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

•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

•Airports

✈Cherry Capital

✈Chicago Airport System

✈Chicago O'Hare

✈Grand Rapids Regional

✈Minneapolis/St. Paul Airport System

•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		---	---
• 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	40 or Higher	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 to 30	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		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 21	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice [2]	1		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

	Runway Condition Code						
Braking Action	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 and by nature conservative
- **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

Airport Operator
TALPA Implementation

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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!