator RCAM Version

Assessment Criteria		Control/Braking Assessment Criteria	
Runway Condition Description	RwyCC	Deceleration or Directional Control Observation	Pilot Reported Braking Action
• Dry	6	---	---
• Frost • Wet (Includes damp and 1/8 inch depth or less of water) 1/8 inch (3mm) depth or less of: • Slush • Dry Snow • Wet Snow	5	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
-15°C and Colder outside air temperature: • Compacted Snow	4	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
• Slippery When Wet (wet runway) • Dry Snow or Wet Snow (any depth) over Compacted Snow Greater than 1/8 inch (3 mm) depth of: • Dry Snow • Wet Snow Warmer than -15°C outside air temperature: • Compacted Snow	3	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 inch (3 mm) depth of: • Water • Slush	2	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice	1	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• 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

TALPA – Aircraft Operator

US FAA Transport Standards

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Airplane Performance

- **FAA Goal – Data Basis**
 - Same basis for all manufacturers and operators
 - One set of assumptions when manufacturers create data
 - One set of guidelines for operators
 - ICAO adopted same time-of-arrival landing performance basis
 - Manufacturer supplied performance data is based on the same assumptions (one minor exception)
 - Operator guidance the same

Airplane Performance

- **Two important parts**
 - Manufacturer data to support implementation of TALPA
 - Takeoff – non-issue, AC's consistent to the greatest degree possible with EASA contaminated runway certification requirements (AC 25-31)
 - Landing – Time of Arrival performance data (AC 25-32)
 - Guidance for operators on implementation of performance data
 - Safety Alert For Operators
 - Operational guidance for TALPA operations - SAFO 19001
 - » Guidance also in FAA Order 8900
 - Recommendations for ops in heavy rain - SAFO 15009

Best Practices

Operational Data and Guidance

- FAA TALPA is **voluntary** for operators therefore the operational information provided are – ***“best practices for conducting a landing distance assessment at time of arrival”***
 - **Timeliness**
 - Typically top of descent
 - Determine how much field conditions can deteriorate and still land
 - **Safety Margin**
 - 15% recommended
 - **Autobrake Usage**
 - Guidance on when A/B data should be factored

Best Practices

Operational Data and Guidance

– Source of Data

- Manufacturer historical (adjusted if necessary) or based on AC 25-32
- If no data available – Generic factors maybe applied to unfactored AFM dry

– Additional Guidance

- Use of dispatch data
- Touchdown point

Braking Action	Runway Condition Code						
	6 (Dry)	5 Grooved /PFC Good	5 Smooth Good	4 Good to Medium	3 Medium	2 Medium to Poor	1 Poor
Turbojet, No Reverse	1.67	2.3	2.6	2.8	3.2	4.0	5.1
Turbojet, With Reverse	1.67	1.92	2.2	2.3	2.5	2.9	3.4
Turboprop Note 1	1.67	1.92	2.0	2.2	2.4	2.7	2.9
Reciprocating	1.67	2.3	2.6	2.8	3.2	4.0	5.1

Operational Performance Implementation Issues

- **Manufacturer's TALPA data/guidance not available**
 - Default to factor's that are conservative because of simplification
- **Multiple contaminants reported**
 - Primarily takeoff issue
 - Data provided by manufacturer for single contaminant on the runway
 - Different airplanes have different critical contaminant for performance
 - Consensus, operators handle the choosing of the critical contaminant for performance purposes

Wet/Water Covered Runways

- **SAFO 19003**, “Turbojet Braking Performance on Wet Runways”
 - During moderate heavy rain wheel braking may degrade rapidly depending on the characteristics of the specific runway
 - Drainage capability
 - Friction surface
 - Rubber contamination

Wet/Water Covered Runways

“Knowing ahead of time whether your aircraft can or cannot stop within the Landing Distance Available if runway conditions deteriorate to a medium to poor condition (RwyCC = 2) is critical when operating in moderate or heavy rain. Go-around, holding, or diversion may be necessary if rainfall intensity increases beyond what might be acceptable for the intended operation.”

[SAFO 19003]

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Implementation Tools

- **Advisory Circular 150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety***
- **Advisory Circular 150/5200-28F, *Notices to Airmen (NOTAMs) for Airport Operators***
- **Enhanced tool for producing RwyCCs and reporting Field Condition NOTAMs (FICON)**
 - Modified system on how surface conditions will be reported based on the RCAM criteria
 - System reduces subjectivity and standardizes how the RwyCC is generated and published
 - System calculates and generates RwyCCs based on contaminant information input by the airport operator
 - System comprised of simple dropdown menu selections for the airport operator
 - Established a demo system for testing and familiarity
 - System business rules and methods are transferrable
 - Prepared to coordinate with implementation teams
 - FAA Order 7930.2, Notices To Airmen (NOTAMs), is governing document

Awareness Campaign

- **Time is critical for a successful implementation**
 - Developed information for operators and stakeholders to use/supplement existing training and guidance documents
 - Conducted outreach nationally via webinars, conferences, industry forums and informational bulletins for airport operators and other stakeholders
 - Recorded narrated presentations on process for utilizing the RCAM for field condition assessment and reporting
 - Sought industry participation to publish articles in trade publications on field condition assessment and reporting
 - Built websites to make information available to industry and stakeholders
 - Held FAA Industry Day ahead of implementation to seek feedback and address stakeholders concerns

Challenges

- Enough time to meet implementation expectations
- Impact of change on airport operators
- Break with traditional way of assessing conditions
- Understanding use of existing friction measuring tools after implementation
- Instituting new terminology
- Applying RwyCC upgrade/downgrade actions

Best Practices

- Development of a website for information and a bank of Frequently Asked Questions
- Capability to accept/answer stakeholders on-going questions throughout implementation
- Usable template as a basic framework that can be used to train stakeholders
- Information distribution capability to reach and receive feedback from numerous stakeholders simultaneously
- Data gathering source for GRF analysis after implementation
- Organic Website

<https://www.faa.gov/about/initiatives/talpa/>

Air Traffic Controller TALPA Implementation

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ATC Guidance Documents

- **Order JO 7110.65 – Air Traffic Control**
 - Added Runway Condition Codes (RwyCC) – “0” (worst) to “6” (best)
 - Replaced “Fair” reportable braking action report with ICAO “Medium”
 - Introduced new categories: “Good to Medium” and “Medium to Poor”
- **Order JO 7210.3 – Facility Operation and Administration**
- **Order JO 7110.10 – Flight Services**
- **Aeronautical Information Manual (AIM)**
- **Aeronautical Information Publication (AIP) ICAO**
- **Pilot/Controller Glossary**

Air Traffic Controller Required Training

- **Develop Training and Training Guidance**
 - Appropriate timelines and methods must be established
 - Training and updates must be consistent state-wide
 - Recommend establishing a training framework/template for standardization
- **Brief Procedural Changes to All Controllers**
 - Terminal facilities
 - EnRoute facilities
 - Both state run and non-government facilities

Emphasize Controller Procedures Not Affected

- **Controllers will** still solicit braking action reports from pilots after/upon landing
- **Controllers will** disseminate to Airport Operators, and pilots, pertinent changes to surface/landing conditions received via PIREPS/NOTAMS
- **Controllers will** disseminate new information via ATIS broadcasts like Runway Condition Codes.
- **Controllers will** **NOT** add the complete FICON NOTAMs to the ATIS broadcast

Conclusion & Thank you!

