ICAO

The Seventh Meeting of the Asia/Pacific Aerodrome Assistance Working Group

Presented to:	AP-AA/WG/7
By:	Federal Aviation Administration
Date:	May 27-29, 2025

Federal Aviation Administration

GRF - RCAM

RCAM

Implemented: October 2016

Standardized Reporting

Subjective to Objective Interpretation

Accurate runway condition

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 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

RCAM

- RCAM Change
  - required for all Part 139 Airports
- NOTAMs extend outside of Winter Operations
- Training required for all personnel issuing NOTAM's
- Wet NOTAM's

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NOTAM – Wet Runways

- **Airport's are encouraged to Report Wet Conditions**
  - July 2016 (FAA AC 150/5200-30D) - A significant change to condition reporting includes the requirement and ability to report 'Wet' when visible dampness, or water that is 1/8-inch (3.3 mm) or less in depth exists on any surface (runways, taxiways, aprons, holding bays).
  - September CertAlert (16-06) – Language changed to highly encouraged
  - March 2017 (FAA AC 150/5200-30D) - Airport operators are highly encouraged to report "Wet" conditions (1/8th inch (3mm) or less of water) when it is the only condition present on the runway. The encouragement for "wet" reporting is largely due to differences in airplane performance on surfaces.

NOTAM – Slippery When Wet

AC 150/5200-30D Airport Field Condition Assessments and Winter Operations Safety

- **1.12.19 Slippery When Wet Runway.** For runways where a friction survey (conducted for pavement maintenance) indicates the averaged Mu value at 40 mph on the wet pavement surface failed to meet the minimum friction level classification specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, the airport operator **must** report via the NOTAM system a RwyCC of '3' for the entire runway (by thirds: 3/3/3) when the runway is wet. The runway condition description "Slippery When Wet" is used for this condition. If airport operator judgment deems a downgrade is necessary, the downgrade must be made such that all three runway thirds match (i.e. 3/3/3, 2/2/2, 1/1/1).

Table 5-2. Runway Condition Assessment Matrix (RCAM) ***(for Airport Operators' Use Only)***

Assessment Criteria		Downgrade Assessment Criteria		
Runway Condition Description	Code	Mu (μ) [1]	Vehicle Deceleration or Directional Control Observation	Pilot Reported Braking Action
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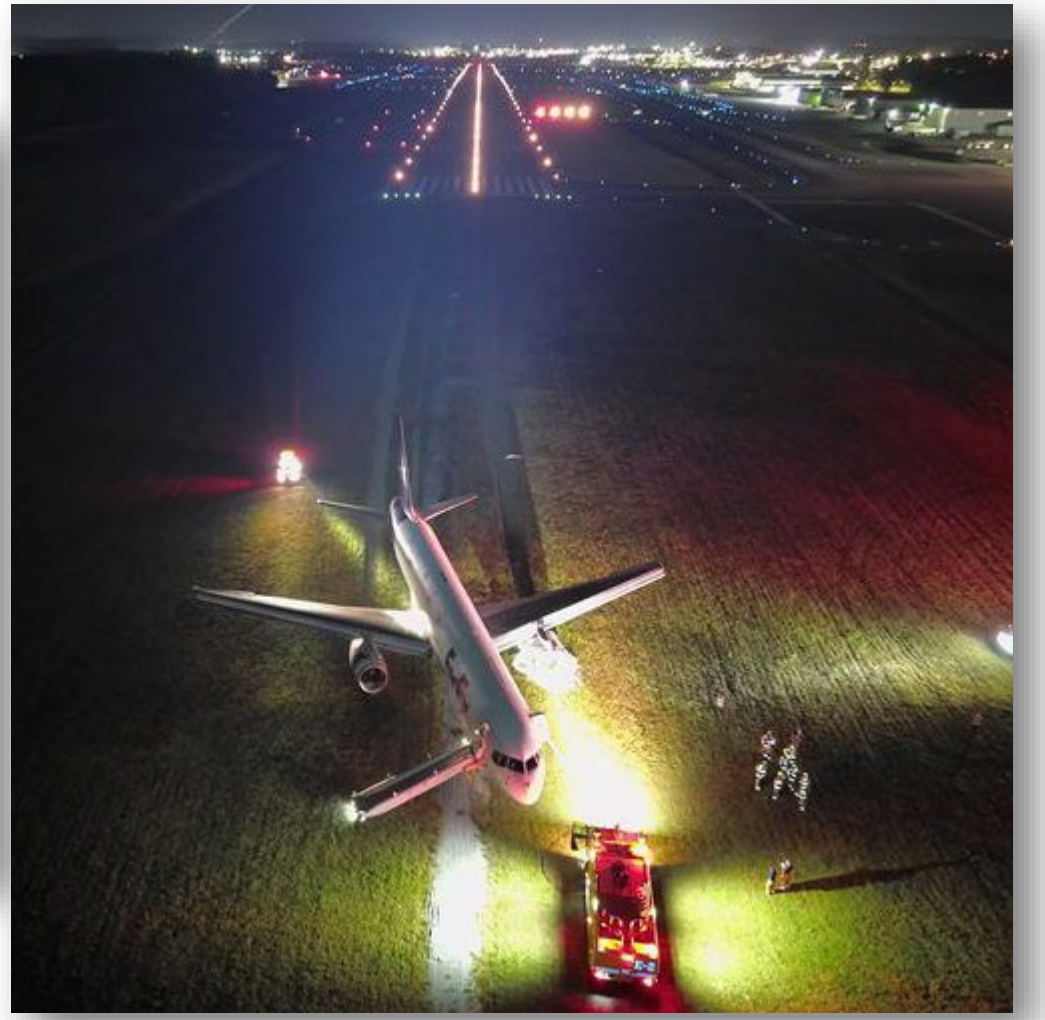
Greater than 1/8 (3mm) inch depth of: • Water • Slush	2	29 to	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor

NOTAM – Wet Runway (Incidents)

Date (m/d/y)	Location (runway) Underline = Part 139 airport	Aircraft	Rainfall rate (in./hr.)	Rainfall descriptor	Runway surface
07/31/2008	Owatonna, MN (KOWA 30)	BAe 125-800A	0.27	Moderate	Smooth
12/22/2009	Kingston, Jamaica (MKJP 12)	B737-800	0.49	Heavy	Smooth
06/16/2010	Ottawa, Ontario (CYOW 07)	EMB-145	0.31	Heavy	Smooth
04/26/2011	Chicago, IL (KMDW 13C)	B737-700	0.60	Heavy	Grooved
09/19/2014	Conroe, TX (KCXO 1)	EMB-505	0.24 - 0.30+	Moderate to heavy	Smooth
11/21/2014	Sugar Land, TX (KSGR 35)	EMB-500	0.12	Moderate	Smooth
07/26/2016	*Sugar Land, TX (KSGR 35)*	*EMB-505*	*4 - 6*	*Heavy*	*Smooth*
10/27/2016	*New York, NY (KLGA 22)*	*B737-700*	*0.11 – 0.30*	*Moderate*	*Grooved*
12/06/2018	Burbank, CA (KBUR 8)	B737-700	1.00	Heavy	Grooved
05/03/2019	Jacksonville, FL (KNIP 10)	B737-800	0.60 - 2.40	Heavy	Smooth
08/26/2021	Banner Elk, NC (NC06 12)	EMB-505	0.20 – 0.40	Moderate to heavy	Smooth
03/09/2022	Pittsburgh, PA (KAGC 28)	HA-420	0	10% 0.125" slush	Grooved
06/26/2022	*Aspen, CO (KASE 33)*	*HA-420*	*0.34*	*Heavy*	*Mixed*
05/18/2023	*Summerville, SC (KDYB 24)*	*HA-420*	-	-	*Smooth*

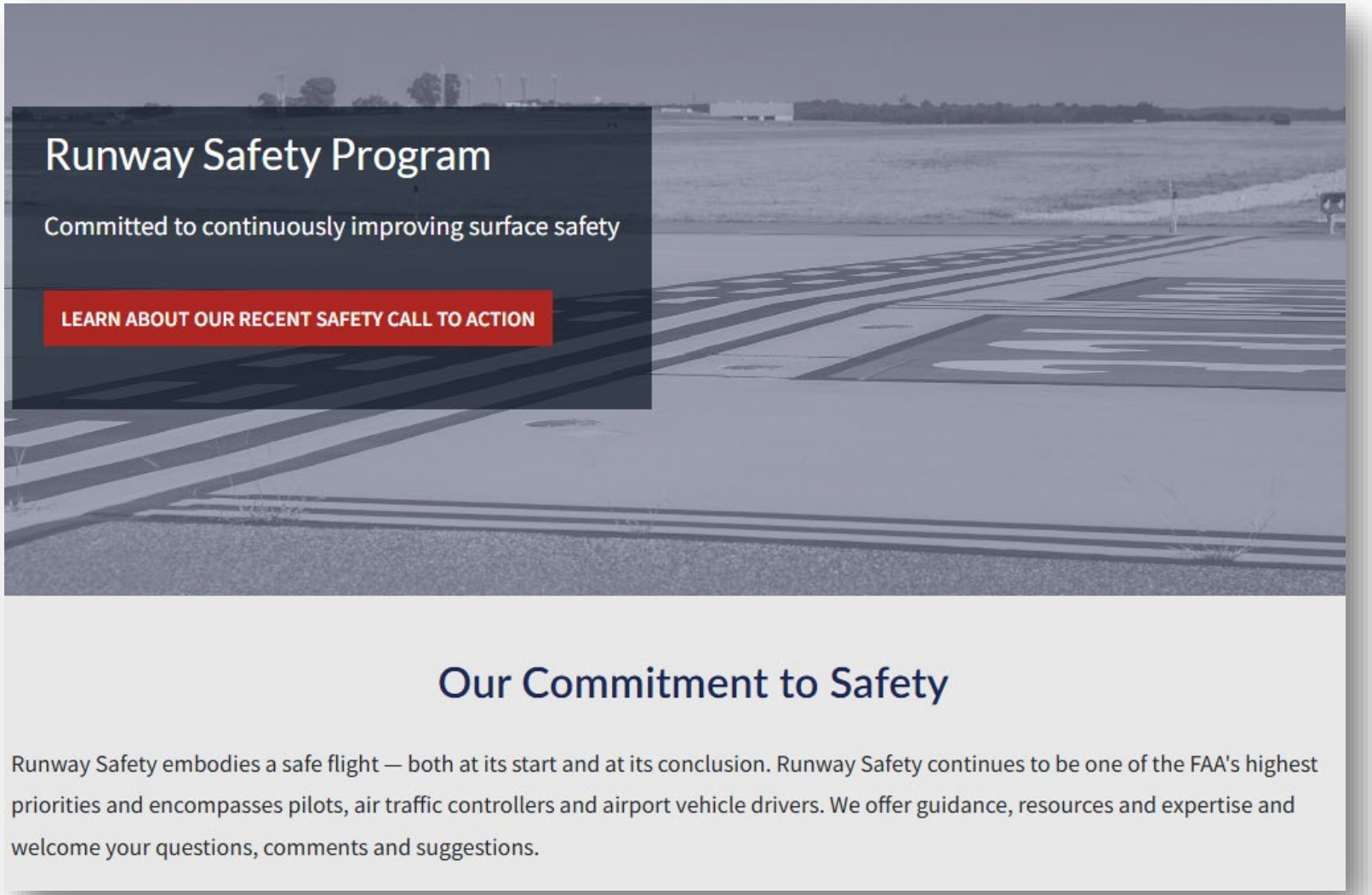


Challenges & Continued Improvement

- **Challenges**
  - Airports with wet seasons
  - Friction testing
  - NOTAM Manager Use
- **Improvement**
  - Winter Operations Working Group & TALPA Working Group
  - NOTAM Working Group
  - Review & Revisions to Advisory Circular as applicable
  - ACSI review during Inspections

Runway Safety

Runway Safety



- **Goal: Incident Prevention**
  - Collaborative effort within agency across lines of business
  - Outreach and Training
- **Goal: Incident Prevention**
  - Collaborative effort within agency

National Runway Safety Plan

National Goals and Initiatives for Continued Safety

ATO SMS Initiatives

Guiding Principle for Data Analysis

4 Pillars

Risk-Based Safety Management (RBSM)

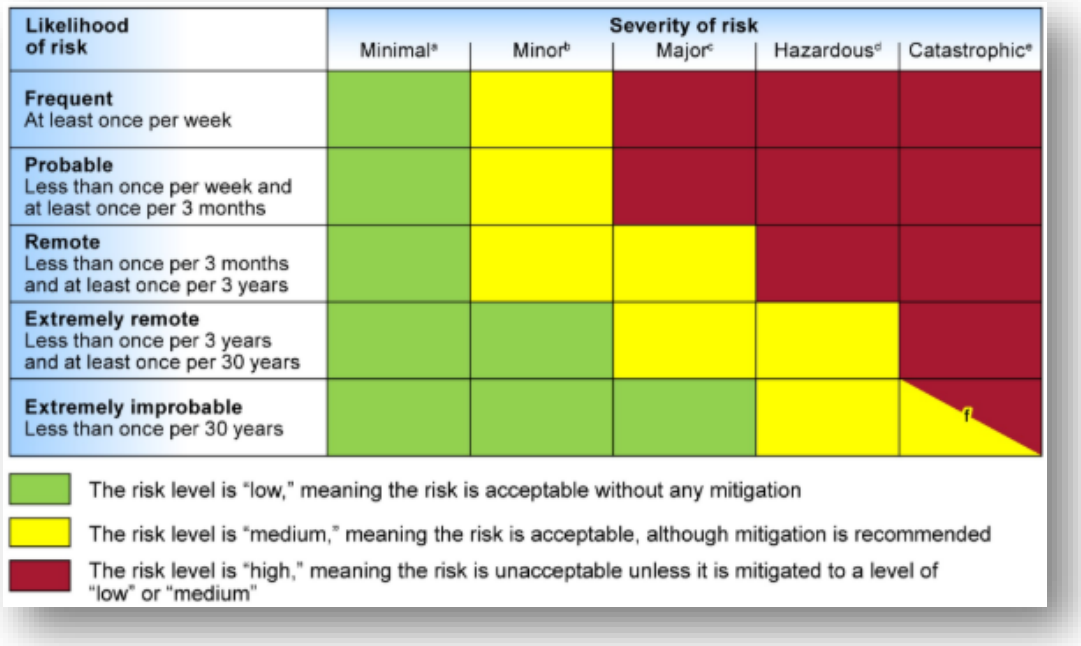
Risk-Based Safety Management

Approach:

Mitigation efforts based on aggregated data that identifies and validates risk in the system.

Results:

- Addresses compliant and non-compliant operations
- Confirms, Validates suspected risk & Identifies unknown risk
- Systematic View
- Empowers personnel to seek out and mitigate risk
- Categorizes potential risk
- Mitigates potential risk through training, policy, procedure, or equipment



NRSP – Safety Policy

Initiatives

- Improve external communication between Airports and ATO.
- Identify enhancements emphasizing Risk-Based Safety Management (RBSM)

Objective: establish and maintain necessary policy, procedures, and guidelines that foster an effective, collaborative and adaptable safety culture within the Runway Safety Program.

NRSP – Safety Risk Management

Initiatives:

- Promote runway safety initiatives that leverage technology.

- Collaboration with FAA and other industry stakeholders to identify and assess safety risks.

RSAT's

Objective: Continuously monitor the level of surface risk within the National Airspace System (NAS) and evaluate the need for new or revised mitigations.

NRSP – Safety Assurance

Initiatives:

- Provide insight into potential surface safety risks in the NAS
- Continue RBSM

Objective: Implement a data-driven approach to continuously assess the effectiveness of risk mitigation strategies and control while proactively identifying emerging or increasing hazards.

NRSP – Safety Promotion

Initiatives:

- Enhance RSAT Meetings for data driven discussions.
- Reduce risk of surface events through outreach and education

Objective: Continuously communicate, advocate and educate.

RS Tools - From the Flight Deck

Video Series with actual runway approach and airport taxiway footage combined with diagrams and visual graphics to clearly identify hot spots and other safety-sensitive items at airports.

Additional Videos

Arrival Alert Notice

Hold Short

Line Up and Wait

Winter Weather Challenges

Wrong Direction Intersection Takeoffs

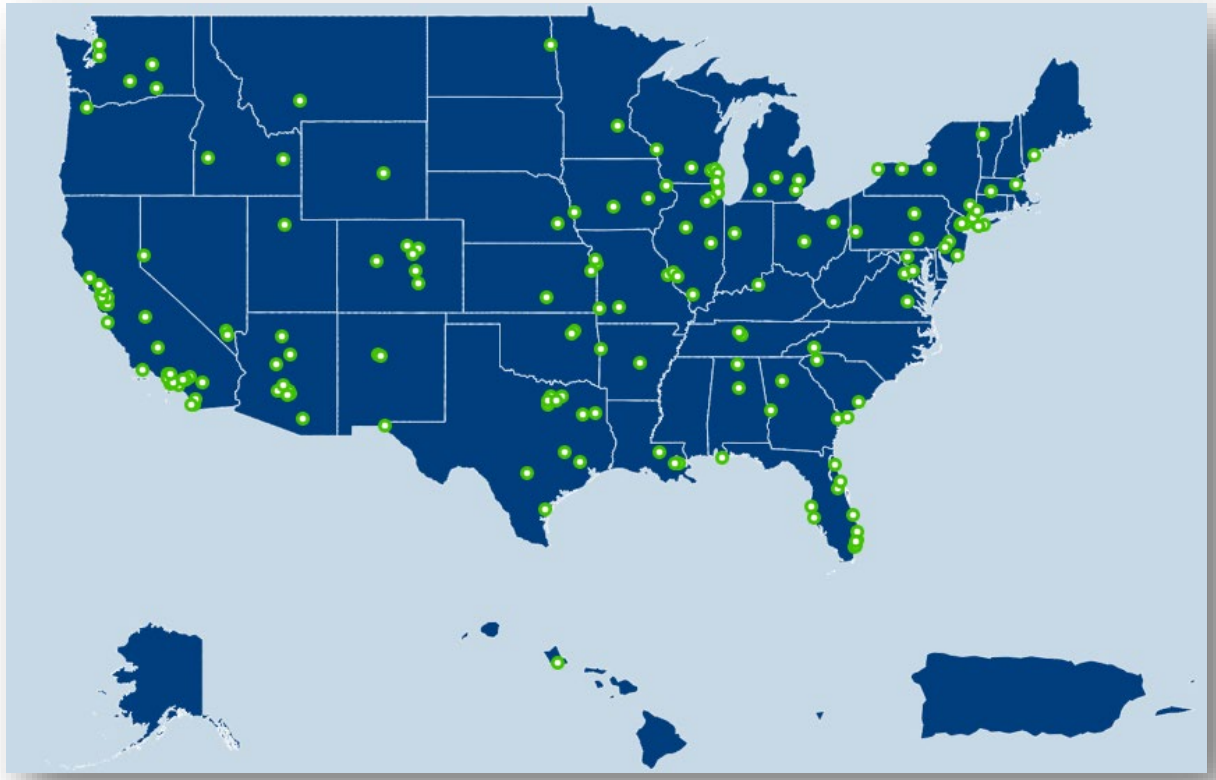
Complex Airfield Geometry

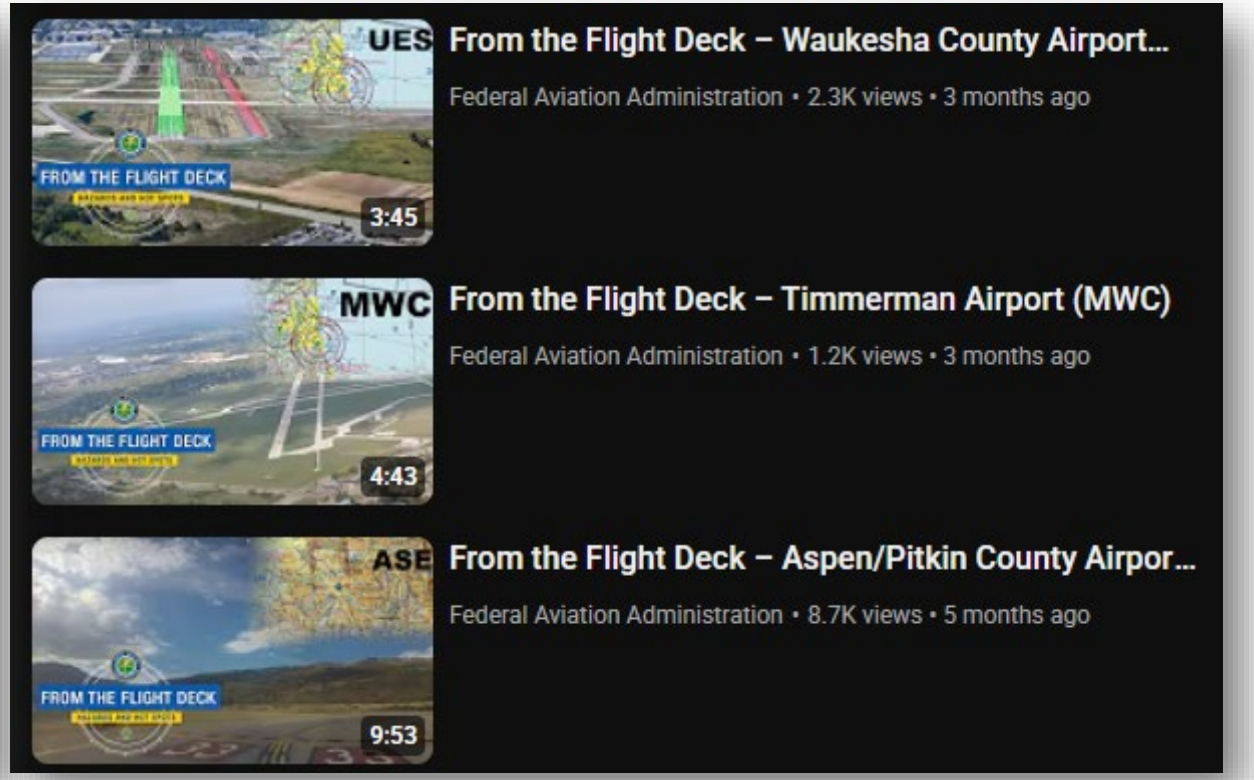
Human Factors

Phraseology

Wrong Surface Landings

RS Tools – From the Flight Deck





Over 140 videos available

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RS Tools – Arrival Alert Notice

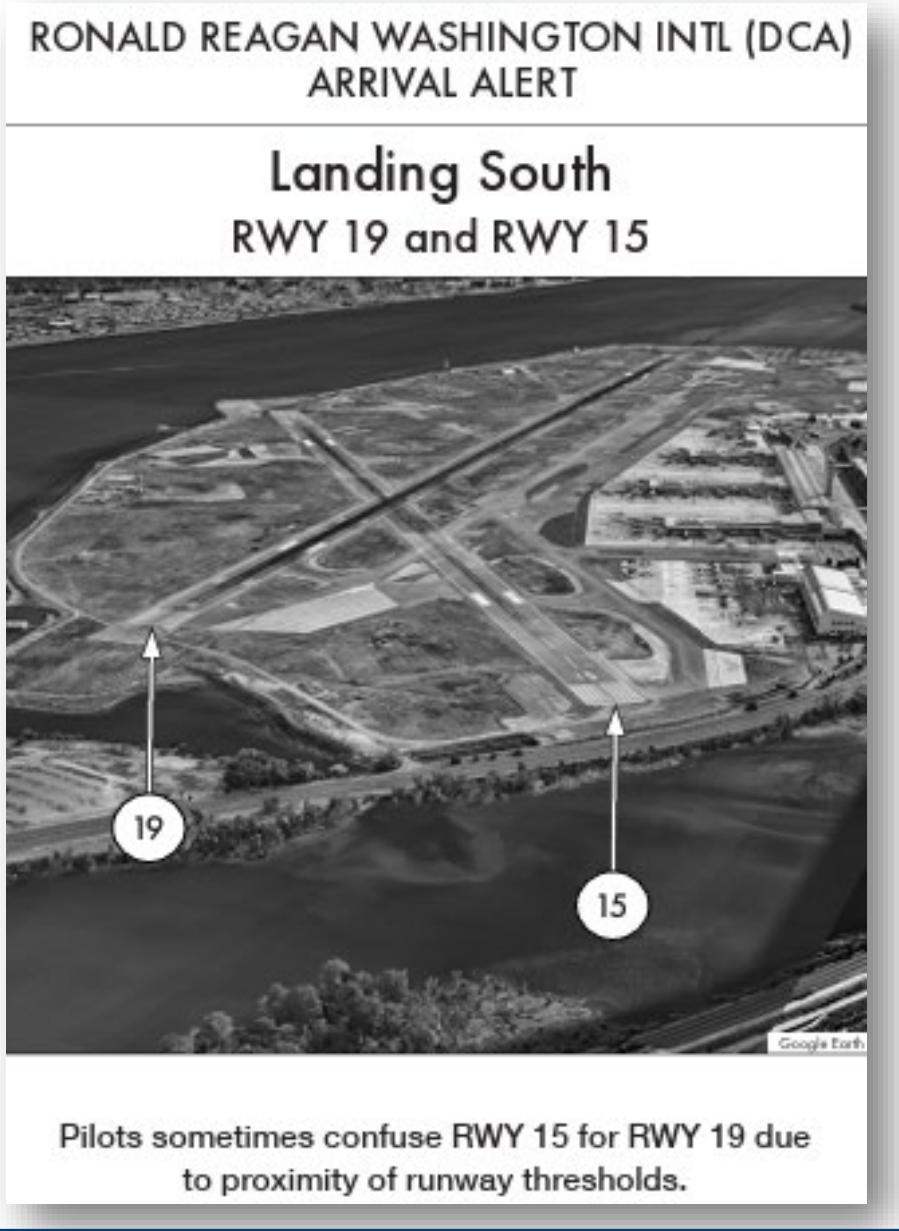
- Wrong surface event continue to be a focus area

- Graphics visually depicting an approach to a particular airport with a misalignment risk, includes language describing the misalignment risk

- 44 Airports have AAN's

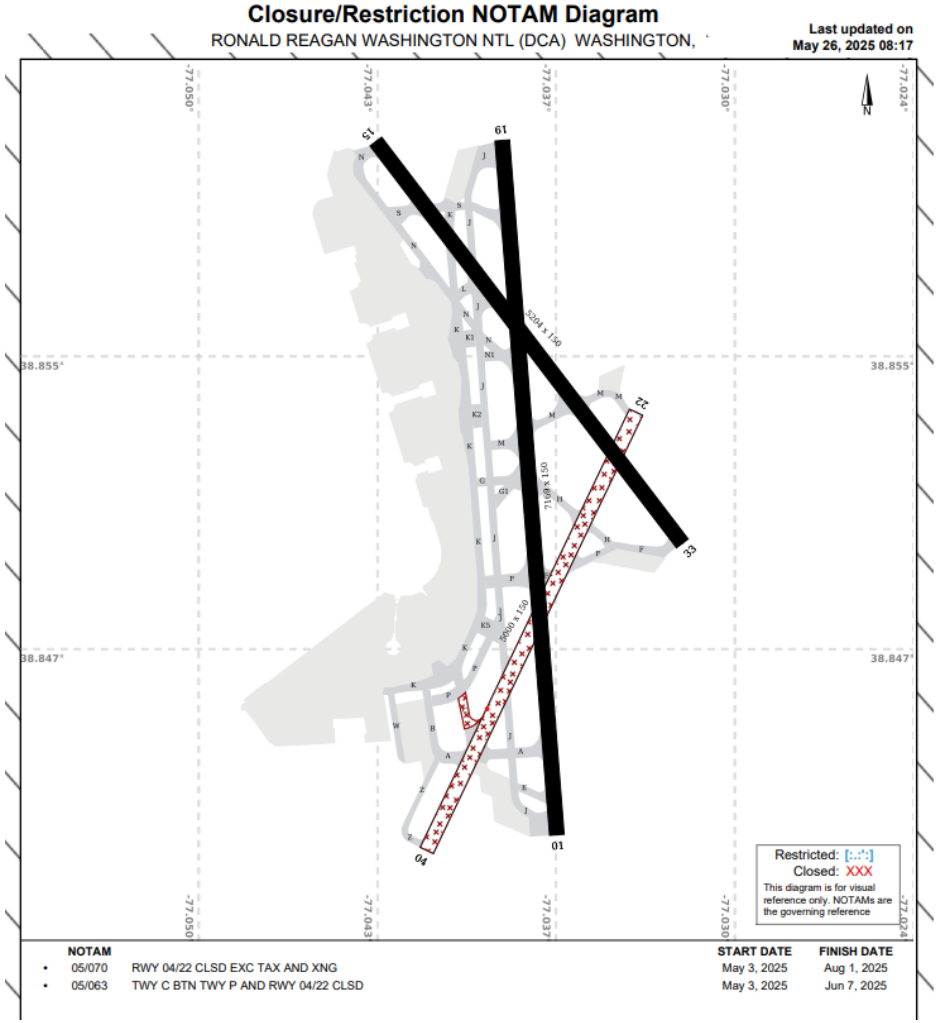
RS Tools - AAN


PALM BEACH INTERNATIONAL AIRPORT
(PBI) ARRIVAL ALERT
Landing West
RWY 28L and RWY 28R
28L
28R


RONALD REAGAN WASHINGTON INTL (DCA)
ARRIVAL ALERT
Landing South
RWY 19 and RWY 15
19
15
Pilots sometimes confuse RWY 15 for RWY 19 due to proximity of runway thresholds.

RS Tools – Construction NOTAMS

- Construction poses a hazard on airport
- Graphic depiction of construction on Airport adds layer of safety
- Easily located on NOTAM
- Ongoing initiative for Runway Safety Office



Runway Safety Action Teams

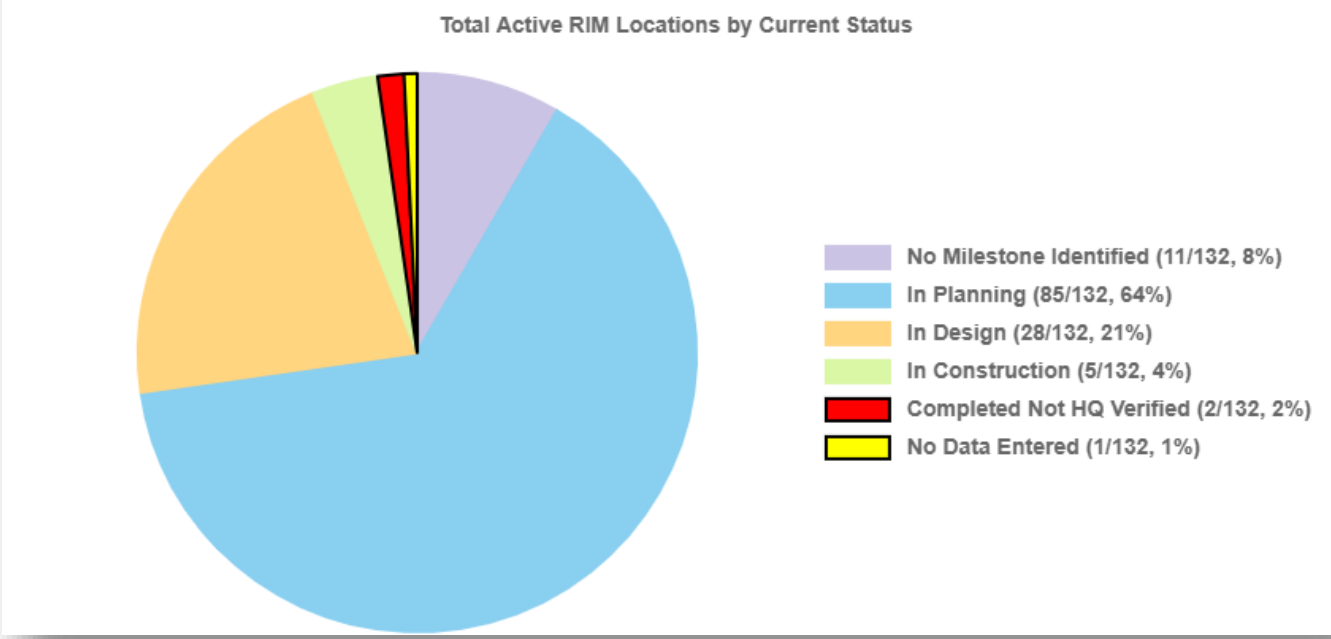
- **Local to each Airport**
- **Agenda**
  - Recent Incident Review
    - Vehicles & Aircraft
  - Airport Geometry
- **Annual Meetings**
  - ATC, Airport, Operators, Pilots, FAA LOB's, Tenants, etc.
- **Outcomes**
  - Runway Safety Action Plan
  - Concerns & Mitigation Plan
  - Improved Safety & Awareness

RIM Program

- **Identify Airports & RIM Locations**
  - Incident Rates
  - Hot Spots
  - RSATs
  - Special Focus RSATs
- **Track Progress**
  - Identification
  - Planning
  - Construction
  - Mitigation

RIM Statistics

Towered Airports (Program Wide Through 2023)	527
Runway Incursions V/PDs & PDs (Since Oct 2007 - Dec 2024)	19207
Updated as of Current Date	
Airports with RIM Locations	79
Problematic Taxiway Geometry Locations (PTGs)	6687
Total RIM Locations	132
RIM Locations in Construction	5
RIM Locations Mitigated	106



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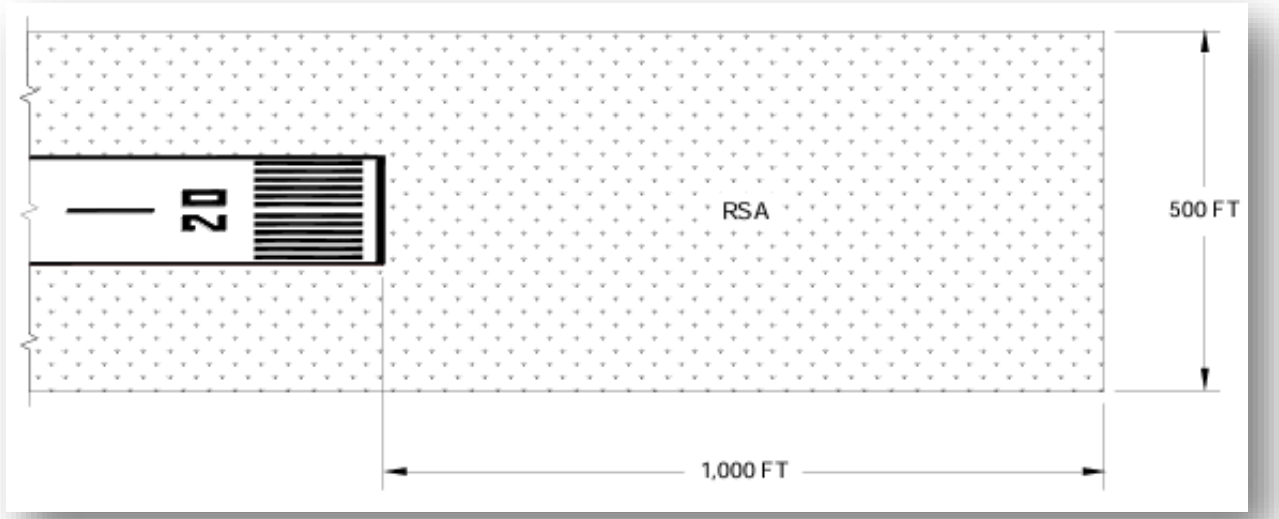
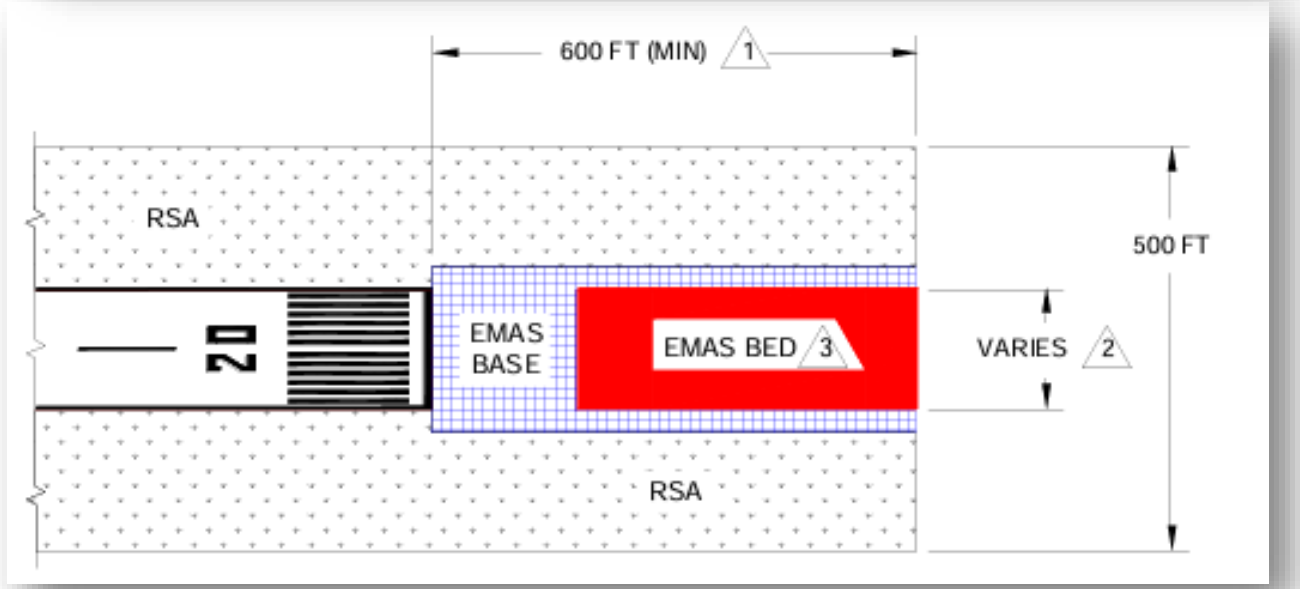
RIM Tool

- [x] RIM Locations
- [x] RIM Locations Mitigated
- [ ] PTGs
- [x] Mitigated PTGs
- [x] Hot Spots
- [x] Incursions
- [x] Hot Spots Polygons
- [ ] Surface Incidents

RI Mitigation

- **RSA Standardization**
  - Aircraft Design
  - Dimensions
  - Inventory of objects
  - Determinations
- **EMAS**
  - When dimensions are not possible





Runway Incursion Mitigation

Manchester-Boston Regional Airport - Hot Spot 1, mitigated Aug, 2022

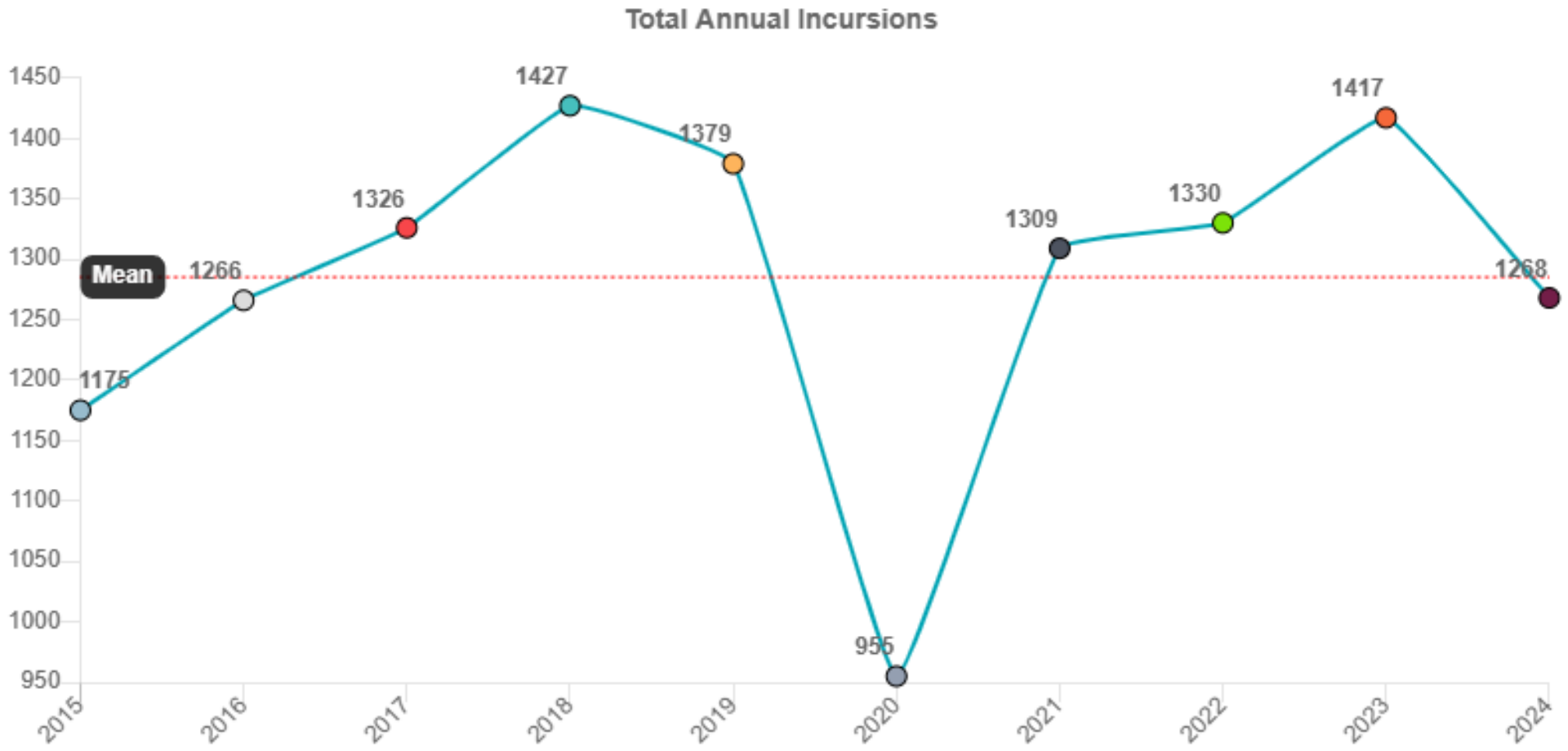
Simplify Geometry

- Taxiways
- Safety Areas
- Hot Spot Removal

Statistics

				RI Totals Per Year																		RI Totals		Average RI Per Year	
Airport Name	RIM Identifier	Mitigation Type	Year Completed	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
ADDISON	M-ADS-05-HS	Signage, Marking and/or Lighting	2022	0	3	5	4	5	2	3	0	2	2	2	5	1	1	2	1	2	0	37	3	2.46	NA
COLUMBUS	M-CSG-08-HS	Signage, Marking and/or Lighting	2022	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0	0.20	NA
DALLAS LOVE FLD	M-DAL-14-HS	Signage, Marking and/or Lighting	2022	0	1	6	3	1	0	3	5	3	5	3	0	3	0	2	0	0	0	35	0	2.37	NA
DALLAS LOVE FLD	M-DAL-15	Signage, Marking and/or Lighting	2022	0	0	0	0	0	1	0	0	0	0	2	7	2	0	0	0	0	0	12	0	0.81	NA
PORTLAND-HILLSBORO	M-HIO-01-HS	Signage, Marking and/or Lighting	2022	0	0	0	1	1	0	2	4	0	2	2	1	1	3	3	4	1	1	23	3	1.53	NA
PORTLAND-HILLSBORO	M-HIO-05	Signage, Marking and/or Lighting	2022	0	1	0	0	2	1	0	0	0	3	3	0	1	1	3	0	1	1	15	2	0.99	NA
WILLIAM P HOBBY	M-HOU-01	Taxiway/Runway Geometry Reconfiguration	2022	0	0	1	3	0	0	1	0	0	2	1	3	0	2	1	1	0	0	15	0	1.02	NA
WILLIAM P HOBBY	M-HOU-15	Taxiway/Runway Geometry Reconfiguration	2022	1	0	0	0	0	1	1	0	0	1	3	1	0	0	1	0	2	0	9	2	0.61	NA
WILLIAM P HOBBY	M-HOU-27-HS	Taxiway/Runway Geometry Reconfiguration	2022	0	0	4	2	3	0	1	0	0	3	1	2	2	1	2	1	2	0	22	2	1.49	NA

Statistics



2024 – 16.4 Million operations

45,000 flights daily

Thank You!