# Why SMS?

- **Heinrich's Triangle** illustrates the number of incidents, hazardous conditions, and unreported "unsafe acts" that occur for every one airport accident

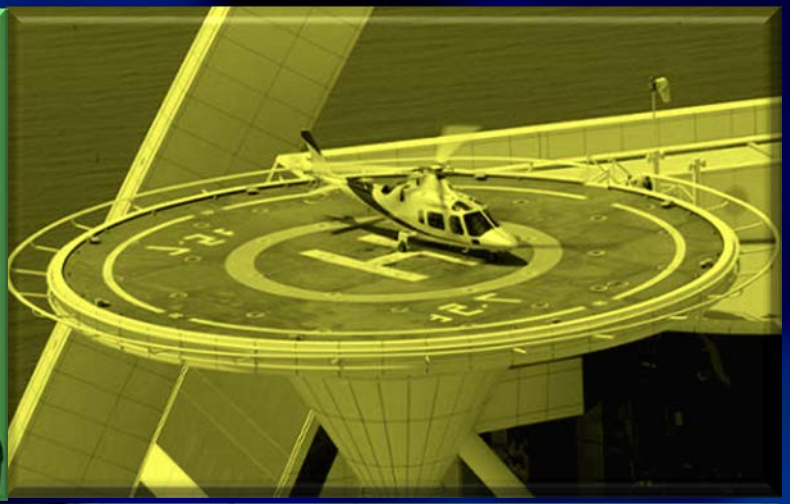
# Why SMS?

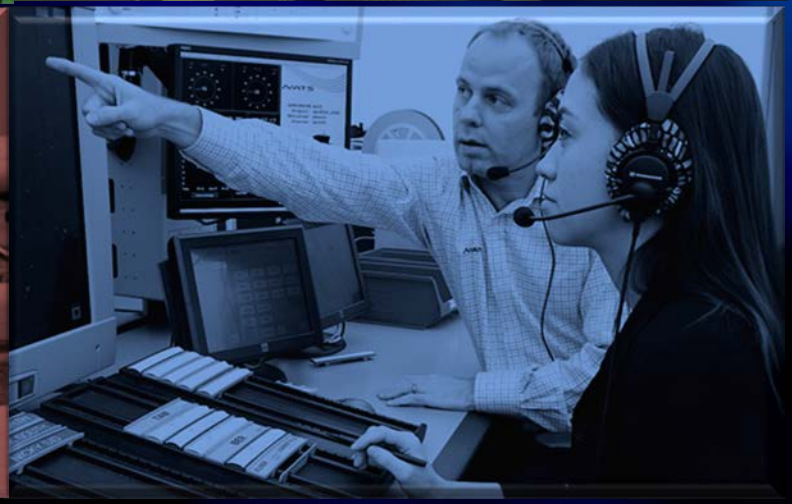
**Other benefits of SMS include:**

- Cross-functional Safety Risk Management among air traffic service providers
- Intra-agency stakeholder participation in solving safety challenges
- Safety saves money

# SMS Components

# SMS Components



# SMS Components

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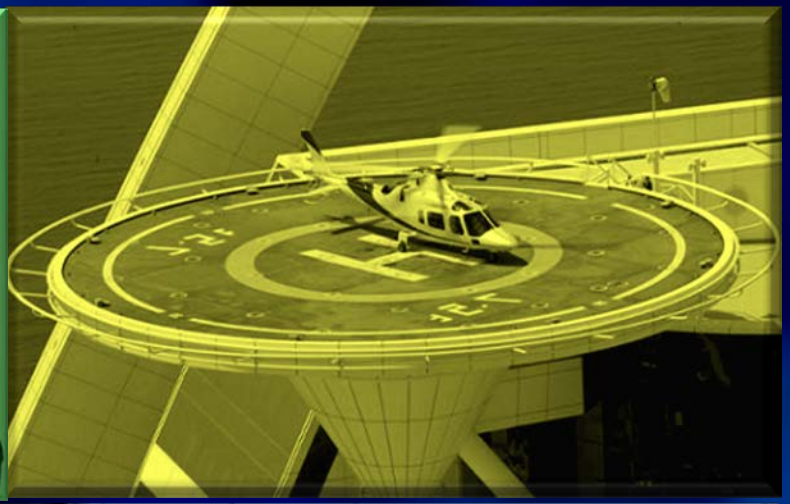

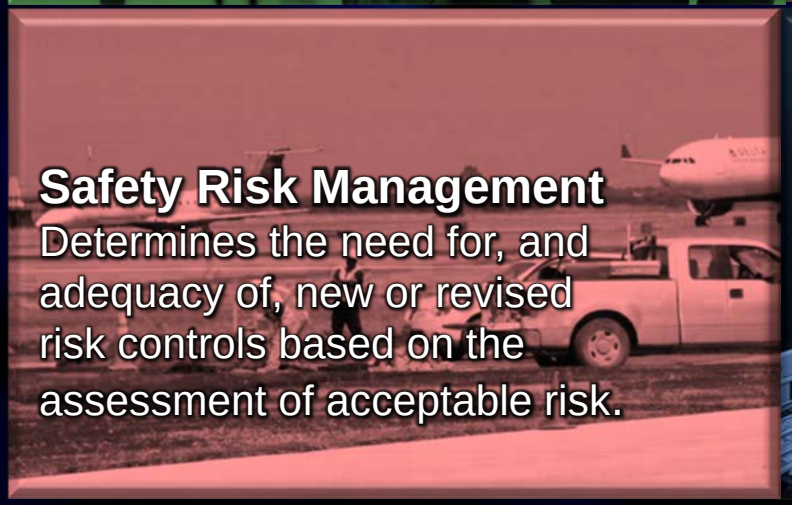

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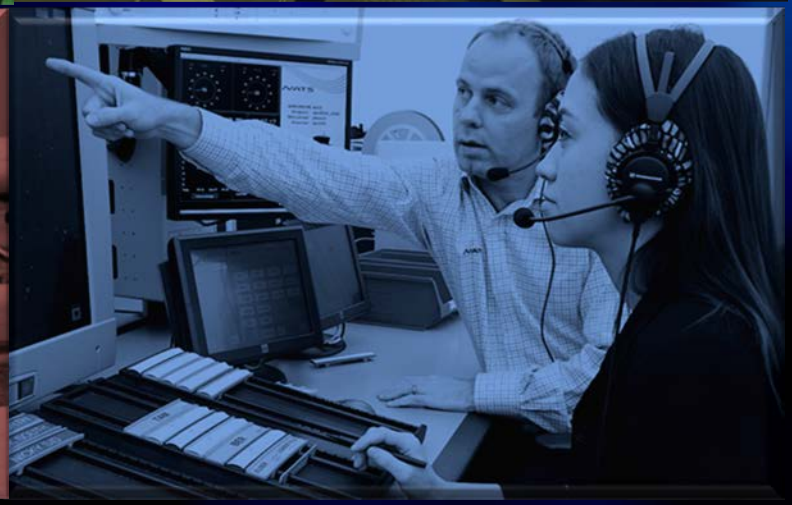

# SMS Components

**Safety Policy**
Establishes senior management's commitment to continually improve safety; defines the methods, processes, and organizational structure needed to meet safety goals.

**Safety Assurance**
Evaluates the continued effectiveness of implemented risk control strategies, supports the identification of new hazards

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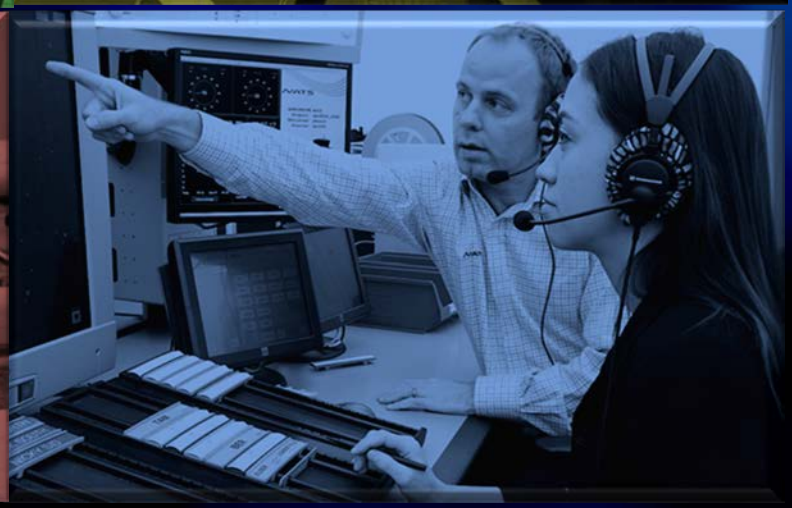

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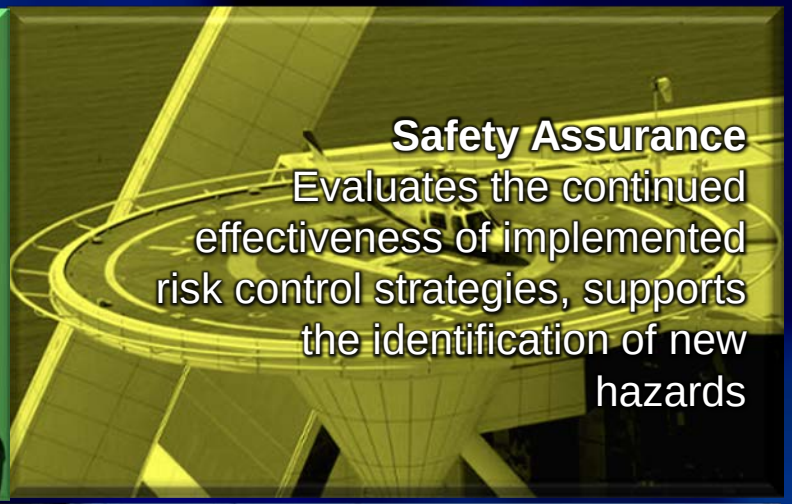

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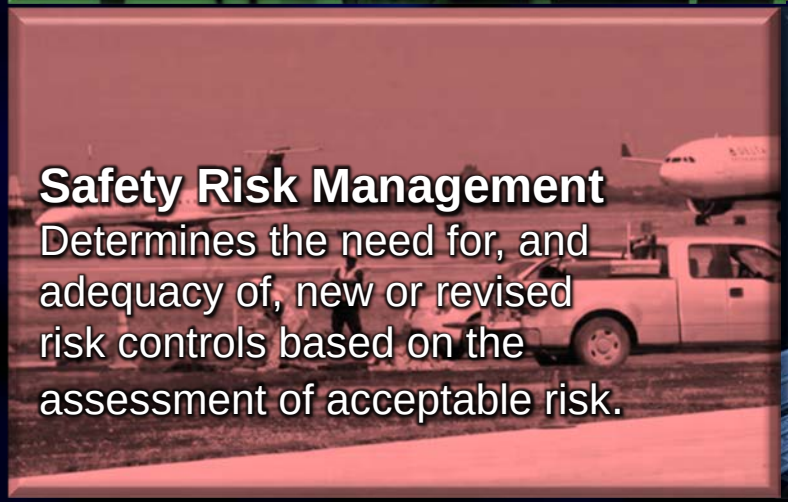

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**Safety Promotion**
Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce

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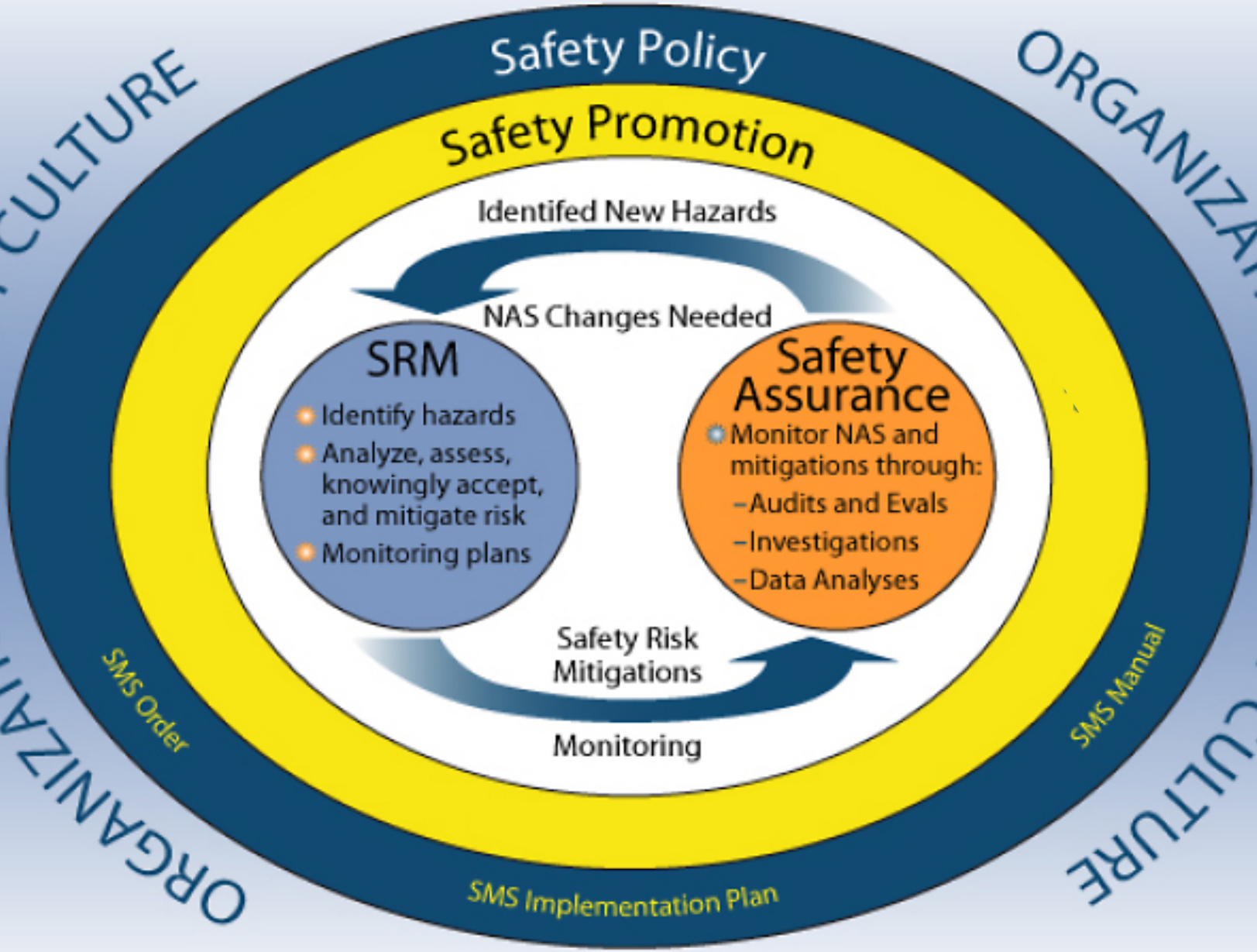
# SMS Components

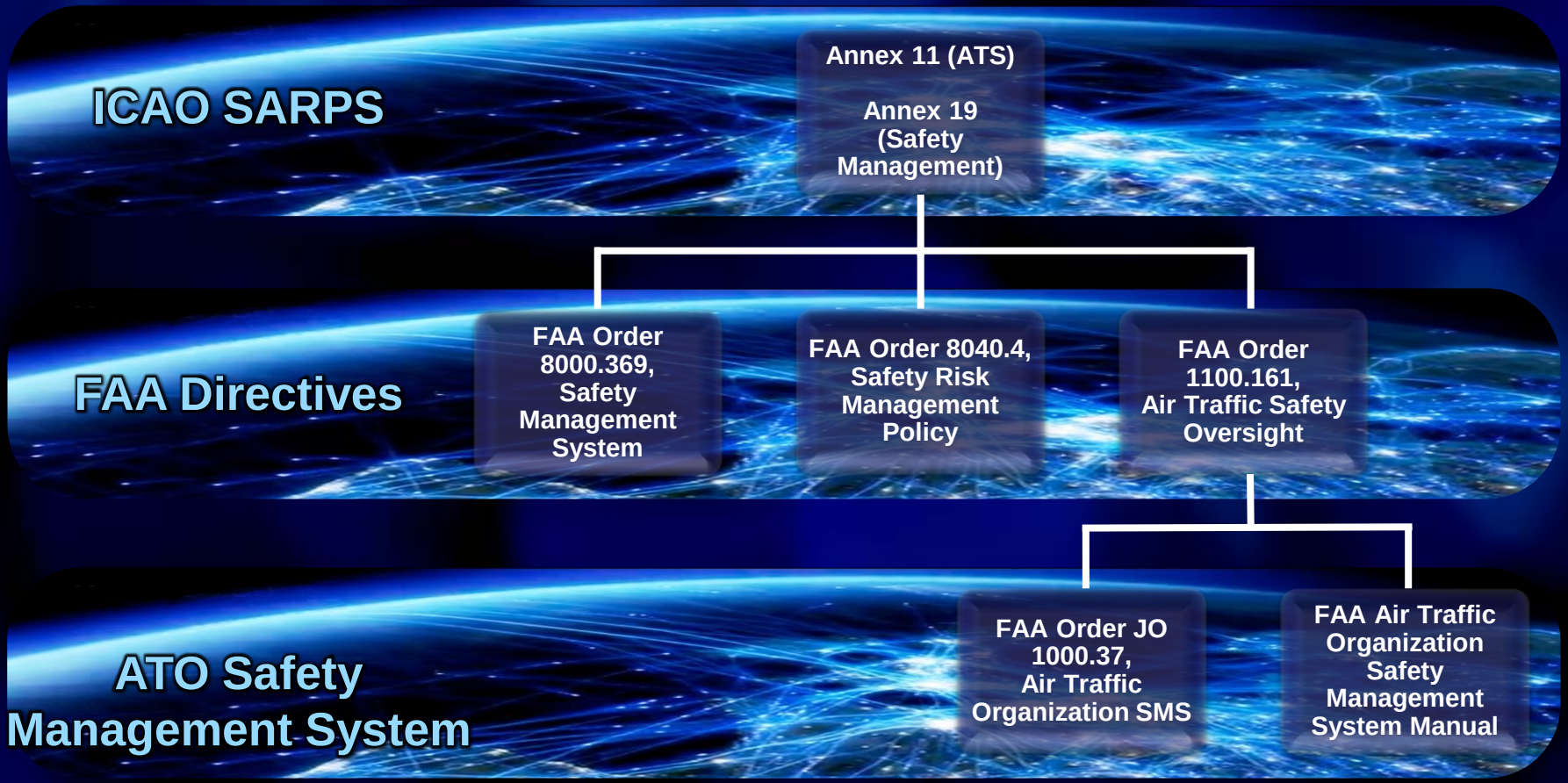
- **The SMS components ensure that a service provider is able to:**
  - Systematically look for the things that can and do go wrong (hazards) in a system or operation
  - Find, describe, and track these hazards, their causes, and inherent risk(s)
  - Prioritize the hazards according to risk
  - Mitigate the risk(s)
  - Verify that the mitigations work
  - Document all of the above


Safety Policy
Safety Promotion
Identifed New Hazards
NAS Changes Needed
SRM
Identify hazards
Analyze, assess, knowingly accept, and mitigate risk
Monitoring plans
Safety Assurance
Monitor NAS and mitigations through:
–Audits and Evals
–Investigations
–Data Analyses
Safety Risk Mitigations
Monitoring
ORGANIZATIONAL SAFETY CULTURE
ORGANIZATIONAL SAFETY CULTURE
SMS Order
SMS Manual
SMS Implementation Plan

# Roles and Responsibilities

- The **State** (**regulator**) is responsible for the State Safety Programme (SSP), which includes establishing requirements for Safety Management Systems in accordance with international standards
- **Service providers** are responsible for developing and implementing Safety Management Systems according to applicable requirements

# FAA Example: SMS Policy

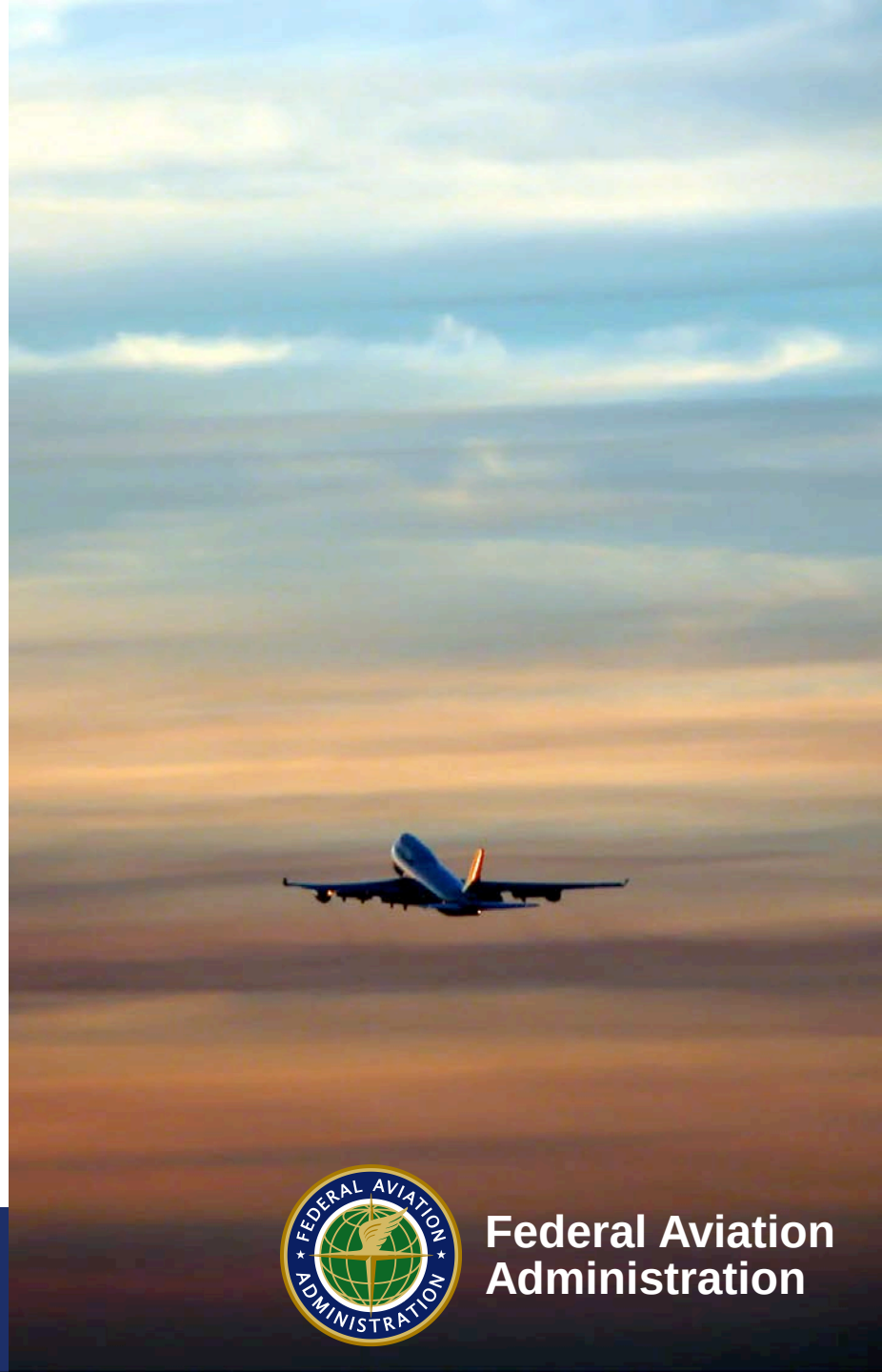


# Policy

# FAA Runway Safety Program

Federal Aviation Administration

October 21-25, 2019



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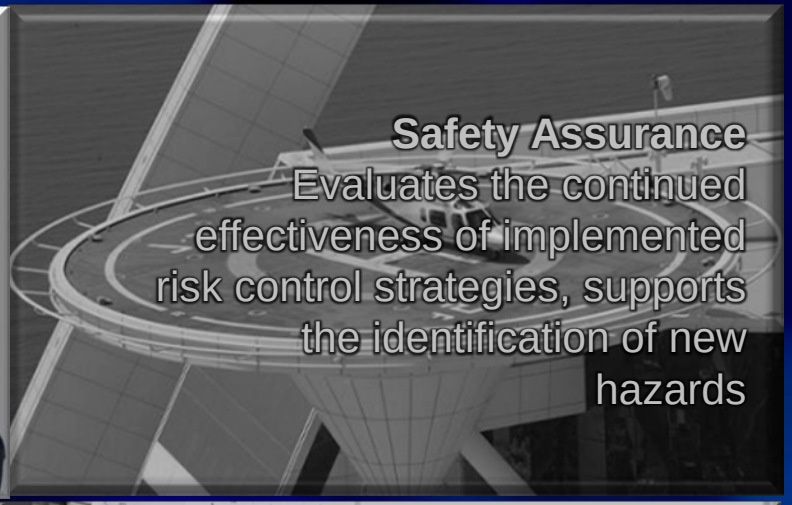

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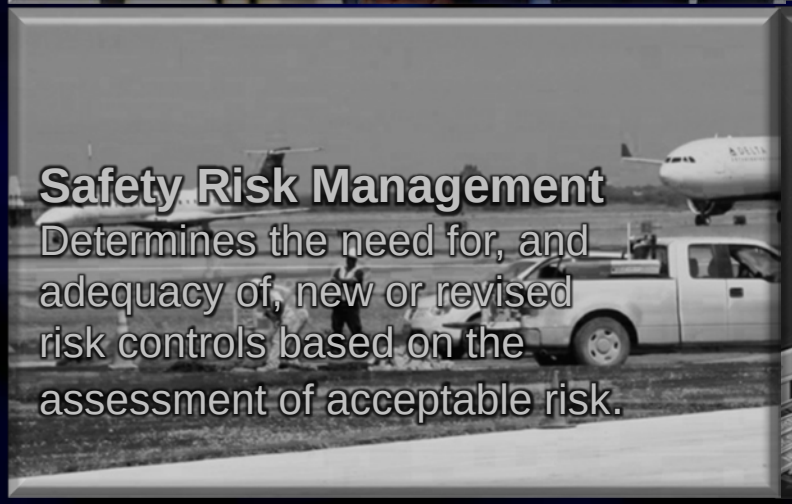

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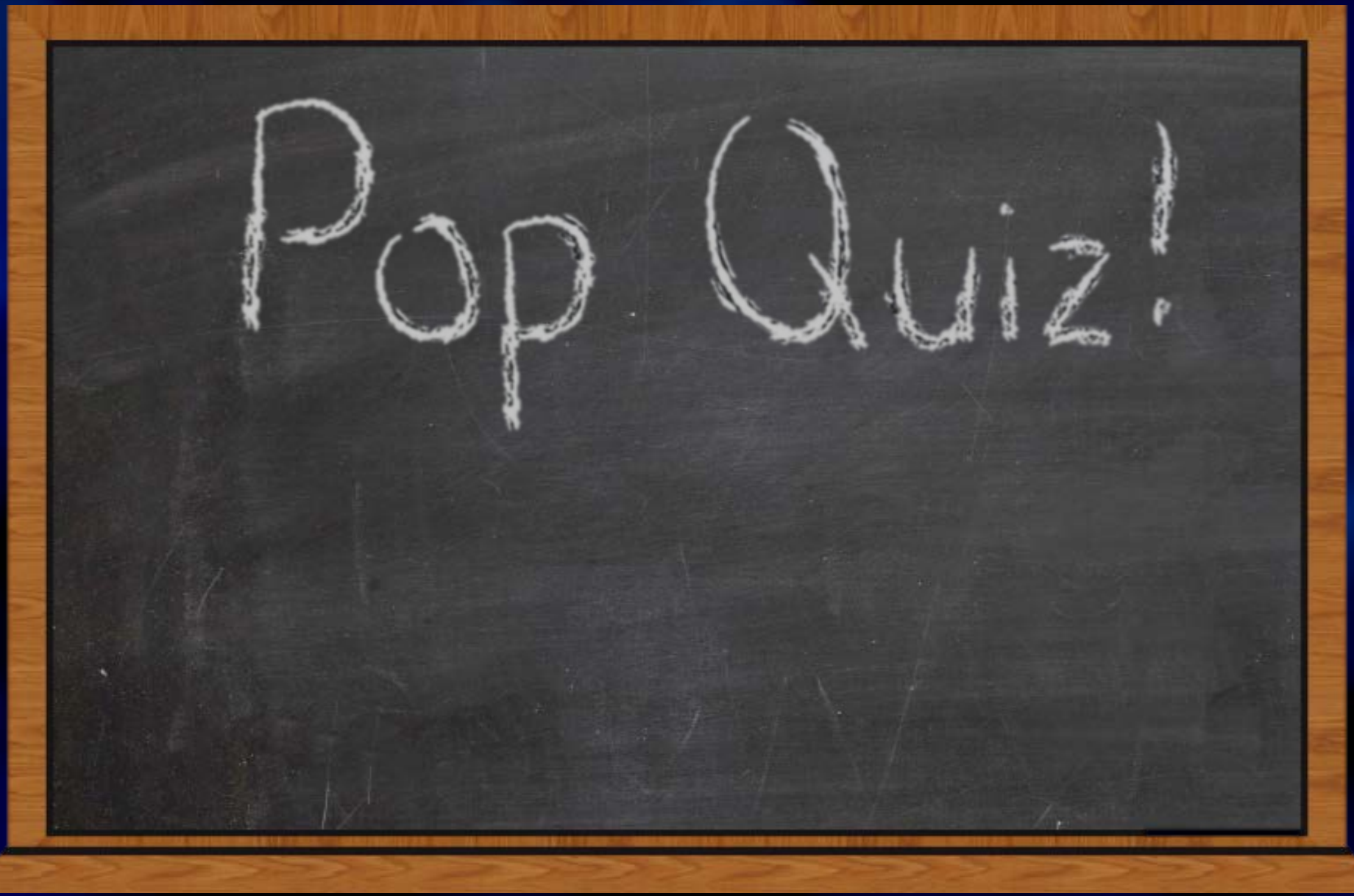
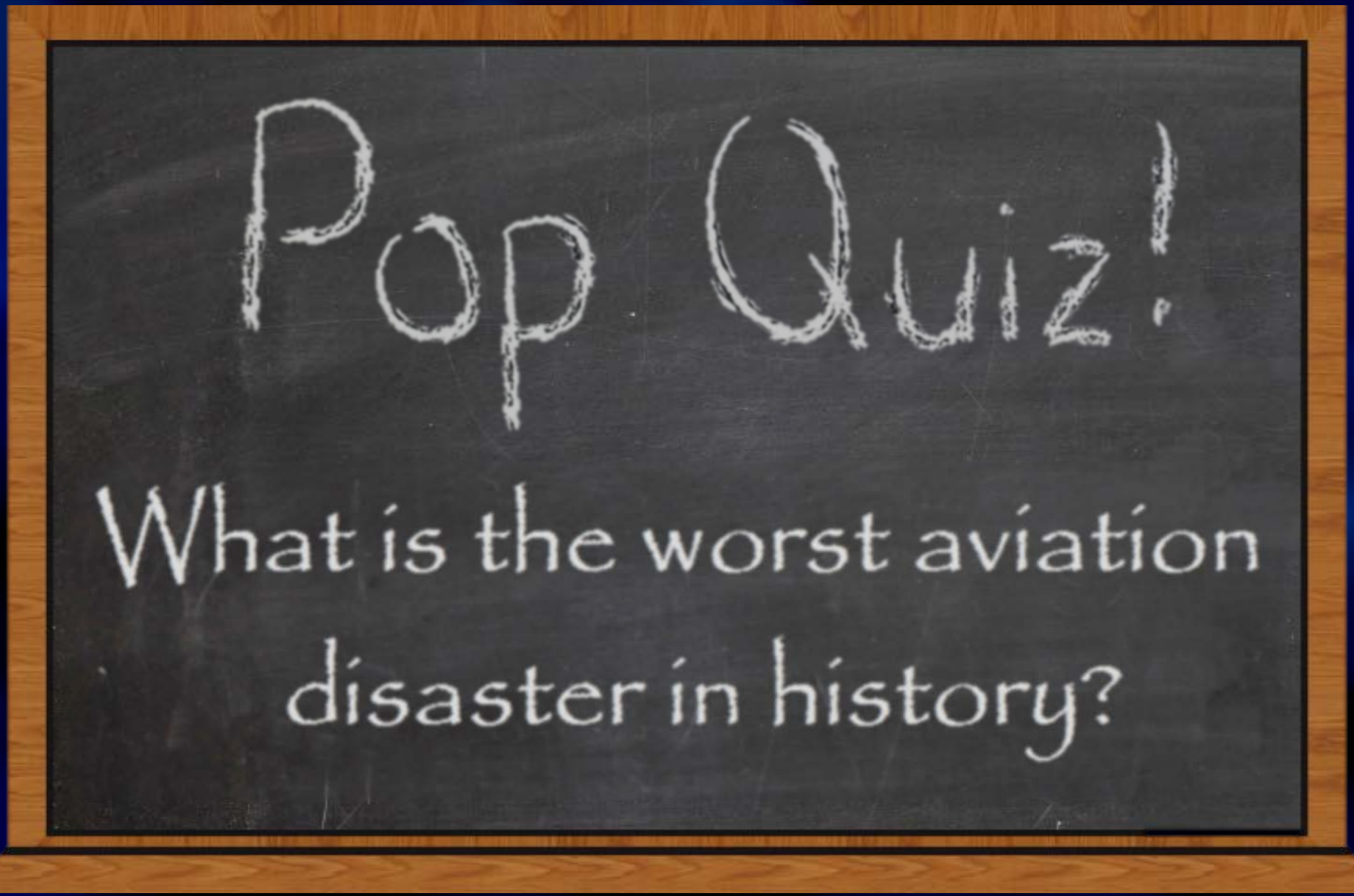
# The Importance of Runway Safety

- There is great potential for disaster when large, fast-moving aircraft and vehicles come together in close proximity
- Complexities of operating on an aerodrome further identify the need for complete situational awareness


Pop Quiz!


Pop Quiz!
What is the worst aviation disaster in history?

- Tenerife, Canary Islands, March 27, 1977
- 2 Boeing 747s collided on the runway at Los Rodeos Airport, killing 583
- One of the primary causes was misunderstanding of radio communications
- https://youtu.be/kjLrZ2SDDaU

# FAA at a Glance

- Over 15 million flights handled in 2016, with more than 40,000 daily average
- More than 2.5 million passengers flying in and out of the U.S. every day
- FAA Air Traffic Services are part of the aviation authority


Federal Aviation Administration

# Runway Safety Program Key Principles

- Based on the pillars of Safety Management system (SMS)
- Creates awareness and cooperation among all stakeholders
- Educates aerodrome users on runway safety risks
- Espouses *Safety Culture*

# FAA SMS Order

- **FAA SMS Order 8000.369B**
  - Requires adopting a common approach to implementing and maturing an integrated SMS including fostering a positive safety culture and other attributes as applicable
  - Defines the roles and responsibilities of the FAA organizations, FAA SMS Executive Council and FAA SMS Committee regarding safety management

**U.S. DEPARTMENT OF TRANSPORTATION**
FEDERAL AVIATION ADMINISTRATION

**ORDER 7050.1B**

Effective Date:
11/07/13

**SUBJ**: Runway Safety Program

1. This order prescribes the Federal Aviation Administration (FAA) Runway Safety Program. This directive establishes policy, assigns responsibility, and delegates authority for ensuring compliance with this order within each organization.

2. The Air Traffic Organization (ATO) expanded the scope of the Runway Safety Program to include the prevention of runway excursions.

3. The ATO Vice President for Safety and Technical Training may periodically evaluate national and regional runway safety programs. Evaluations will focus on compliance with this order and the effectiveness of the programs in meeting objectives, strategies, and initiatives outlined in FAA's Strategic Plan and the National Runway Safety Plan.

4. Our long-term goal is to improve runway safety by decreasing the number and severity of runway incursions, excursions, and other surface incidents.

Michael P. Huerta
Administrator

Distribution: Electronic

Initiated By: AJI-0
ATO Safety & Technical Training

# FAA Runway Safety Order

- **FAA Order 7050.1B – Runway Safety Program**
  - Establishes policy, assigns responsibility, and delegates authority for the FAA Runway Safety Program
  - Intended to improve runway safety by decreasing the number and severity of runway incursions, runway excursions, and other surface incidents

# Runway Safety SMS Process

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# Runway Safety SMS Process




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# Runway Safety Policy


**Runway Safety Council**

- ✓ Executive Steering
- ✓ Provides government and industry leadership to develop and focus implementation of an integrated, data-driven strategy to reduce the number and severity of runway incursions
- ✓ Data-driven, risk-based, integrated systems approach
- ✓ Governs the work of the Surface Safety Group
- ✓ National Runway Safety Plan

# Safety Assurance


**Runway Incursion Assessment Team and Surface Risk Analysis Process**

- ✓ Determines runway incursion severity classification
- ✓ Comprised of one or more members from ATC, Flight Standards (Regulator), and Office of Airports

# Safety Risk Management


**Surface Safety Group**

- ✓ Identify and understand the contributing factors
- ✓ Analyze risk factors
- ✓ Develop safety strategies and mitigations to maintain the safest levels of surface operations
- ✓ Collect, find, fix, monitor work that is steered by the executive members of the Runway Safety Council (RSC)

# Safety Risk Management


**Surface Safety Initiative Team**

- ✓ Serve as a forum for the identification, discussion, research, analysis, and recommendation of possible solutions to potential surface safety gaps
- ✓ Develop a standardized, data-driven methodology for the identification, selection and prioritization of surface safety gaps
- ✓ Assess alternatives that may include, but are not limited to, policy, procedures, training, technology, and/or personnel changes to address gaps by priority

# Safety Promotion


**Communication and Outreach Team**

- ✓ **Training**
- ✓ **Promotional materials (signage, videos, email blasts, posters, etc.)**
- ✓ **Conferences**
- ✓ **Stakeholder meetings**
- ✓ **Airport Construction Advisory Council**

# Three Levels of Governance

- **National**
  - Policy direction and implementation
  - Data analysis
  - Stakeholder engagement
  - Safety Promotion
- **Regional**
  - Data analysis
  - Stakeholder engagement
  - Safety Promotion
- **Local**
  - Data collection and analysis
  - Runway Safety Teams
  - Mitigation implementation

# FAA Stakeholder Engagement

- Every aspect of Runway Safety program
- Runway Safety Council, Surface Safety Group, and Surface Safety Initiative Team
- Data collection and analysis
- Safety Risk Management Panels
- Runway Safety Teams
- Promotional activities

# Safety Assurance

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# Safety Assurance

# Safety Culture

# Just Culture Safety Self Assessment

# Encouraging Safety Culture

- **Safety culture** is the way safety is perceived, valued, and prioritized
  - Reflects the real commitment to safety at all levels in the organization
- Safety culture is important to regulators *and* ANSPs
- Safety culture can be *positive*, *negative*, or *neutral*

SKYbrary: Category: Safety Culture (http://www.skybrary.aero/index.php/Category:Safety_Culture)

# Encouraging Safety Culture

- An organization with a **negative** safety culture:
  - Does not address staff concerns about safety
  - Does not learn from safety events
  - Does not include safety management in decision-making

SKYbrary: Toolkit: Safety Culture, A1.3 What is a “good” safety culture? (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Encouraging Safety Culture

- An organization with a **positive** safety culture:
  - Recognizes that safety is a business imperative
  - Prioritizes safety over other pressures (economic, societal, etc.)
  - Believes that safety is everyone's responsibility

SKYbrary: Toolkit: Safety Culture, A1.3 What is a "good" safety culture? (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Positive Safety Culture

**Reporting**

- Encourages employees to divulge information about all safety hazards they encounter

**Just**

- Holds employees accountable for deliberate violations of the rules but encourages and rewards them for providing essential safety-related information

**Flexible**

- Adapts effectively to changing demands and allows quicker, smoother reactions to off-nominal events

**Learning**

- Willing to change based on safety indicators and hazards uncovered through assessments, data, and incidents

James Reason, Managing the Risks of Organizational Accidents, Hants: Ashgate, 1997, p. 196)

# Encouraging Safety Culture

- **To develop a positive safety culture:**
  - Understand the concept of safety culture
  - Measure safety culture
  - Improve safety culture

SKYbrary: Toolkit: Safety Culture (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Measuring Safety Culture

- **Conduct a safety culture assessment to:**
  - Establish a shared understanding of the organization's (CAA or ANSP) safety culture and identify its strengths and weaknesses
- **The safety culture assessment process includes:**
  - Pre-launch phase
  - Data collection
    - Safety culture questionnaire, interviews, workshops
  - Safety culture analysis
  - Diagnosis, feedback, and way forward

SKYbrary: Toolkit: Safety Culture, B1.1 How do you measure safety culture? (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Measuring Safety Culture

- **Strategies for conducting a safety culture assessment:**
  - Collaborate with an external, independent assessment team of experts
  - Appoint an internal “champion”
  - Seek staff contribution and involvement

SKYbrary: Toolkit: Safety Culture, B1.2 and B1.3 (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Measuring Safety Culture

- The **safety culture questionnaire** is tool to collect data about the current safety culture
  - Set of statements that respondents are asked to agree or disagree with
  - Designed to elicit responses on a variety of topics that indicate how the ANSP(or regulator!) approaches and manages safety in practice

**Example safety culture questions**

| | Strongly disagree | Disagree | Neither | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Appropriate responses are made after an incident to address the reasons why the incident occurred. | 1 | 2 | 3 | 4 | 5 |
| 2. Everyone at my Unit feels that safety is their own responsibility - there is proactive participation by all staff in safety initiatives. | 1 | 2 | 3 | 4 | 5 |
| 3. People who raise problems are seen as trouble-makers. | 1 | 2 | 3 | 4 | 5 |
| 4. Even if the system fails, we are still expected to achieve the targets that are set for us. | 1 | 2 | 3 | 4 | 5 |
| 5. The organization says "it is committed to safety" but actually has other higher priorities. | 1 | 2 | 3 | 4 | 5 |
| 6. Only my manager has responsibility for safety. | 1 | 2 | 3 | 4 | 5 |

Safety Culture in Air Traffic Management: A White Paper; FAA/EUROCONTROL AP 15

# Measuring Safety Culture

- **Additional sources of information about safety culture include:**
  - Website
  - Safety programs and safety initiatives in place
  - Documented policies and procedures
  - Internal publications (organization structure, mission statement, etc.)
  - Incident reports
    - How often voluntary reporting processes are used
    - Quality and scope of incident reports, and whether important issues are covered appropriately
    - Whether reports are acted on, how feedback is communicated, and what the process for responding to reports entails

SKYbrary: Assessing Safety Culture in ATM (http://www.skybrary.aero/index.php/Assessing_Safety_Culture_in_ATM#Data_Collection:_The_Safety_Culture_Questionnaire)

# Improving Safety Culture

- **A safety culture assessment may suggest specific opportunities for improvement**
- **The following practices also support a positive safety culture:**
  - Encourage open discussion of safety concerns among staff and management
  - Establish and foster voluntary safety reporting programs

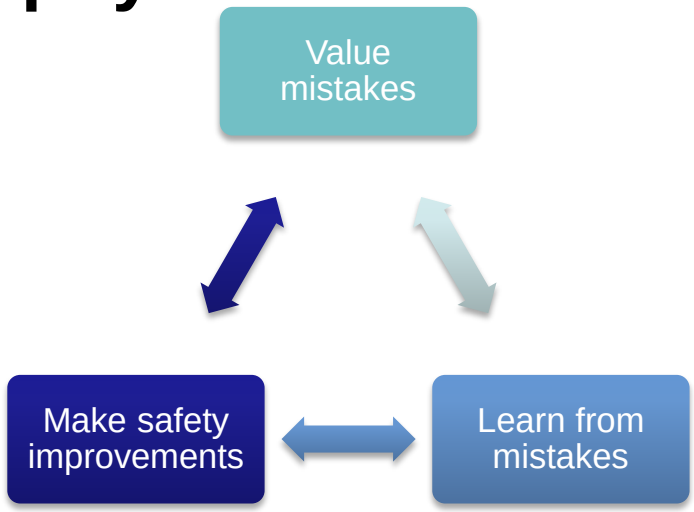
# Improving Safety Culture

- **Strategies for managing culture change:**
  - Establish commitment to improving safety culture at all levels of the organization
  - Set up monitoring processes (for resources, objectives, implementation, timelines)
  - Report progress and communicate achievements
  - Celebrate success

SKYbrary: Toolkit: Safety Culture, C1.3 Planning for safety culture change (http://www.skybrary.aero/index.php/Solutions:Safety_Culture)

# Encourage Voluntary Reporting

- **Voluntary safety reporting programs are a component of a positive safety culture**
  - Non-punitive
- **Voluntary reporting philosophy:**
  - Value mistakes
  - Learn from mistakes
  - Make safety improvements



# Encourage Voluntary Reporting

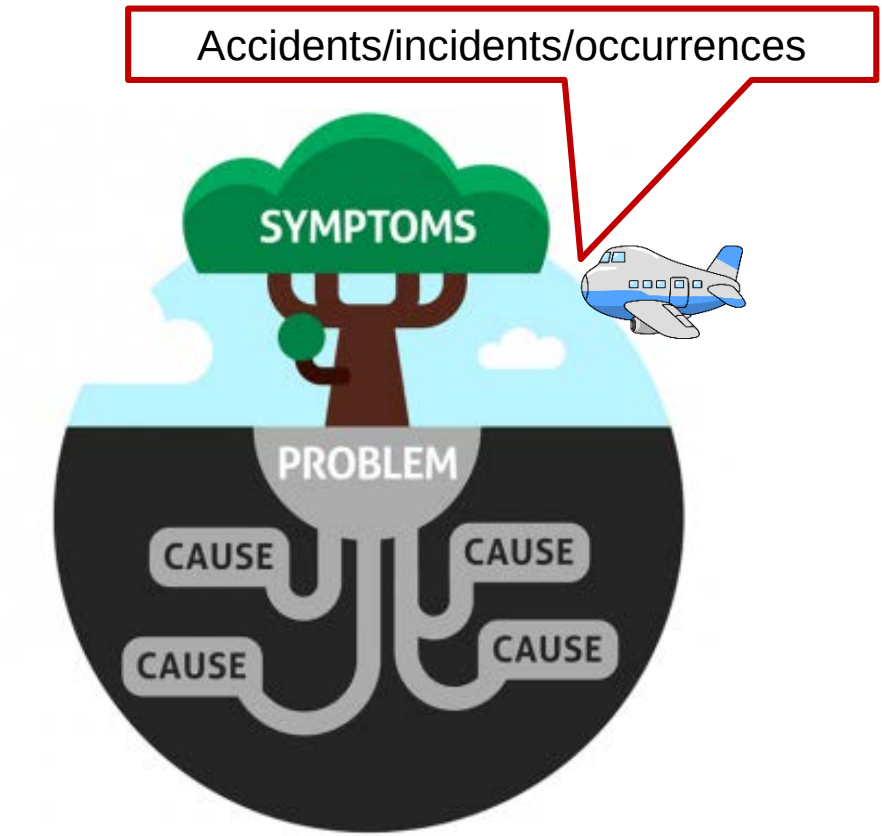
- **Successful voluntary safety reporting programs require:**
  - Incentives to report
    - Limited immunity from enforcement and/or disciplinary actions
  - Legal protection of identities and reported information (de-identification)
  - Collaboration between regulator and service provider(s)
    - Agreement on terms and conditions to be upheld by each party
  - Dedicated program manager
  - Documented process for report handling and analysis
  - Resolution of identified safety issues
  - Data-sharing processes to provide access to safety information gathered by the program(s)

# Why Voluntary Reporting?

- **FAA (regulatory) perspective:**
  - Many accident precursors do not entail noncompliance with regulations/requirements
  - Access to safety information not otherwise known
  - Incentive to exceed minimum standards
  - Additional means of achieving corrective action
  - Improve the ability to ensure future compliance

# Root Cause Analysis

- **Root cause analysis** is a deductive method used to analyze a problem, identify its causes and the measures that could be taken to prevent it from occurring again
  - Symptoms of the problem may be visible but you are unable to see and identify the causes
- Voluntary safety reports support root cause analysis




Using Root Cause Analysis to Drive Process Improvement (http://intland.com/blog/safety-engineering/using-root-cause-analysis-to-drive-process-improvement/)

# FAA Voluntary Reporting Tools

# Acceptable Reports

- **Voluntary reporting programs do not tolerate intentionally reckless or criminal behavior**
- **Acceptable reports:**
  - Must be inadvertent
  - Must *not* involve gross negligence (that is, the individual did not intentionally introduce risk)
  - Must *not* appear to involve criminal activity
  - Must *not* appear to involve substance abuse, controlled substances, or alcohol
  - Must *not* appear to involve intentional falsification

# FAA Example: Protecting Safety Information

- **Limitations on disclosure of safety information are contained in U.S. statutes and regulations**
  - 49 U.S. Code § 44735: Limitation on Disclosure of Safety Information
  - Title 14 of the Code of Federal Regulations
    - Part 91.25 – Aviation Safety Reporting Program: Prohibition Against use of Reports for Enforcement Purposes
    - Part 193 – Protection from Release of Voluntarily Submitted Safety Related Information
      - FAA ATSAP and T-SAP reports protected under Part 193
    - Part 13.401 – Flight Operational Quality Assurance Program: Prohibition against use of data for enforcement purposes

# FAA Example: Event Review

- An **Event Review Committee (ERC)** determines the appropriate response for each voluntary safety report
  - Reviews and analyzes the information provided
  - Conducts interviews of reporting personnel when required
  - Gathers additional information as available
  - Investigates all safety related reports to the extent appropriate

# FAA Example: Event Review

- **The ATSAP ERC:**
  - Includes members from each party to the program:
    - Regulator
    - Service Provider(s)/Certificate Holders
    - Labor union(s)
  - Requires members to sign confidentiality and non-disclosure agreements
  - Meets at least twice a month
  - Uses both informal and formal methods to resolve reports
    - May recommend additional training to address an employee's performance that demonstrates a lack of qualifications
    - May issue a formal Corrective Action Request requiring response from the service provider

# References

- **Voluntary Reporting Resources:**
  - FAA Order JO 7200.20
  - FAA Order 7200.22
- **ICAO Safety Management Manual, Doc 9859**

# Next Up:
# Surface Event Definitions

# Safety Assurance: Surface Events and Severity Classifications

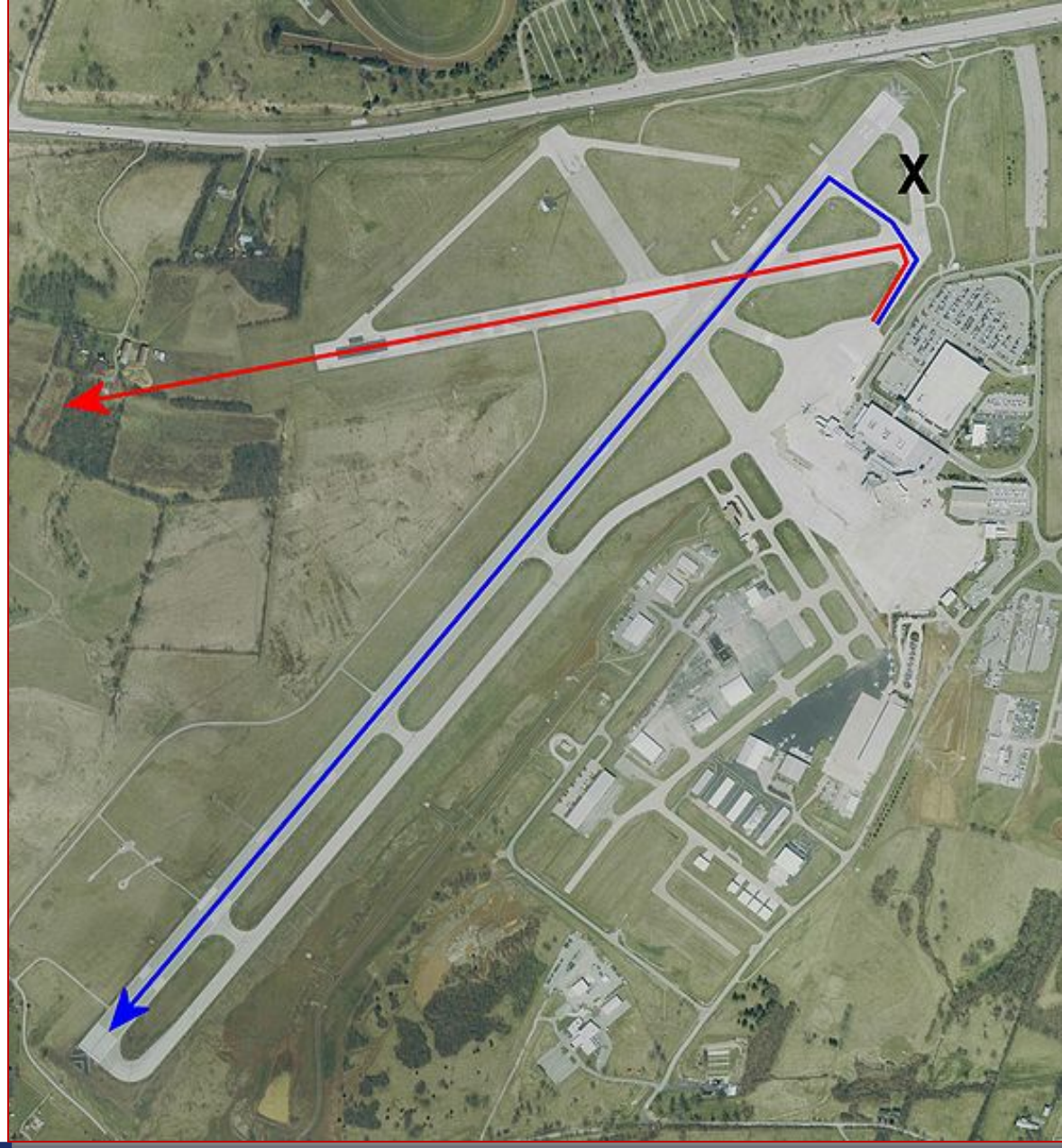
# Worst US Runway Incursion Accident

- Comair flight 5191
- August 27, 2006
  Lexington, KY
- Wrong runway takeoff
- 49 fatalities
- 1 survivor
- https://www.youtube.com/watch?v=yIq-zzlSH18

# August 2006

**COMAIR Flt 5191**

**49 Fatalities**



# 2013

# Surface Incident

Unauthorized or unapproved movement within the *designated movement area* (excluding runway incursions) or an occurrence in that same area associated with the operation of an aircraft that affects or could affect the safety of flight.

# *Surface Incident Example*

**Vehicle/aircraft crosses this marking:**

**Entering a taxiway without communicating with (or receiving permission from) the tower.**

**“SOLID LINE = STOP”**

# Runway Incursion

An occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a *surface designated for the landing and take-off of aircraft.*

# *Runway Incursion Example*

**Pilot acknowledges “HOLD SHORT” of the runway,
but crosses this marking anyway, entering the Runway Safety Area (RSA).**

**“SOLID LINE = STOP”**

# Primary Causes of Runway Incursions

- **Breakdown in communications**
- **Lack of airport familiarity**
- **Loss of situational awareness**
- **Complacency**
- ***Normalization of deviance from process, procedures, regulations***

## Pilot Deviation

A Pilot Deviation (PD) is an action by a pilot that violates any Federal Aviation Regulation (FAR). For example, a pilot fails to comply with air traffic instructions to hold short of an active runway.

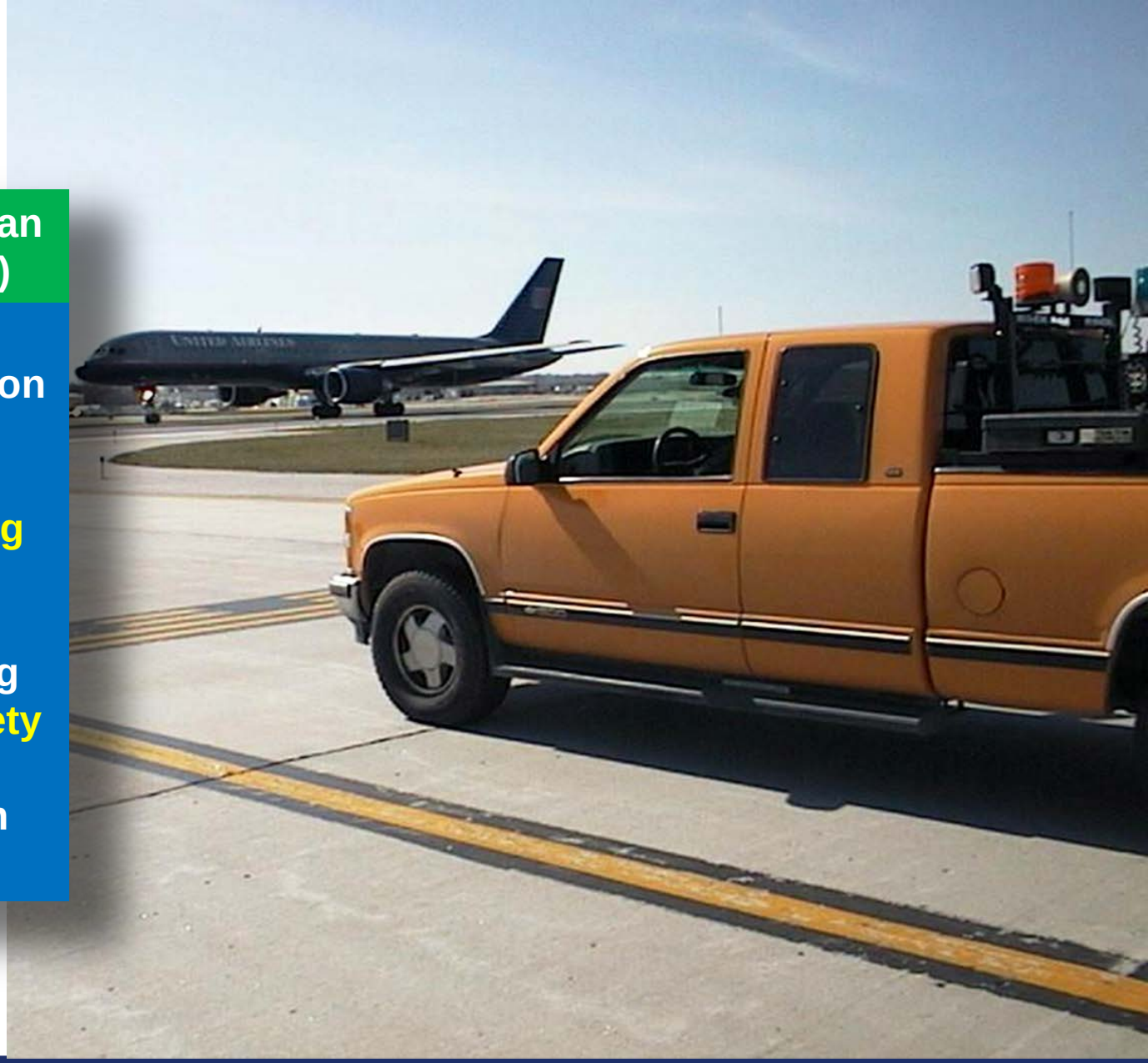
# Three Types of Runway Incursions


**Operational Incident (OI)**

**An Operational Incident is a surface event attributed to ATCT action or inaction.**

## Vehicle / Pedestrian Deviation (V/PD)

A vehicle or pedestrian deviation (V/PD) involves pedestrians or vehicles interfering with aircraft operations by entering or moving in the runway safety area without authorization from air traffic control.



Federal Aviation Administration

# Runway Incursion Definitions

**A Runway Incursion is…**"Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft." (ICAO Doc 4444 - PANS-ATM)

Severity Categories:

**A** Serious incident in which a collision is **narrowly avoided**

**B** Incident in which separation decreased and there is a **significant potential for collision,** which may result in a time critical corrective/ evasive response to avoid a collision

**C** Incident characterized by **ample time and/or distance** to avoid a collision

**D** Incident that **meets definition of a runway incursion** but with no immediate safety consequences

# Runway Excursion (RE)

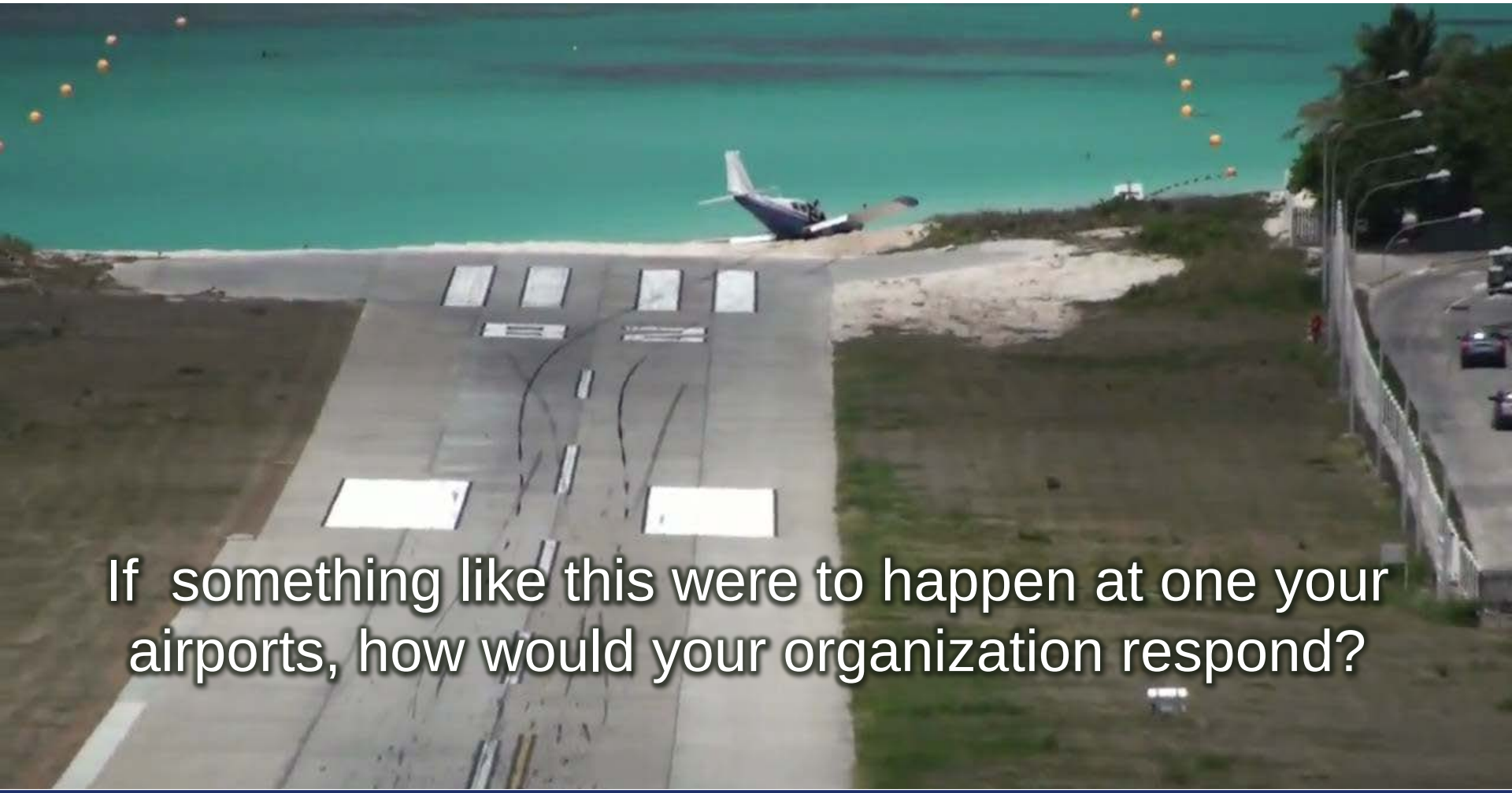
A veer off or overrun off the runway surface.

Federal Aviation Administration

# Runway Excursion Types

- **Overrun on Take Off**: A departing aircraft fails to become airborne or successfully reject the take off before reaching the end of the runway.
- **Overrun on Landing**: A landing aircraft is unable to stop before the end of the runway is reached.
- **Veer Off**: An aircraft taking off, rejecting a take off or landing departs the side of the runway.

# Question


If something like this were to happen at one your airports, how would your organization respond?


Federal Aviation Administration

# Next Up:
# Data Collection and Severity Classification

# Safety Assurance: FAA Data Collection and Analysis

# Data Collection

- **Mandatory Occurrence Report (MOR)**

**FAA Order JO. 7210.632 – Air Traffic Organization Reporting**

***It is the responsibility of all Air Traffic Organization employees who are engaged in and support air traffic services to report all suspected unsafe air traffic occurrences.***

- **FAA collects MOR data on runway incursions, runway excursions, and surface incidents**

# Data Analysis

- **Severity classifications**

- **Runway Incursion Assessment Team (RIAT)**

- **Runway Safety Team**

# FAA Runway Incursion Assessment Team (RIAT)

- Determines runway incursion severity classifications
- Takes place once a week
- Comprised of either one or more members from Air Traffic Organization Terminal Services, Flight Standards, and Office of Airports

    - **Flight Standards Member** - qualified aviation safety inspectors or equivalent experience with either general aviation and/or air carrier background and field experience. Broad knowledge of various aircraft types, models, and performance characteristics

    - **Office of Airports Member** - Qualified airport certification safety inspector, or knowledgeable of airport operations

    - **Air Traffic Organization Terminal Services** – Experienced Certified Professional Controller in one or more FAA Airport Traffic Control Towers

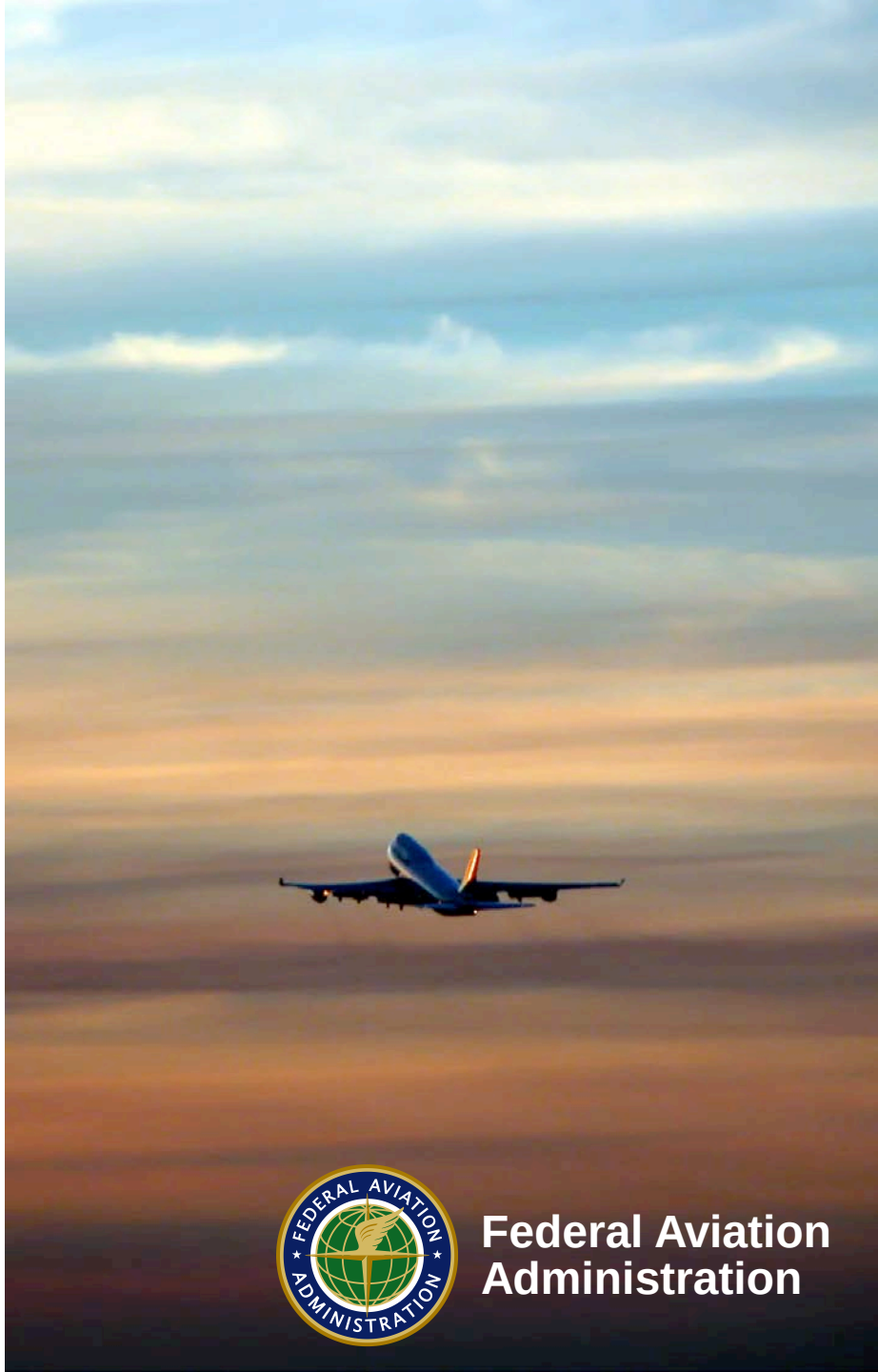
# Runway Incursion Assessment Team (RIAT) Exercise

# Runway Incursion Assessment Team

## Exercise

Federal Aviation Administration

October 21-25, 2019



# Exercise Overview

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- Work as a multidisciplinary team to assign an Incident Type and a Severity Classification to each incursion

# Preparation

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- **Groups of 6-8**

# Preparation

- **Groups of 6-8**
- **Assign roles**

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- **Groups of 6-8**
- **Assign roles**
  - 1 Facilitator

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- **Groups of 6-8**
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  - 1 Facilitator
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  - 2 Airport safety experts (voting members)

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- **Groups of 6-8**
- **Assign roles**
  - 1 Facilitator
  - 1 Scribe/Timekeeper
  - 2 Airport safety experts (voting members)
  - 2 Flight Safety experts (voting members)
  - 2 Air Traffic experts (voting members)

# Files Needed

# Files Needed

- **Mock RIAT Data (Excel)**

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- **Mock RIAT Data (Excel)**
- **Mock RIAT Airport Diagrams (pdf)**

# Files Needed

- **Mock RIAT Data (Excel)**
- **Mock RIAT Airport Diagrams (pdf)**
- **RIAT Guidance (Word)**

**Found here:**
**https://www.icao.int/NACC/Pages/meetings-2019-wrst.aspx**

# Activity

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- Each Voting Member reviews incursions and decides his/her opinion on the Incident Type and the Severity Category, based on the Guidance document and his/her area of expertise

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- Group works to establish agreement among all voting members

# Activity

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- Facilitator asks each Voting Member for his/her vote on the Incident Type and the Severity Category
- Group works to establish agreement among all voting members
- Scribe records the agreed upon Incident Type and Severity Category

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- Each Voting Member reviews incursions and decides his/her opinion on the Incident Type and the Severity Category, based on the Guidance document and his/her area of expertise
- Facilitator asks each Voting Member for his/her vote on the Incident Type and the Severity Category
- Group works to establish agreement among all voting members
- Scribe records the agreed upon Incident Type and Severity Category
- Repeat process for each incursion listed

Federal Aviation Administration

# Incursion #1, Rocky Mountain Metro

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- Aircraft 1 landed Runway 12R and was then instructed to turn off the runway at Delta3 to Delta, then make a left turn onto Runway 3 and hold short of Runway 12R.

# Incursion #1, Rocky Mountain Metro

- Aircraft 1 landed Runway 12R and was then instructed to turn off the runway at Delta3 to Delta, then make a left turn onto Runway 3 and hold short of Runway 12R. The pilot correctly read back the instructions. Aircraft 1 was then observed to have crossed Runway 12R while a departing aircraft had just become airborne on Runway 12R.

# Incursion #1, Rocky Mountain Metro

- Aircraft 1 landed Runway 12R and was then instructed to turn off the runway at Delta3 to Delta, then make a left turn onto Runway 3 and hold short of Runway 12R. The pilot correctly read back the instructions. Aircraft 1 was then observed to have crossed Runway 12R while a departing aircraft had just become airborne on Runway 12R. There was no over flight. Controller estimated proximity of 150 vertical and 150 lateral as Aircraft 1 crossed the hold short line.

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- Assessment - ?

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- Assessment - ?
- FAA – Category C, Pilot Deviation

# Incursion #2, Falcon Field

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- Aircraft 1 landed Runway 22R and was instructed to turn left on Taxiway Bravo and holdshort of Runway 22L.

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- Aircraft 1 landed Runway 22R and was instructed to turn left on Taxiway Bravo and holdshort of Runway 22L. Readback was correct. Aircraft continued to taxi onto Runway 22L and stopped on the runway.

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- Aircraft 1 landed Runway 22R and was instructed to turn left on Taxiway Bravo and holdshort of Runway 22L. Readback was correct. Aircraft continued to taxi onto Runway 22L and stopped on the runway.  Aircraft 2 had been cleared for takeoff on Runway 22L and overflew Aircraft 1 on the runway. Closest proximity approximately 100 feet.

# Incursion #2, Falcon Field

- Aircraft 1 landed Runway 22R and was instructed to turn left on Taxiway Bravo and holdshort of Runway 22L. Readback was correct. Aircraft continued to taxi onto Runway 22L and stopped on the runway.  Aircraft 2 had been cleared for takeoff on Runway 22L and overflew Aircraft 1 on the runway. Closest proximity approximately 100 feet.
- Assessment - ?

# Incursion #2, Falcon Field

- Aircraft 1 landed Runway 22R and was instructed to turn left on Taxiway Bravo and holdshort of Runway 22L. Readback was correct. Aircraft continued to taxi onto Runway 22L and stopped on the runway.  Aircraft 2 had been cleared for takeoff on Runway 22L and overflew Aircraft 1 on the runway. Closest proximity approximately 100 feet.
- Assessment - ?
- FAA – Category B, Pilot Deviation

# Incursion #3, Portland-Hillsboro

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- A C172  landed on Runway 31L, exited onto Taxiway Alpha and contacted Ground Control (GC) to request taxi back to Runway 31L. GC  advised the aircraft that Runway 2 was in use.

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- Assessment - ?

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- Assessment - ?
- FAA – Category D, Pilot Deviation

# Incursion #4, Hilo Intl

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- Assessment - ?

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- Assessment - ?
- FAA – Category D, Operational Incident

# Incursion #5, New Century Aircenter

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- A vehicle proceeded on Taxiway Alpha and crossed Runway 22 without ATC authorization while a GALX was on landing roll. An airport vehicle observed an unknown vehicle traveling northbound on Taxiway Alpha and notified ATC as the aircraft was touching down on Runway 22.

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- A vehicle proceeded on Taxiway Alpha and crossed Runway 22 without ATC authorization while a GALX was on landing roll. An airport vehicle observed an unknown vehicle traveling northbound on Taxiway Alpha and notified ATC as the aircraft was touching down on Runway 22. The vehicle crossed Runway 22 at Taxiway Alpha when the aircraft was 1500 feet from the taxiway.

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- Assessment - ?
- FAA – Category C, Vehicle/Pedestrian

# Incursion #6, Monroe Regional

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# Incursion #6, Monroe Regional

- A C172 was cleared for takeoff on Runway 22 while an airport vehicle was on the runway edge. The vehicle was cleared to conduct a full-length inspection on Runway 4 from Taxiway Foxtrot. Approximately 4 minutes later the aircraft called ready for takeoff on Runway 22 at Taxiway Charlie (full length of runway). Local Control  then cleared the aircraft for takeoff while the vehicle was sitting off the east edge of Runway 22 at Taxiway Charlie 1.

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- Assessment - ?
- FAA – Category B, Operational Incident

# Incursion #7, Smyrna Airport

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- A PA28 departed Runway 01 and lifted off approximately 1,700 feet  down the runway.  The pilot informed the tower that a pedestrian was walking in the middle of Runway 01 towards the approach end.

# Incursion #7, Smyrna Airport

- A PA28 departed Runway 01 and lifted off approximately 1,700 feet  down the runway.  The pilot informed the tower that a pedestrian was walking in the middle of Runway 01 towards the approach end. The person was approximately 200 feet south of the Runway 32/14 hold short lines. The closest proximity was 150 feet vertical and 0 Lateral.

# Incursion #7, Smyrna Airport

- A PA28 departed Runway 01 and lifted off approximately 1,700 feet  down the runway.  The pilot informed the tower that a pedestrian was walking in the middle of Runway 01 towards the approach end. The person was approximately 200 feet south of the Runway 32/14 hold short lines. The closest proximity was 150 feet vertical and 0 Lateral.
- Assessment - ?

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- A PA28 departed Runway 01 and lifted off approximately 1,700 feet  down the runway.  The pilot informed the tower that a pedestrian was walking in the middle of Runway 01 towards the approach end. The person was approximately 200 feet south of the Runway 32/14 hold short lines. The closest proximity was 150 feet vertical and 0 Lateral.
- Assessment - ?
- FAA – Category B, Vehicle/Pedestrian

# Incursion #8, Montgomery Field

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- An SR22 landed Runway 28L and had a runway excursion to the left, before reaching Taxiway Golf 1.

# Incursion #8, Montgomery Field

- An SR22 landed Runway 28L and had a runway excursion to the left, before reaching Taxiway Golf 1. The aircraft came to rest in the grass between Runway 28L and Taxiway Hotel, just east of Golf 1, within the Runway Safety Area (RSA).

# Incursion #8, Montgomery Field

- An SR22 landed Runway 28L and had a runway excursion to the left, before reaching Taxiway Golf 1. The aircraft came to rest in the grass between Runway 28L and Taxiway Hotel, just east of Golf 1, within the Runway Safety Area (RSA). ATC attempted to contact the pilots but received no response, then both passengers were observed jumping out of the aircraft.

# Incursion #8, Montgomery Field

- An SR22 landed Runway 28L and had a runway excursion to the left, before reaching Taxiway Golf 1. The aircraft came to rest in the grass between Runway 28L and Taxiway Hotel, just east of Golf 1, within the Runway Safety Area (RSA). ATC attempted to contact the pilots but received no response, then both passengers were observed jumping out of the aircraft. A few moments later a pedestrian ran across Taxiway Hotel to assist the aircraft and entered the RSA without ATC authorization. Subsequently, the pedestrian called the tower phone line and reported no injuries, but the aircraft was leaking fuel.

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- An SR22 landed Runway 28L and had a runway excursion to the left, before reaching Taxiway Golf 1. The aircraft came to rest in the grass between Runway 28L and Taxiway Hotel, just east of Golf 1, within the Runway Safety Area (RSA). ATC attempted to contact the pilots but received no response, then both passengers were observed jumping out of the aircraft. A few moments later a pedestrian ran across Taxiway Hotel to assist the aircraft and entered the RSA without ATC authorization. Subsequently, the pedestrian called the tower phone line and reported no injuries, but the aircraft was leaking fuel.
- Assessment - ?

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- Assessment - ?
- FAA – Category D, Vehicle/Pedestrian

# Incursion #9, Chicago O'Hare

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- ATC cleared Aircraft 2, a CRJ2, for departure on Runway 28R with Aircraft 1, also a CRJ2, less than 6,000 feet downfield.

# Incursion #9, Chicago O’Hare

- ATC cleared Aircraft 2, a CRJ2, for departure on Runway 28R with Aircraft 1, also a CRJ2, less than 6,000 feet downfield. The first CRJ2 rolled and was airborne when the second CRJ2 began departure roll.

# Incursion #9, Chicago O'Hare

- ATC cleared Aircraft 2, a CRJ2, for departure on Runway 28R with Aircraft 1, also a CRJ2, less than 6,000 feet downfield. The first CRJ2 rolled and was airborne when the second CRJ2 began departure roll. Closest proximity based on FALCON replay was 5,370 feet lateral and 200 feet vertical. No ASDE analysis available because of 45-day retention.

# Incursion #9, Chicago O'Hare

- ATC cleared Aircraft 2, a CRJ2, for departure on Runway 28R with Aircraft 1, also a CRJ2, less than 6,000 feet downfield. The first CRJ2 rolled and was airborne when the second CRJ2 began departure roll. Closest proximity based on FALCON replay was 5,370 feet lateral and 200 feet vertical. No ASDE analysis available because of 45-day retention.
- Assessment - ?

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- ATC cleared Aircraft 2, a CRJ2, for departure on Runway 28R with Aircraft 1, also a CRJ2, less than 6,000 feet downfield. The first CRJ2 rolled and was airborne when the second CRJ2 began departure roll. Closest proximity based on FALCON replay was 5,370 feet lateral and 200 feet vertical. No ASDE analysis available because of 45-day retention.
- Assessment - ?
- FAA – Category C, Operational Incident

# Incursion #10, Reno/Tahoe Intl

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- Assessment - ?
- FAA – Category A, Vehicle/Pedestrian

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- Assessment - ?

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- Assessment - ?
- FAA – Category A, Operational Incident

# Incursion #12, North Las Vegas

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- Assessment - ?

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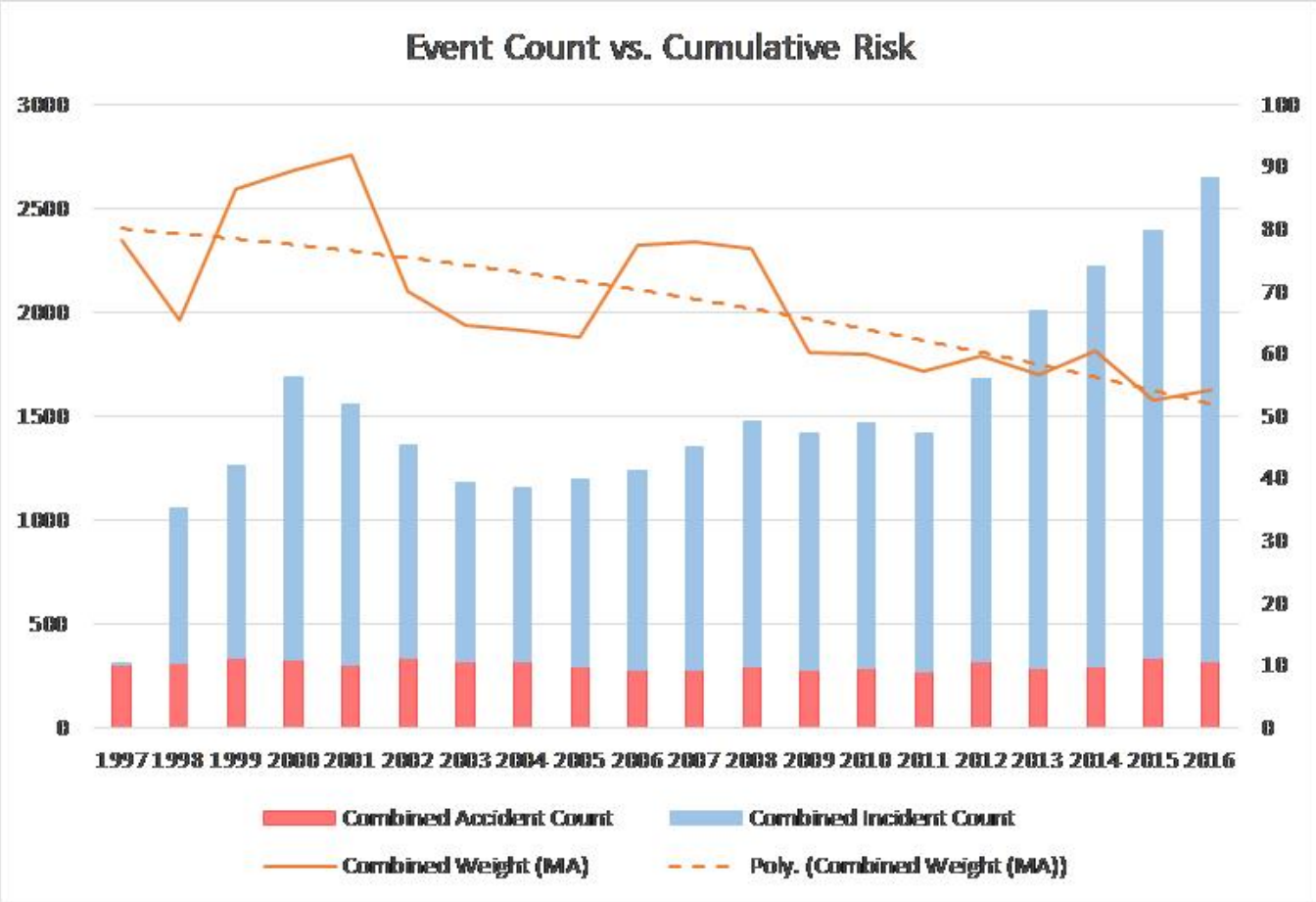
- Assessment - ?
- FAA – Category A, Pilot Deviation


INCURSION
LESSONS
INCIDENT
IDEA
LEARNED

# FAA Runway Safety Metric

- **Monitors all types of surface events that occur in runway environment**
- **Helps FAA to understand what is driving risk in the system**
- **Data shared with runway safety stakeholders**

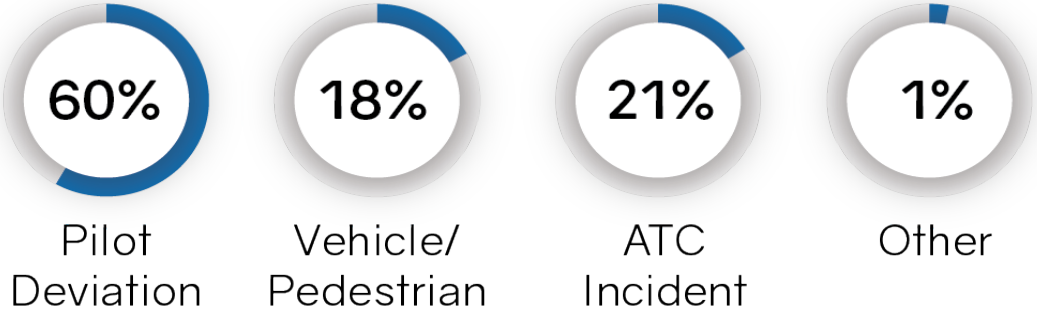
# FAA Runway Safety Metric



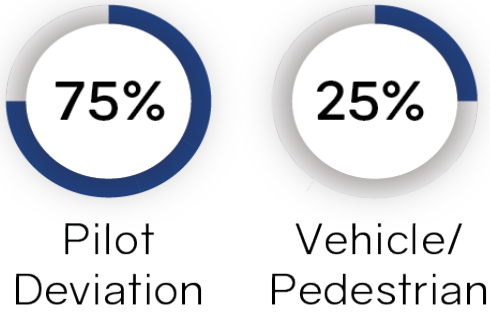
# Runway Incursions By The Numbers

## FY18 RUNWAY INCURSIONS

**704**
**RUNWAY INCURSIONS**




**4**
**A&B EVENTS**



# Assessment of A, B, & C Runway Incursion Data

As a result of the annual increase in the number of reported RIs of all Categories, the FAA identified runway incursions as a safety issue in FY17.

To identify the contributing factors and mitigations, Subject Matter Experts (SMEs) and panel members from Lines of Business (LOBs) across the agency, along with three representatives from various pilot organizations (e.g., Aircraft Owners and Pilots Association, the Air Line Pilots Association (ALPA), and the National Business Aviation Association) reviewed the data.

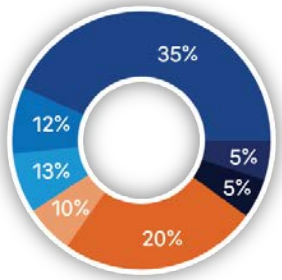
Reviewed 265 OIs

## Causes:


ATC cleared aircraft to land/depart on an occupied runway


ATC did not monitor aircraft position on approach to intersecting runway

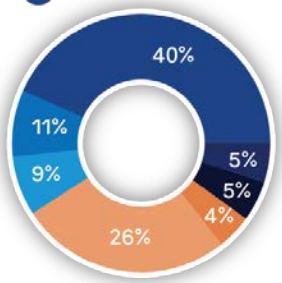
## Contributing Factor:




- Distraction By Other Aircraft
- ATC Did Not Comply With 7110.65 Requirements
- Misjudge (Optimistic Expectations)
- Anticipated Separation Rule (Tower Only)
- ATC Overlooked Traffic Due to Ineffective Runway Scan
- ATC Was Unaware Aircraft/Vehicle Location
- Other

## Barriers or Mitigations:

- ASDE-X
- Corrective Action by Controller or Pilot
- Unknown
- Canceled Takeoff Clearance
- Traffic Call
- Go Around
- Other



# Analysis Summary 361 FY16 Pilot Deviations (PD)

## Causes:

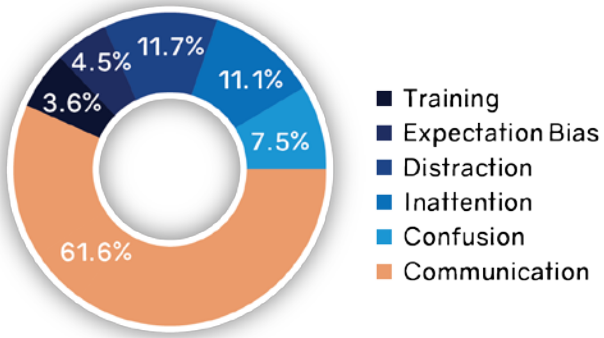

Pilot Failed to Hold Short of Runway as Instructed


Pilot Failed to Hold Short of Runway

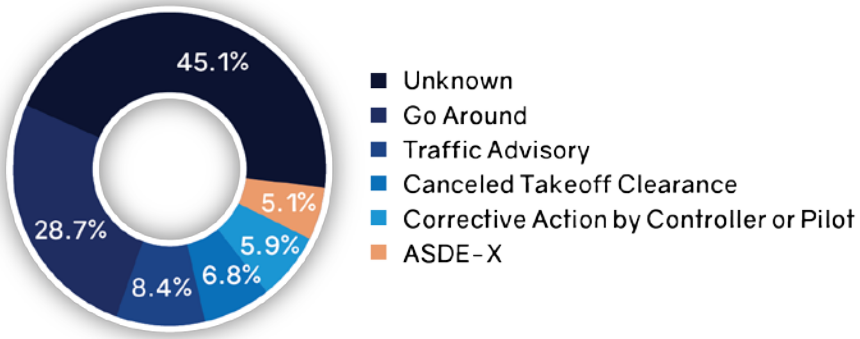

Pilot Did Not Follow ATC Clearance


Pilot Departed Without Departure Clearance

## Contributing Factor:




## Barriers or Mitigations:



# Runway Safety Team Process

# Local Runway Safety Process

- **Runway Safety Teams are our primary tool at the airport level to reduce surface risks at an airport**
- **Towered airports in the U.S. are required by the FAA to conduct an RST meeting at least once each fiscal year**

# Runway Safety Teams

- Recommendation from the first ICAO Global Runway Safety Symposium in 2011
- Effective means of reducing runway related accidents and incidents
- Have helped significantly reduce the runway safety related risks globally since 2011
- Over 200 airports internationally have registered an RST with ICAO

# RST Planning

- **Meet at least annually**
- **Carefully consider timing (possibly coincide with pilot meetings)**
- **Notify participants with sufficient lead time**
  - The sooner the RST is planned, the better the chance of stakeholder engagement!!
  - Consider inviting stakeholders to make presentations – keeps meeting interesting and facilitates engagement!!
- **Prepare meeting materials**
  - Agenda, specific event data, any information that needs to be communicated with aerodrome users
  - Adjust meeting duration to agenda – don't make meeting longer than it needs to be!!!
- **Ensure an appropriate environment (meeting room acoustics, technology, etc)**
- **Review previous RST's action plan and achievements**
- **Identify a note taker/recorder for action plan**

# Team members

- Air Traffic Control representatives
- Airport operator and their employees (mower operators, airfield inspectors, etc.)
- Airline representatives
- Fixed Base Operators (FBOs) and flight schools
- Navigational aid technicians
- Union representatives
- Wildlife biologists
- Governmental regulators
- Local flying clubs and pilots based on the field
- ARFF or local Fire Department (whoever responds to emergencies on the field)

**ANYONE WHO OPERATES ON THE AERODROME!!!**

# RST Success

- **Active facilitation and make it interesting**
- **Stakeholder participation**
- **Clear explanation of potential hazards**
- **Review of previous RST's action plan**
- **Development of new action plan**
- **Follow up to ensure action plan goals are met**
- **Celebrate safety successes!!**

# Facilitation Tips

- **Prepare in advance**
- **Plan and distribute agenda**
- **Establish community expectations**
- **Practice active listening**
- **Encourage and balance participation**
- **Guide the group in presenting and sharing information and to finding resolutions**
- **Provide closure and reiterate action items**

# How do we identify potential hazards?

# Airport Geometry

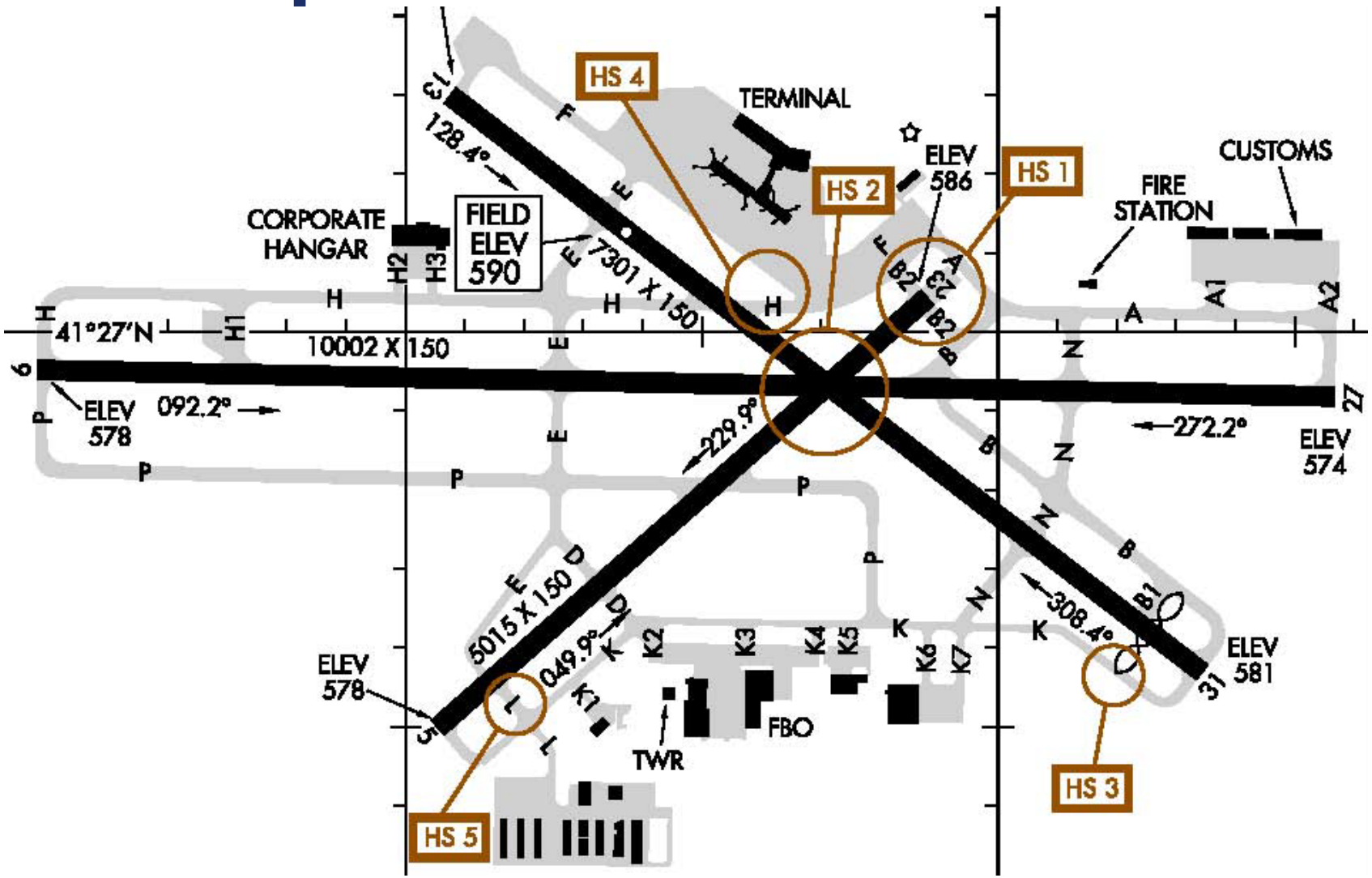
**Does the airport have any of these common geometry problems?**

- Crossings in middle third of runway (high-energy areas)
- Unusual marking and/or signage placement
- Absence of a full length parallel taxiway
- Direct/short ramp to runway taxi routes
- Aligned taxiways (in-line)
- Intersections with more than three ways to go
- Wide expanse of pavement at a taxiway/runway intersection
- Entrance taxiways at other than 90º to runway
- Taxiway coinciding with the intersection of two runways

# Airport Geometry

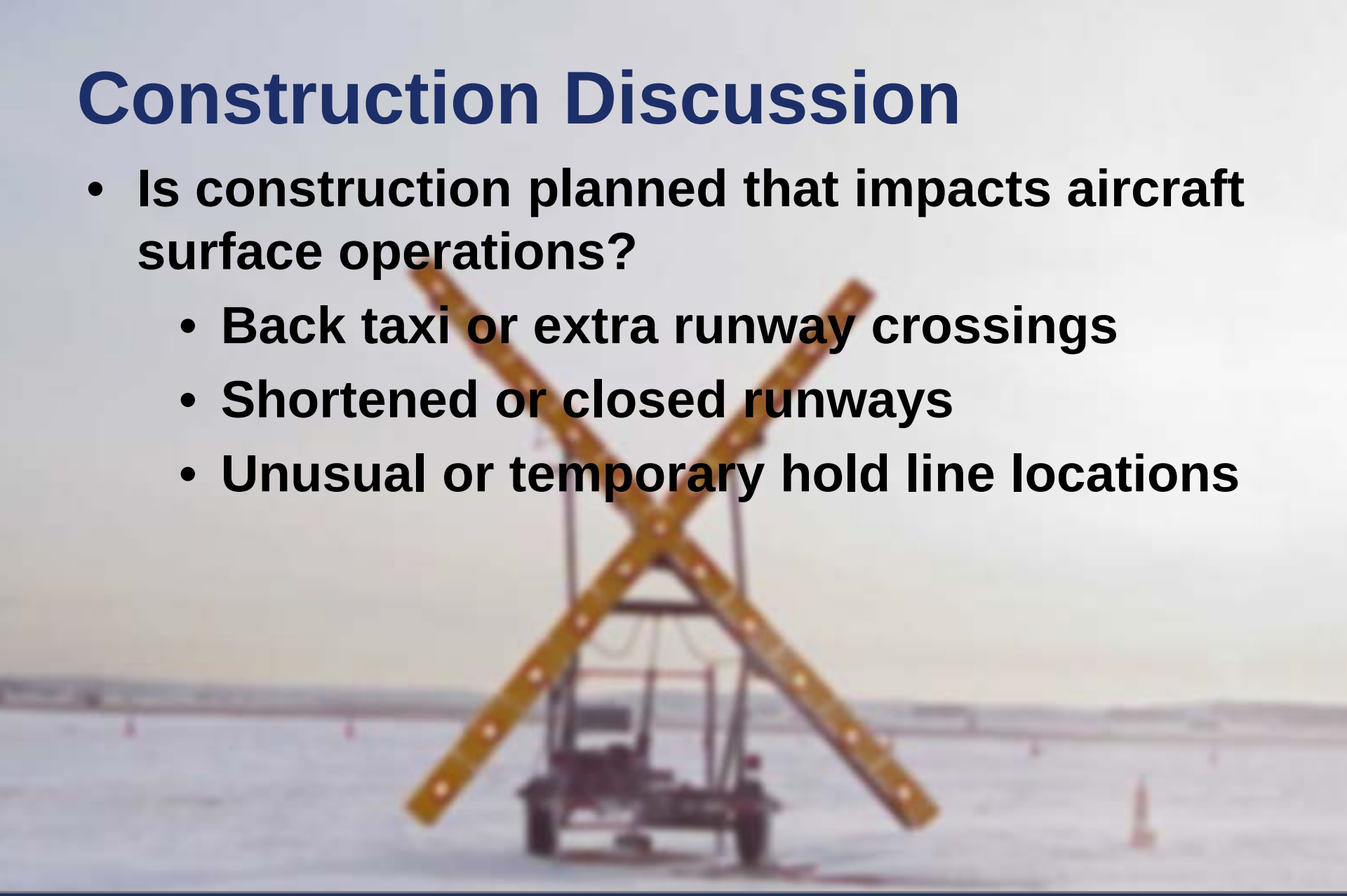
- **Are there airport geometry changes planned aimed at reducing the risk of runway incursions?**
- **Are there procedural or other mitigations needed to reduce risk?**
  - Prohibiting crossings in high energy segment of runways
  - Runway Guard Lights at difficult intersections
  - Surface painted signs at difficult intersections

# Example: MLI


HS 4
TERMINAL
HS 2
ELEV 586
HS 1
CUSTOMS
FIRE STATION
CORPORATE HANGAR
FIELD ELEV 590
13
128.4°
7301 X 150
H2
H3
H
H1
41°27'N
10002 X 150
A
A1
A2
Z
B
B2
23
6
27
ELEV 578
092.2°
272.2°
ELEV 574
229.9°
5015 X 150
D
E
049.9°
K
K1
K2
K3
K4
K5
K6
K7
FBO
TWR
ELEV 578
308.4°
B1
31
ELEV 581
HS 3
HS 5
P
L
N

# Construction Discussion

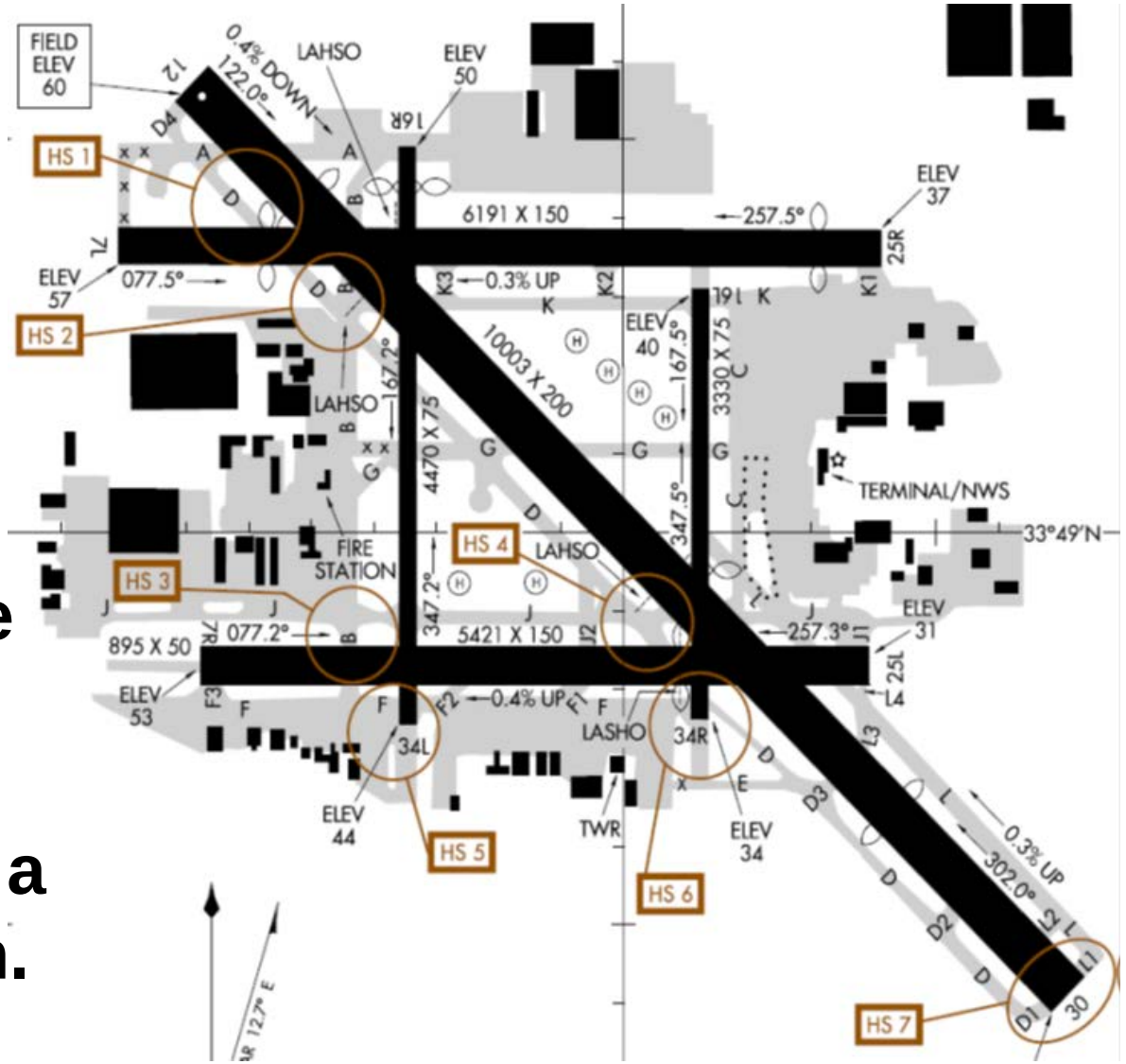
- **Is construction planned that impacts aircraft surface operations?**
  - **Back taxi or extra runway crossings**
  - **Shortened or closed runways**
  - **Unusual or temporary hold line locations**



# Hot Spots

**What is a Hot Spot?**

**Any area on the aerodrome where the team feels there is an increased risk of a runway incursion.**



# Hot Spots

**Are there any areas which pilots have difficulty navigating?**

- Wide expanses of pavement
- Extra wide hold lines
- Taxiways on the edge of an apron (direct access or short taxi distance)
- Complex intersections
- Runway confusion – landing on the wrong runway (or a taxiway)
- Closely aligned runway ends

***Designating an area as a Hot Spot can help increase pilots' awareness of areas where incursions are more likely to happen***

# Effects of Weather

**Are there any areas on the airport where weather could impact surface safety?**

- Water ponding and covering markings
- Sun conditions making visibility difficult
- Areas not visible from the ATCT due to weather


Federal Aviation Administration

# Vehicles


**Procedures…**

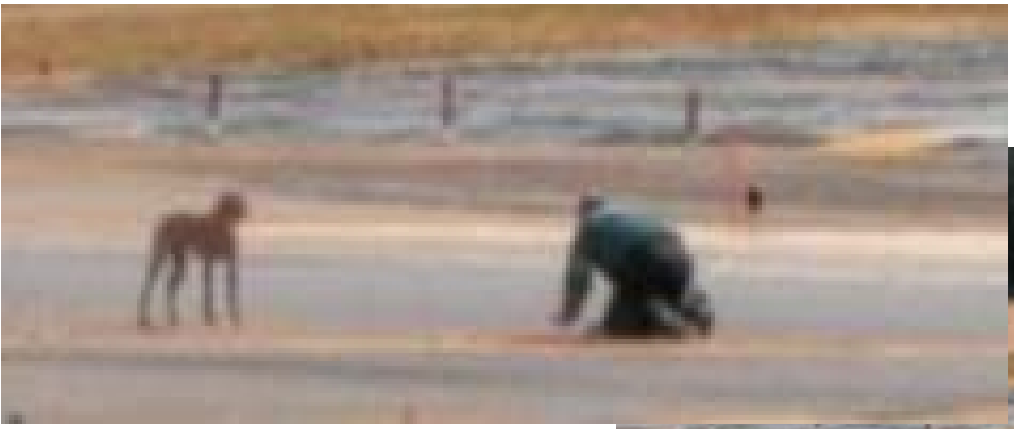
- Do vehicle drivers always use access roads – or do they cross runways for convenience?
- Do the ATCT and airport encourage crossings in low energy portions of the runway?
  - Right at landing threshold
  - Last third of runway surface
- Are access roads well maintained?

**For drivers in the movement area…**

- Is training adequate to ensure safe operations?
- Are there taxi-qualified mechanics who operate on the field?
- Do procedures provide for maximum safety?
  - Are distractions controlled? (ie: cell phones/texting prohibited while on the airfield?)
- Are improvements possible?

# Wildlife control and vehicles

- **Do procedures at your airport**
  - Ensure drivers addressing wildlife know to keep clear of runways?
  - Employ risk mitigations? (closing runways and/or sending traffic around when animals are near operational runways)



# How do we document and Follow up?

# What are Action Items?

- **Action items developed during an RSAT meeting are voluntary, consensus driven, and are not regulatory.**
- **You must have agreement from the party who will be responsible for implementation.**
- **If the responsible party is not present at the meeting, ensure coordination prior to finalizing the action plan.**

# Action Plans

- **After each RST meeting, the Air Traffic manager (or person leading the meeting) creates the Runway Safety Action Plan (RSAP).**

- **This is a document that outlines the RST's plan for the coming year for improving runway safety.**

# Action Plans

**Sections to include in the RSAP:**

- **Airport statistics**
  - Identifier / Airport name
  - Towered / non-towered
  - Hours of operation
  - Type and number of operations
  - Number of flight schools / FBOs

# Action Plans

**Sections to include in the RSAP (cont):**

- **Incident history**
- **Meeting overview**
- **Action items**
- **Best practices**
- **Review of previous action items**
- **Current airport diagram**
- **List of attendees**

# RUNWAY SAFETY ACTION ITEMS

## *Suggested detail for Action Items*

**Number :** XXX ATCT-2013-001

**Define Issue:**

**Proposed Solution:**

**Responsibility of :** ATCT, Airport, etc.

**Point of Contact :**

**POC email:**

**Estimated Start Date:**

**Estimated Completion Date:**

# Runway Safety Team Activity

## *Atlantis International Airport*

# 2019 Runway Safety Team (RST)

Atlantis International Airport (AIA)
October 24, 2019

# Introduction

Welcome to the Runway Safety Team (RST)
Introduction of team members:

- **Cheri Walter, AIA Air Traffic Manager, AIA ATCT**
- **Juan Manuel Manriquez, Airport Director, AIA**
- **Bart Simpson, Air Traffic Controller Association, AIA ATCT**
- **Stakeholders - Self Introductions (please sign roster)**

Please enter name, organization, and contact information on the sign-in sheet

# Agenda

- Runway Safety Briefing
  - Overview of the RST Process
  - Definitions and National Statistics
  - National Trends and Topics
- RST Open Discussion
  - Local Incidents
  - Local Action Item Review
  - Identify local risk factors and/or current initiatives
  - Stakeholder / User Perspectives/Discussion
- Outcome: Develop RSAP and Action Items

# RST Process Overview

- Purpose: To bring local stakeholders together at least once per year to identify and mitigate the risks of significant surface events at your airport
- Process:
  - Review Incident History
  - Discuss Current Concerns
  - Create 2019 Runway Safety Action Plan and Action Items

# Basic Definitions

- **Runway Incursion**: The incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft, including the Runway Safety Area (RSA).
- **Runway Excursion**: A veer off or overrun off the runway surface
- **Surface Incident**: Unauthorized or unapproved movement within the designated movement area (excluding runway incursions) or an occurrence in that same area associated with the operation of an aircraft that affects or could affect the safety of flight

# Definitions Cont'd

**Types of Surface Events:**

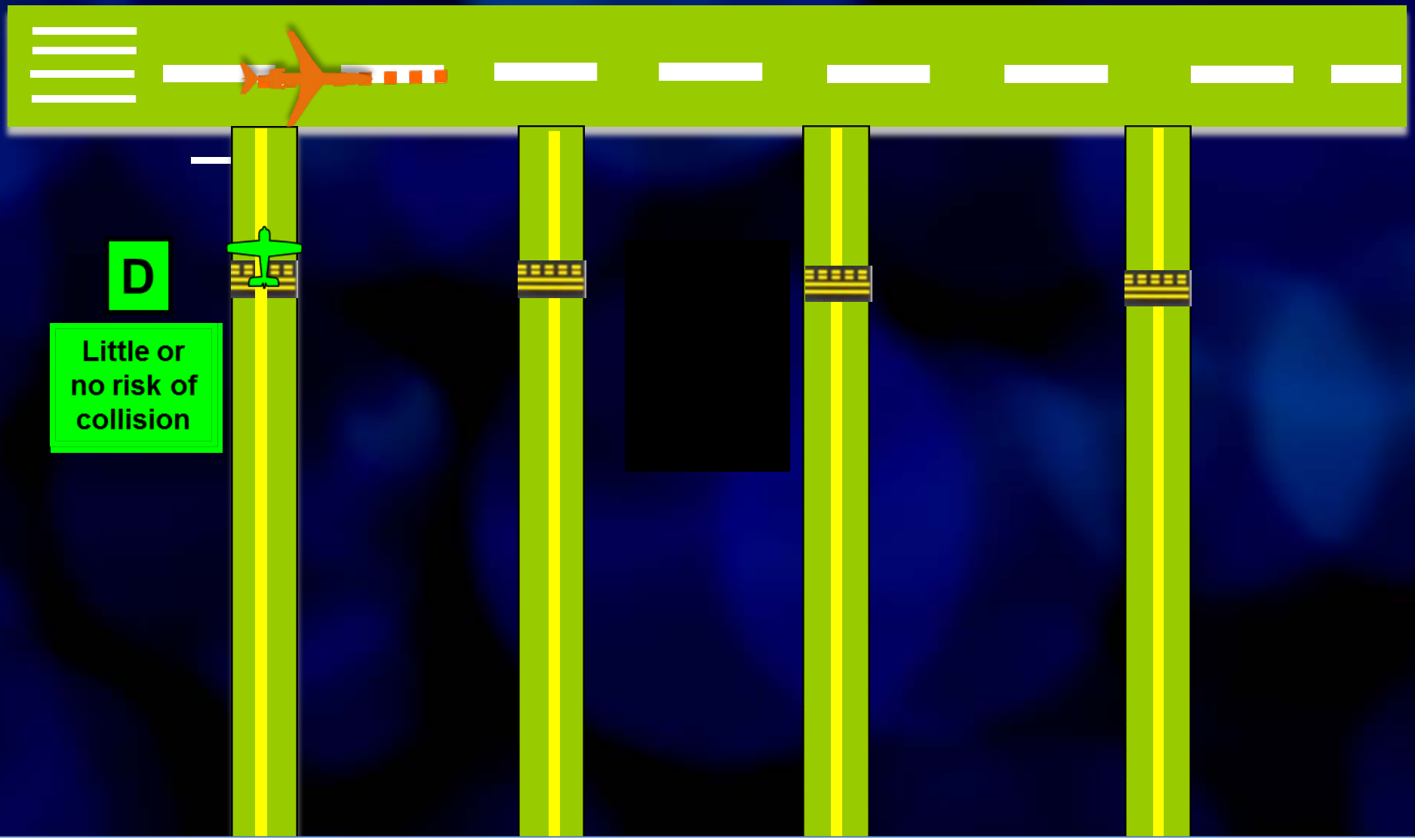
- **Operational Incident (OI)** – A surface event attributed to ATCT action or inaction
- **Pilot Deviation (PD)** – A surface event caused by a pilot or other person operating an aircraft under its own power
- **Vehicle or Pedestrian Deviation (VPD)** – A surface event caused by a vehicle driver or pedestrian
- **Other** – Surface events which cannot clearly be attributed to a mistake or incorrect action

# Incursion - Severity Category

**The following scenarios are all classified as runway incursions, but with different severity categories.**

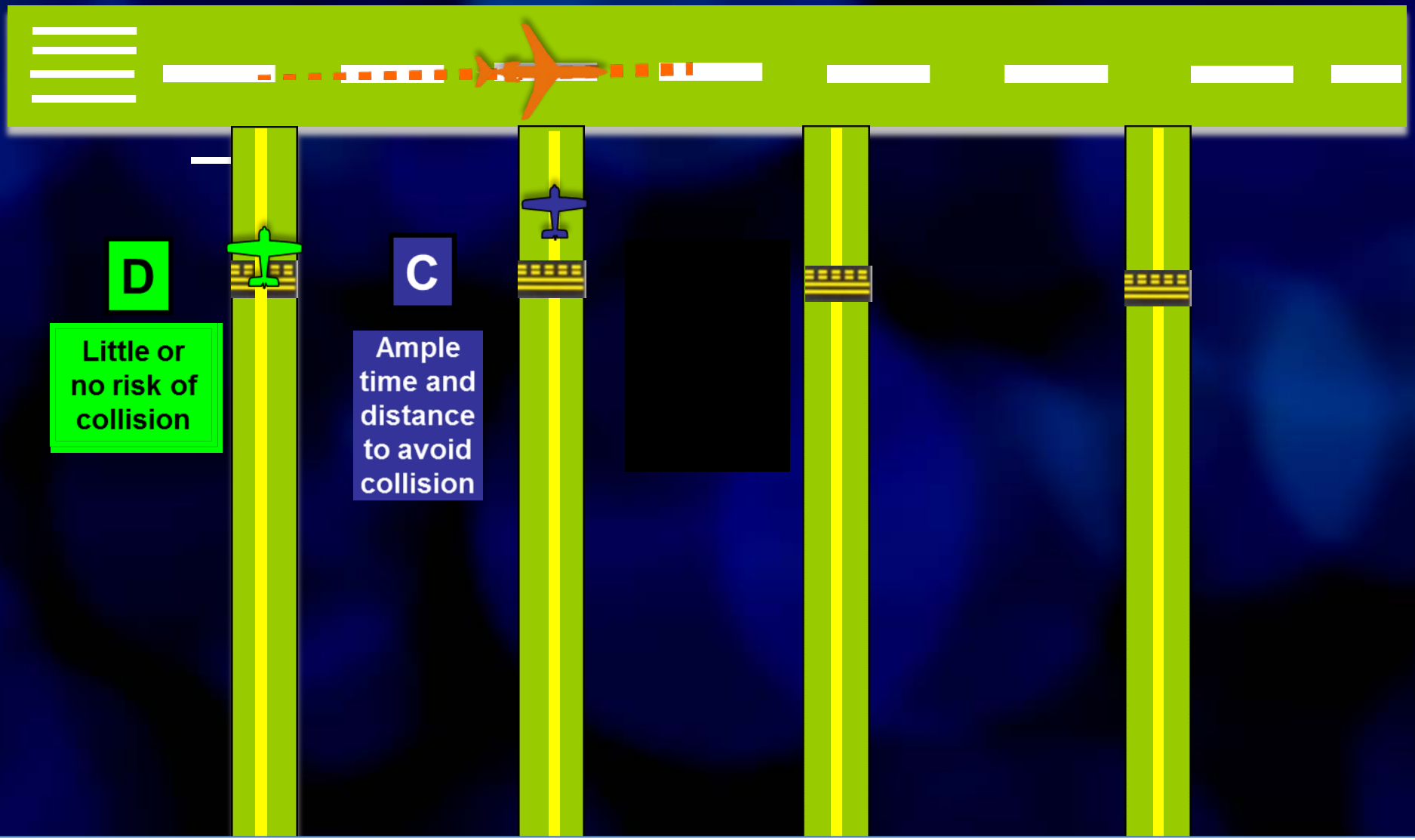
**In each case, the taxiing aircraft penetrated the runway safety area (crossed the holding position marking).**

# Incursion - Severity Category



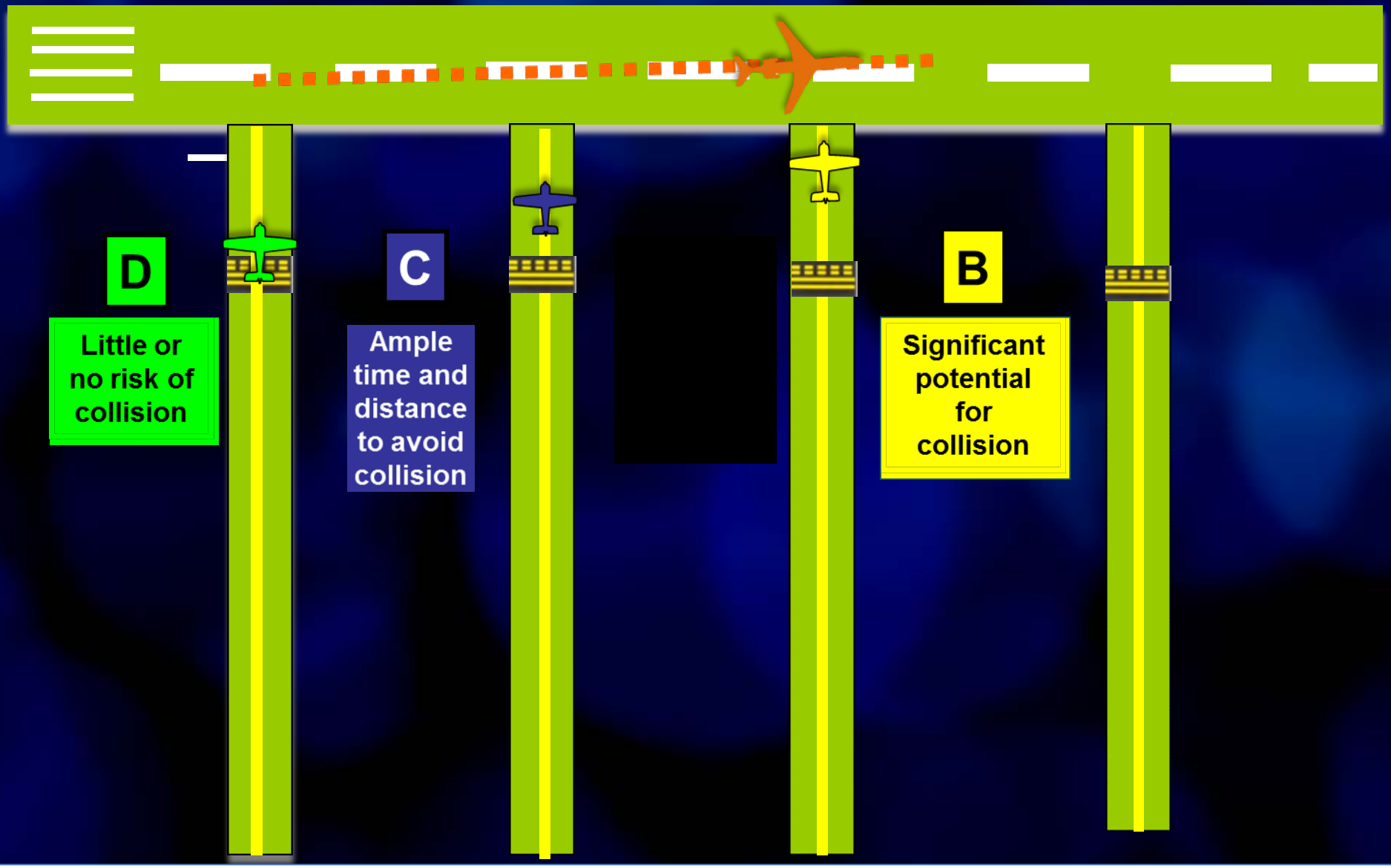

Category D runway incursions involve little or no risk of a collision. There is either no other aircraft involved, or other aircraft are further than a mile away (greater than a 1 mile final).

# Incursion - Severity Category



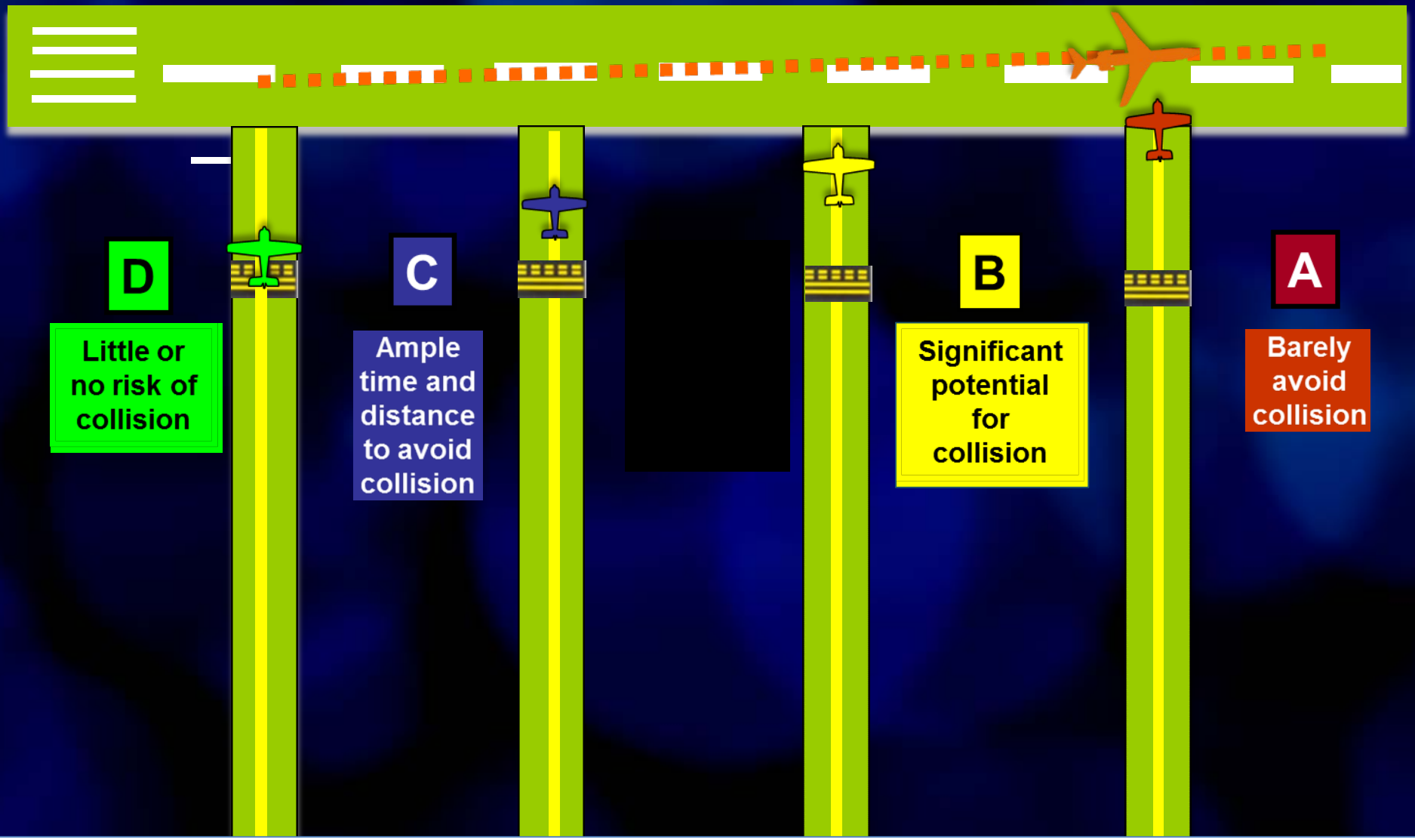

Category C runway incursions involve another aircraft, but there is ample time and distance to avoid a collision.

# Incursion - Severity Category




Category B runway incursions involve significant potential for collision.

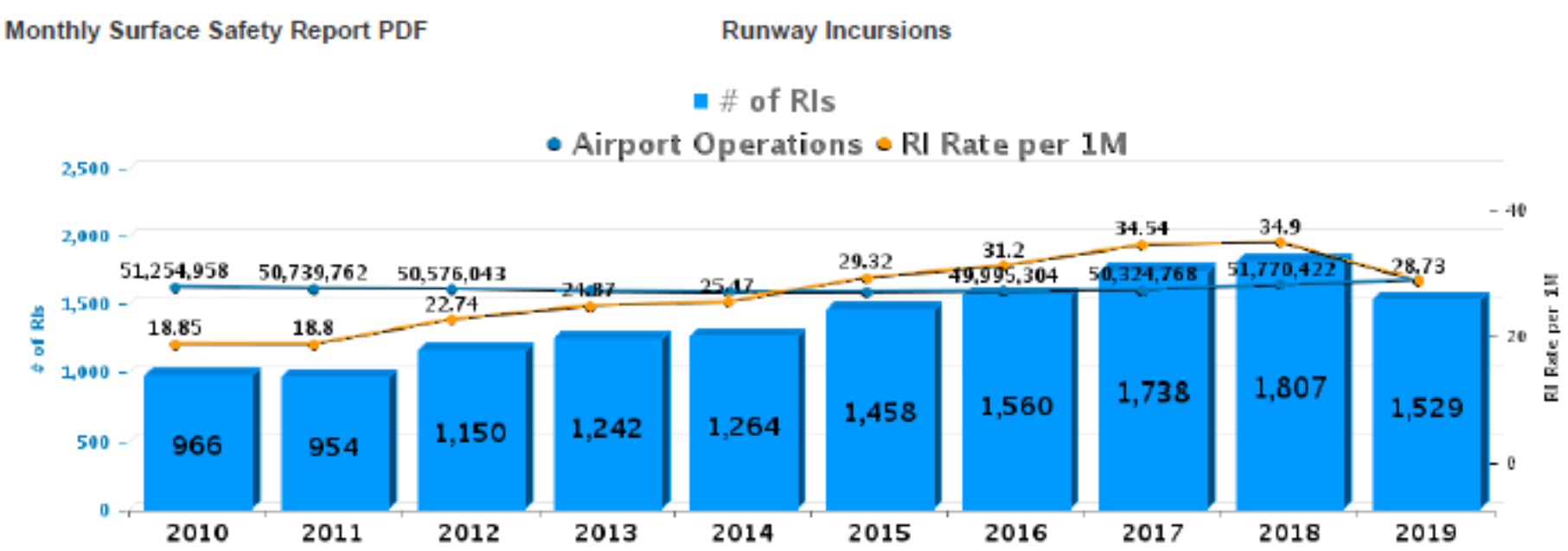
# Incursion - Severity Category




Category A runway incursions are events in which an accident occurred or was barely avoided. Usually characterized by aggressive evasive maneuvers.

# National Statistics

## Total Runway Incursions by Fiscal Year

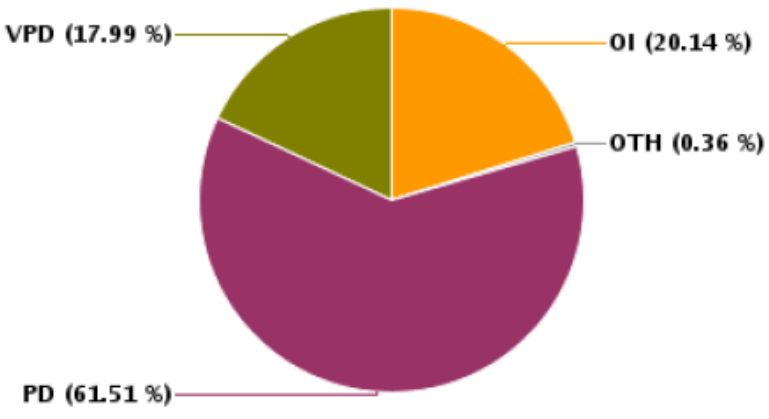


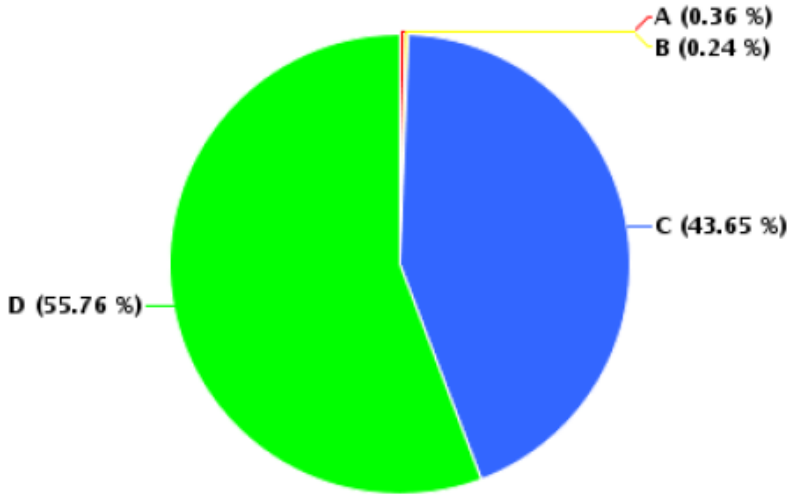

Data current as of October 1, 2019

# National Statistics

Data current as of 1/1/2018

## What Does the Data Show?

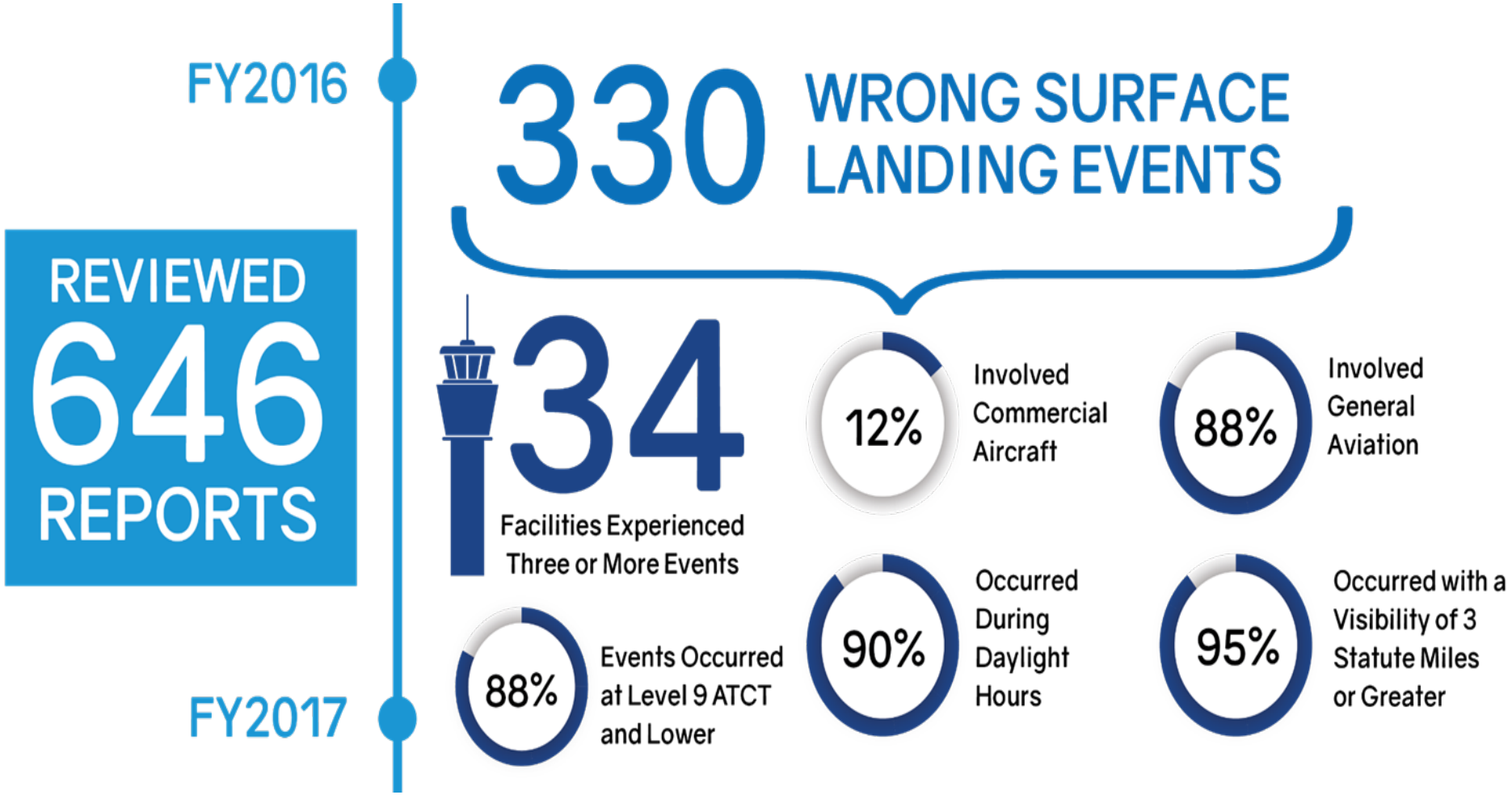



| Incident Type Category | # of RI's |
|---|---|
| OI | 168 |
| OTH | 3 |
| PD | 513 |
| VPD | 150 |
| **Sum:** | **834** |

| Severity Category | # of RI's |
|---|---|
| A | 3 |
| B | 2 |
| C | 364 |
| D | 465 |
| **Sum:** | **834** |

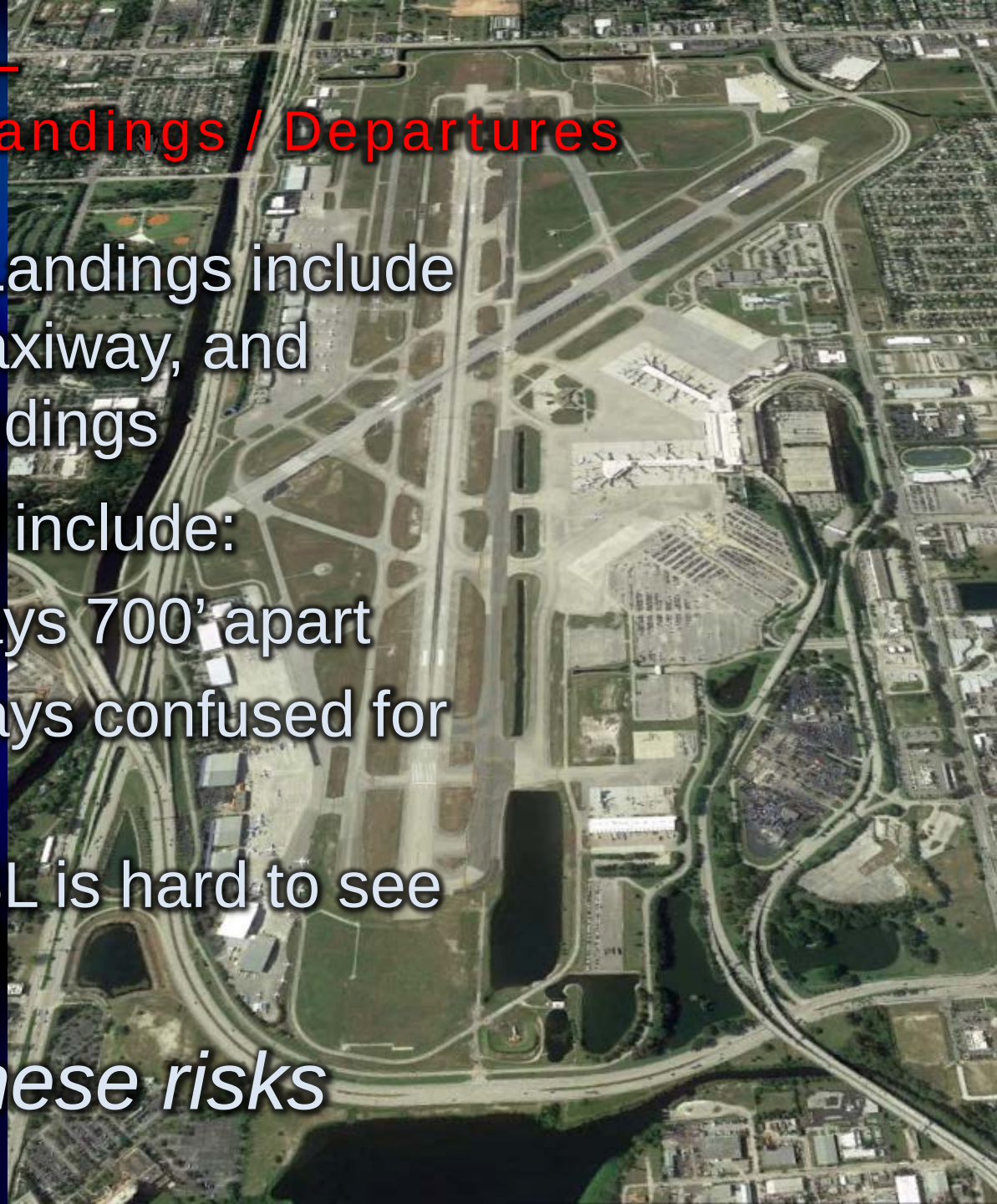
# National Trends - Wrong Surface Landings / Departures



# National Trends – Wrong Surface Landings / Departures

- Wrong Surface Landings include wrong runway, taxiway, and wrong airport landings
- Common factors include:
  - Parallel runways 700’ apart
  - Parallel taxiways confused for runways
  - RWY 10R / 28L is hard to see

***AIA** has all these risks*

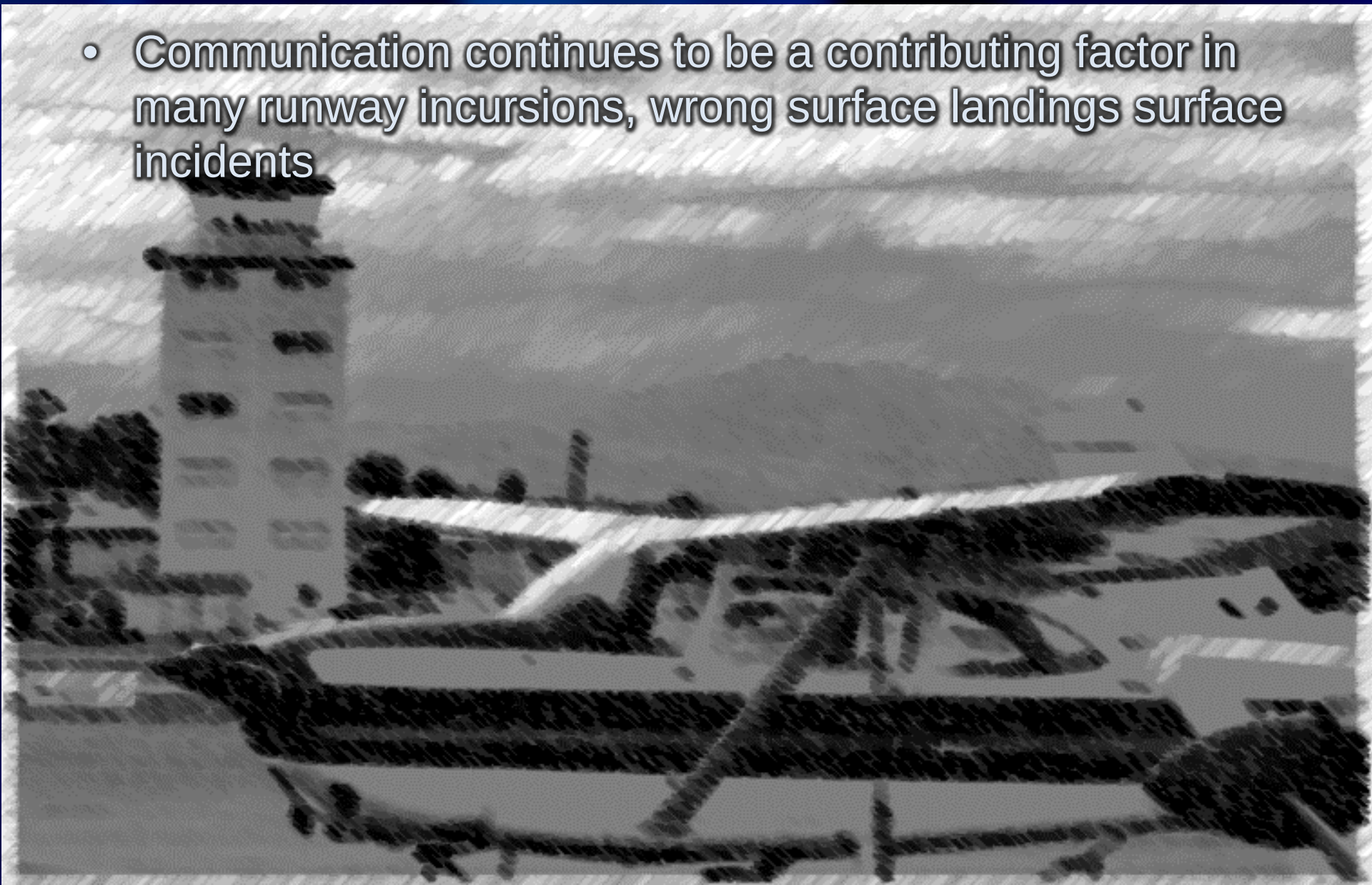


# National Trends – Wrong Surface Landings / Departures

- Pilot expectation bias the most common contributory factor in wrong surface landings
- Examples of “bias”:
  - Last minute runway change
  - Always expecting the same clearance
  - Not confirming airport layout
  - Falsely “hearing” what is expected opposed to what is actually happening
  - Not “seeing” taxiway / runways marking
  - Examples and discussion?

# National Trends - Communication Challenges

- Communication continues to be a contributing factor in many runway incursions, wrong surface landings surface incidents

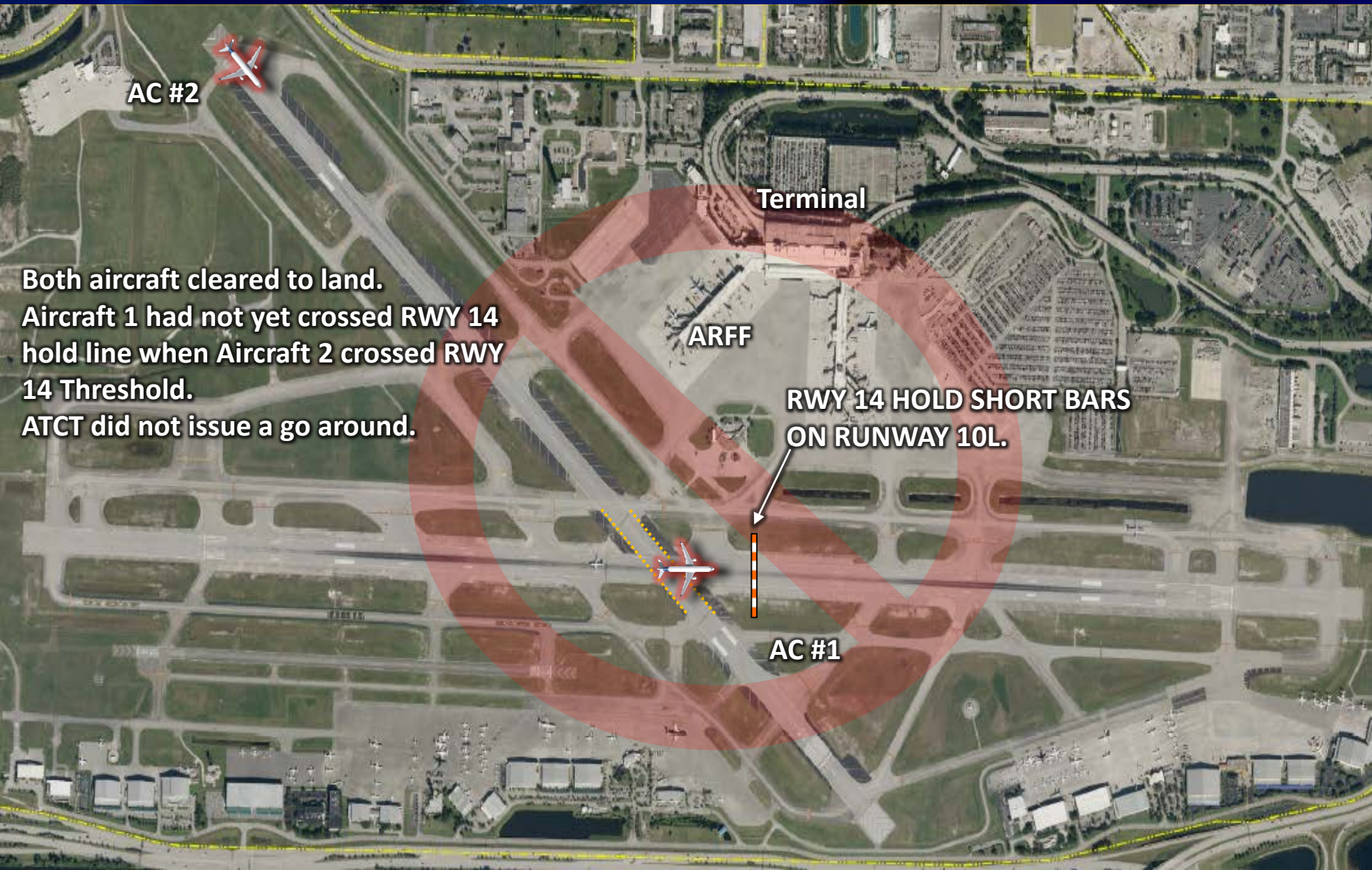


# Communication Best Practices

- Complete Read back / Hear back loop
- Use Prescribed Phraseology and Standard Format by pilots and controllers
- Maintain Situational Awareness including transmissions to other aircraft / vehicles
- Use appropriate Speech Rate
- Ask for clarification anytime!

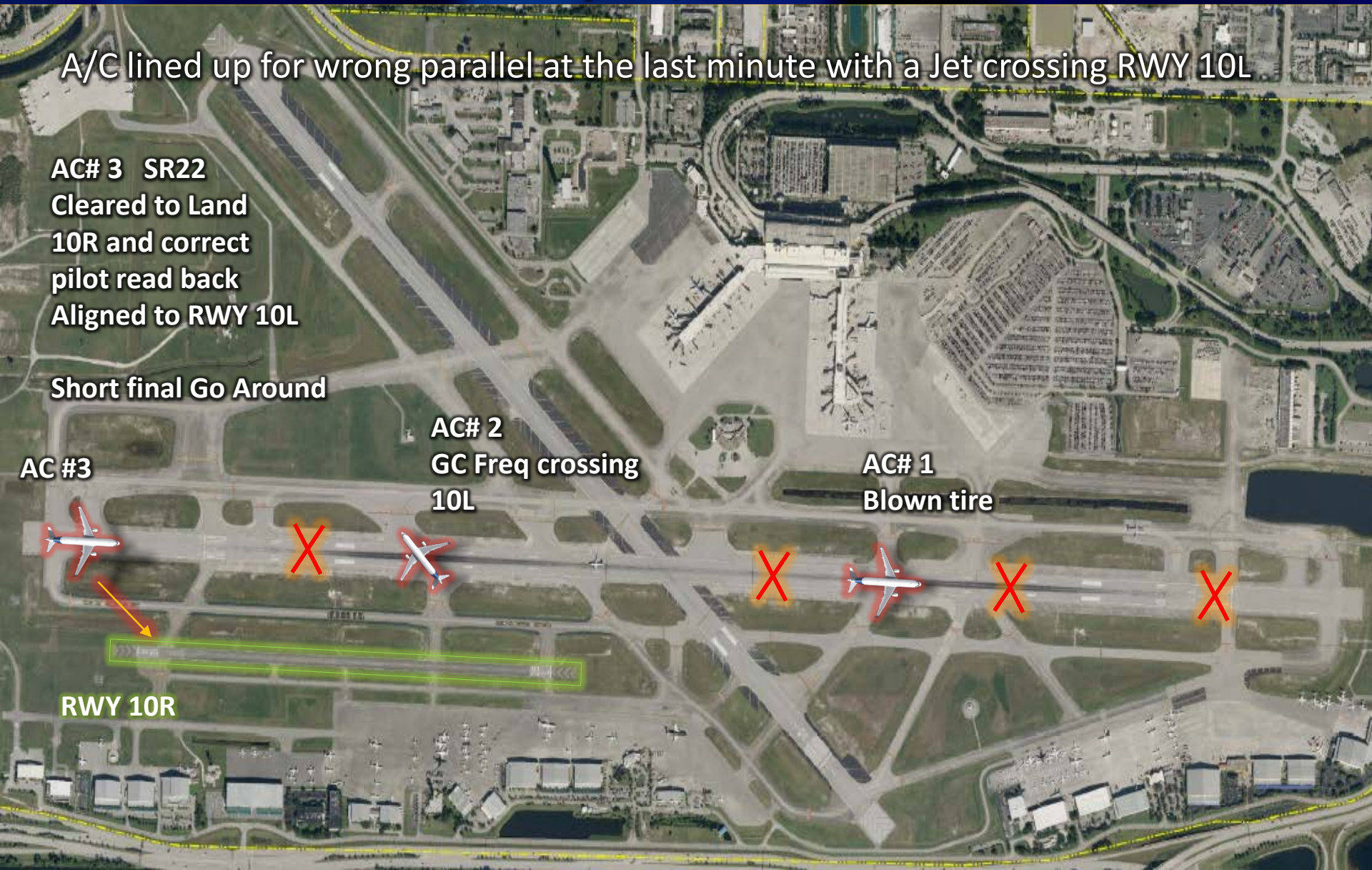
# Local Incidents #2

March 29, 2018



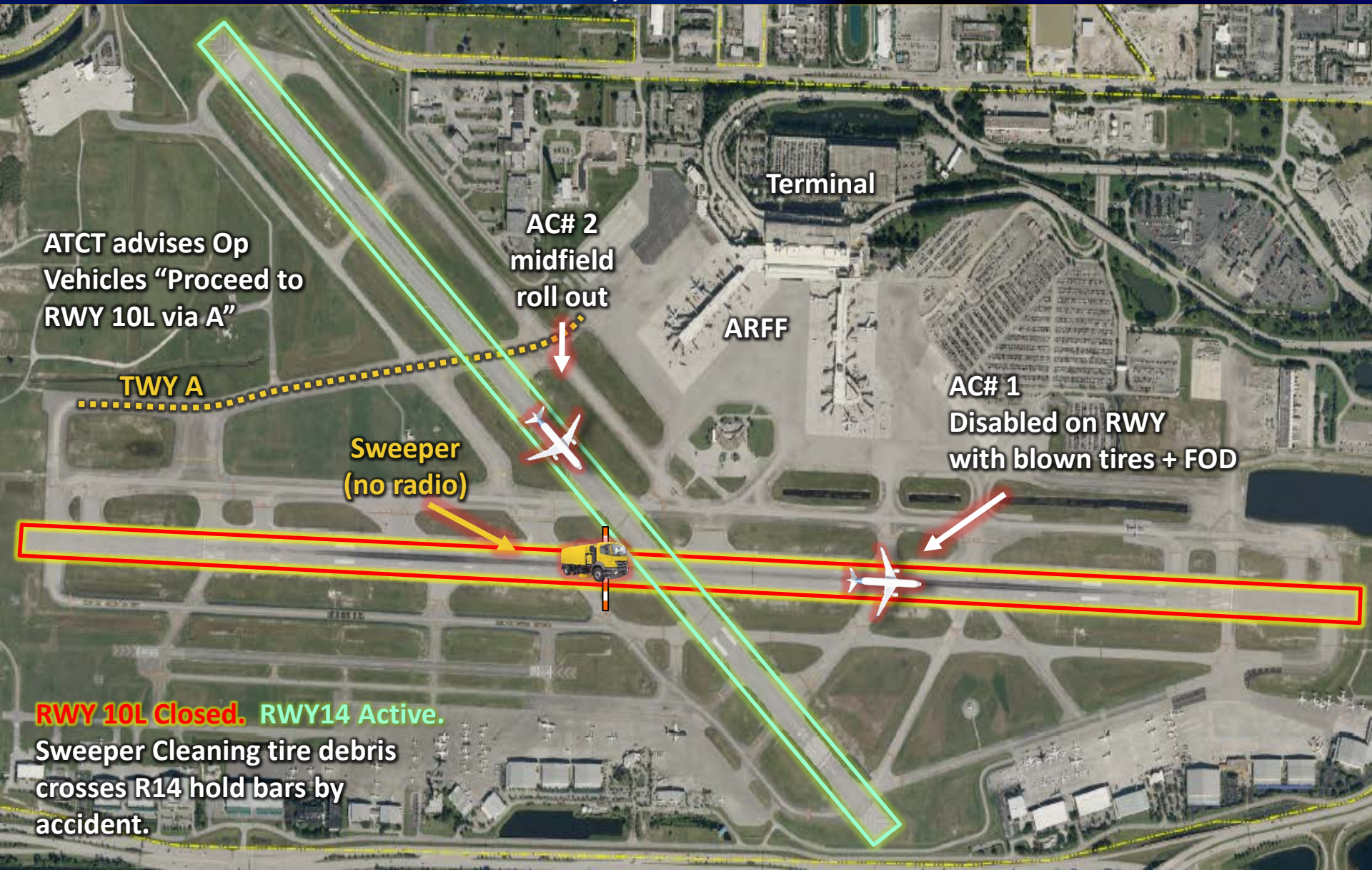
# Local Incidents #3

April 29, 2018



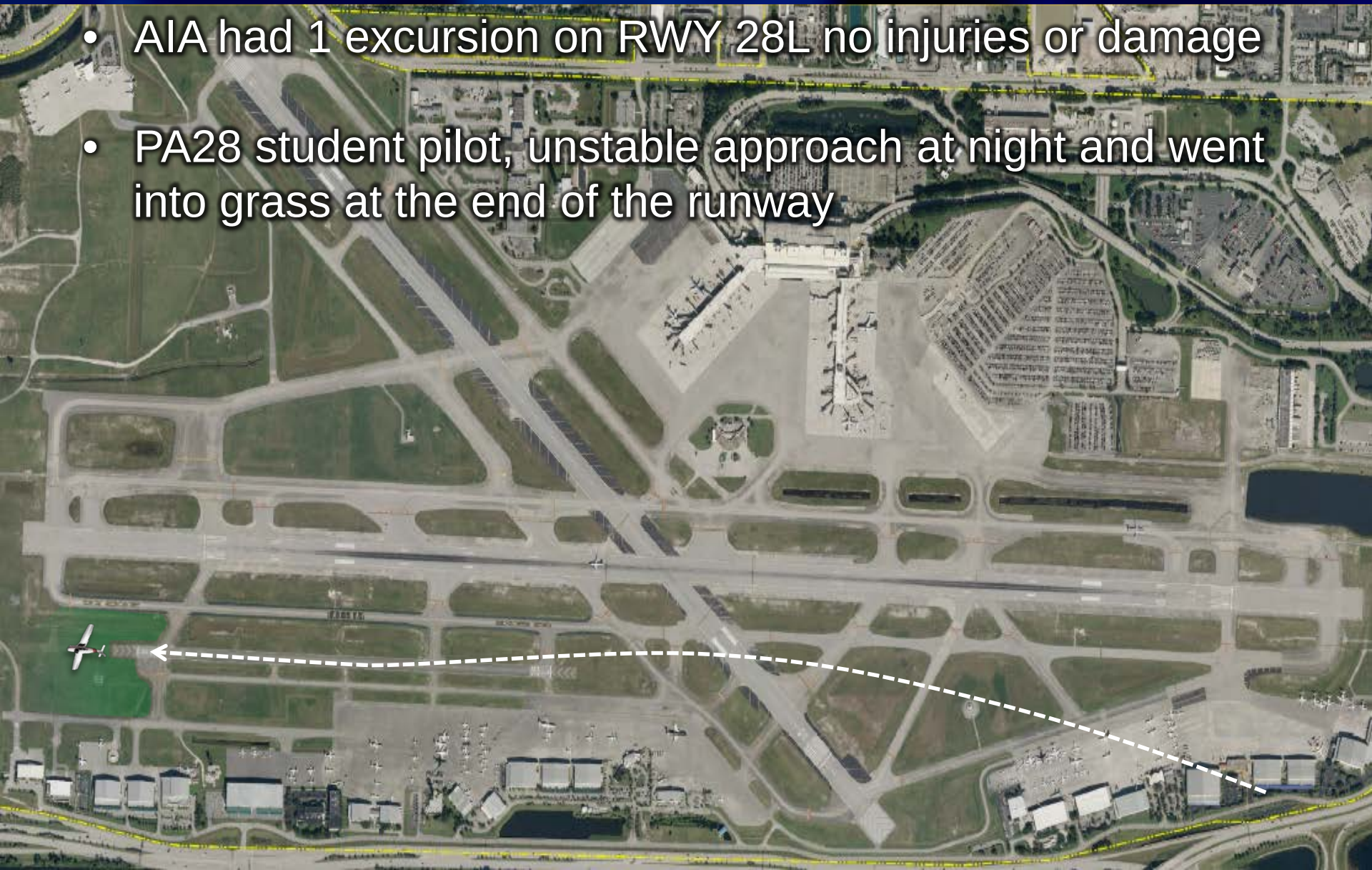
# Local Incidents #4

May 3, 2018



# Local Incident #5

- AIA had 1 excursion on RWY 28L no injuries or damage
- PA28 student pilot, unstable approach at night and went into grass at the end of the runway



# 2018 Action Item Review

## 2018

AIA-001: Runway 10L L hold bars are placed further back than expected. ***Info is now on ATIS + Hot Spot #1***

AIA-002: TWY R3 entry directly from ramp to RWY 10R and then TWY L1 to RWY 10L. ***Now - TWY L1 is now TWY P after re-labeling plan. Direct entry issue pending.***

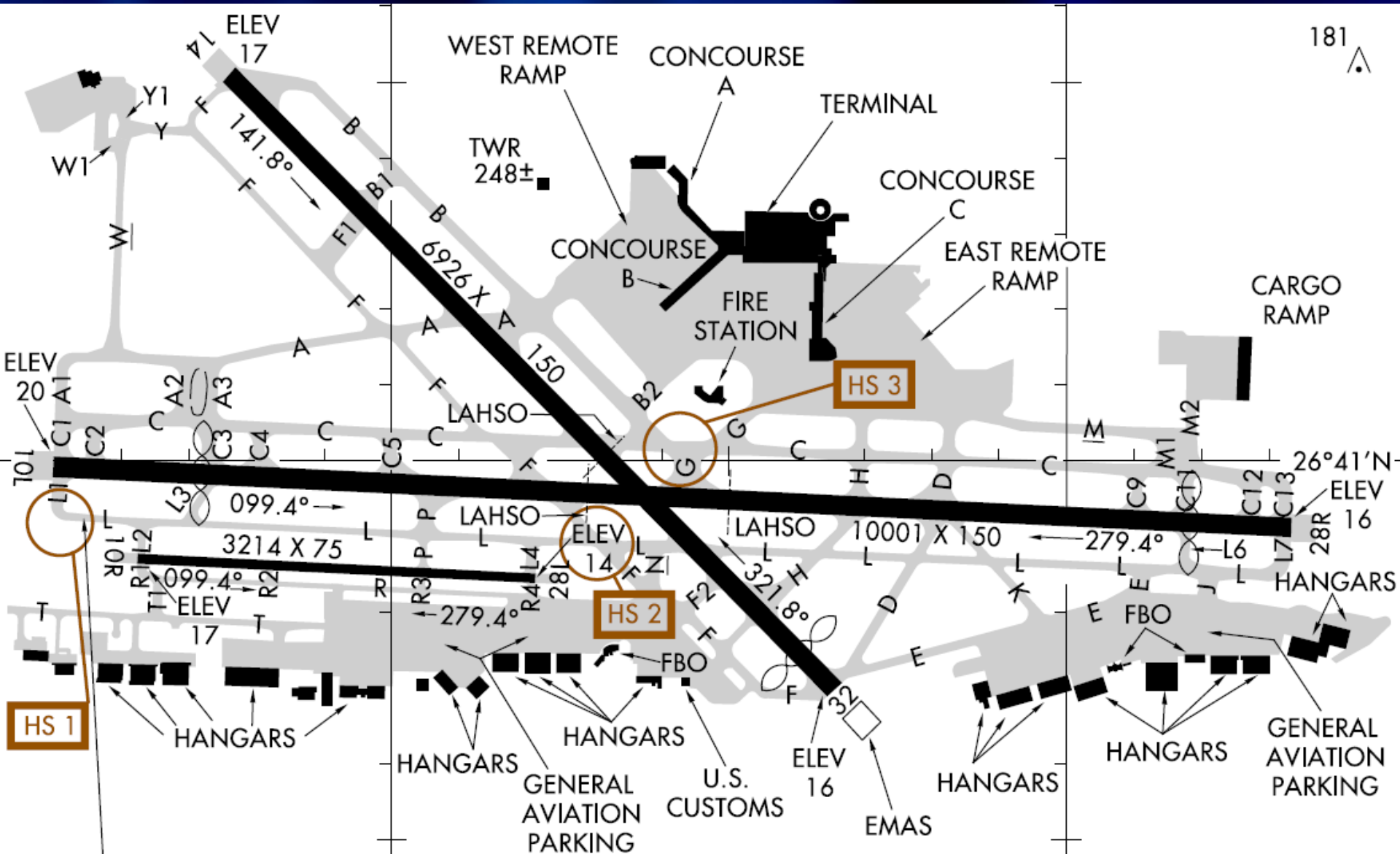
# Action Item Review cont'd

## 2018

AIA-003: Taxiway re-labeling plan.
***Completed in June 2018***

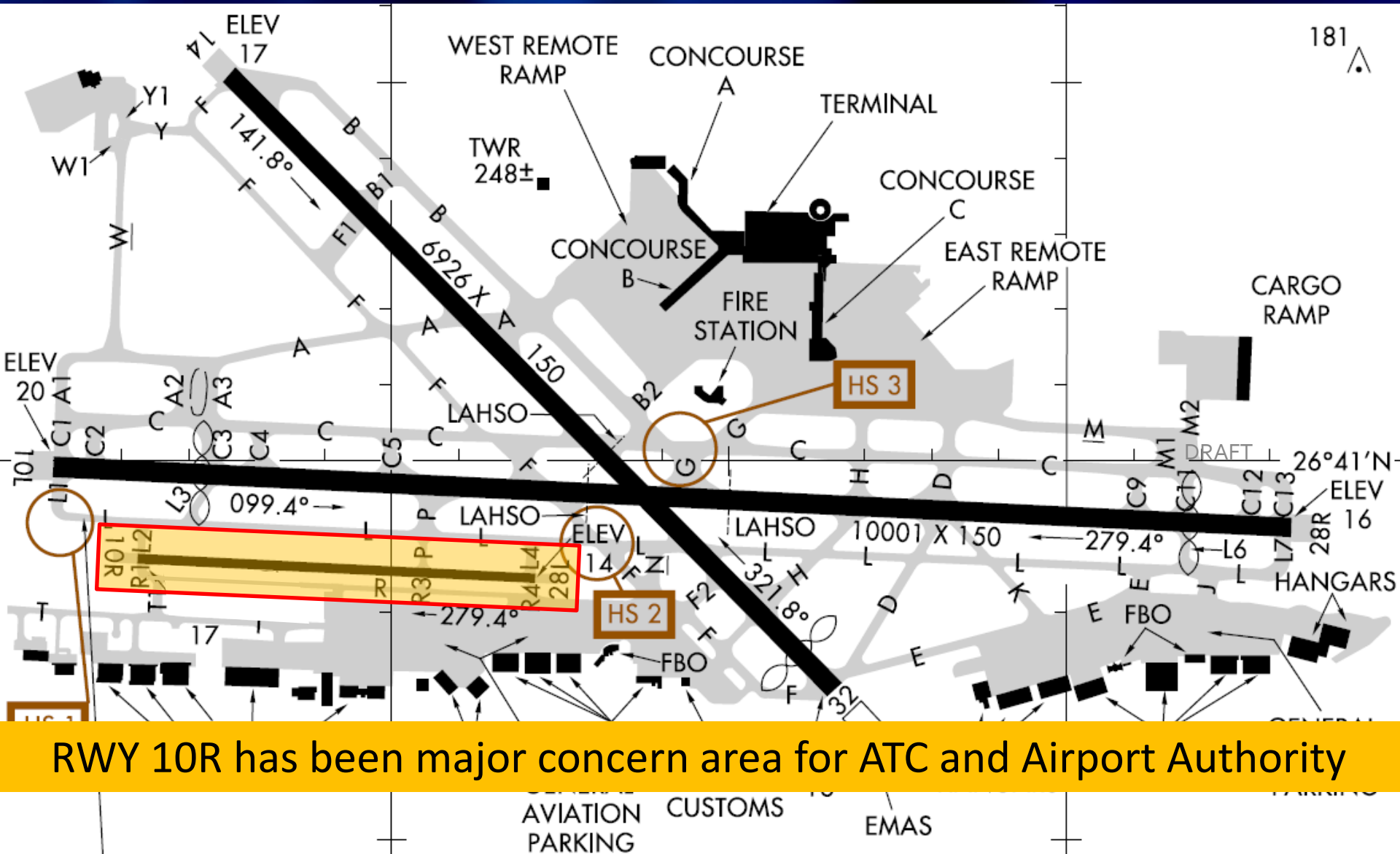
AIA-004: Strategic pushback plan during construction (Mentioned by Atlantis Airways at last RST).
***Construction phase completed in late 2018.***

# Risk Factors - AIA Hot Spots




Risk Factor - You are Cleared to Land
RWY 28L = Where is it?

# Risk Factor - RWY 10R/28L is Hard To See!




RWY 10R has been major concern area for ATC and Airport Authority

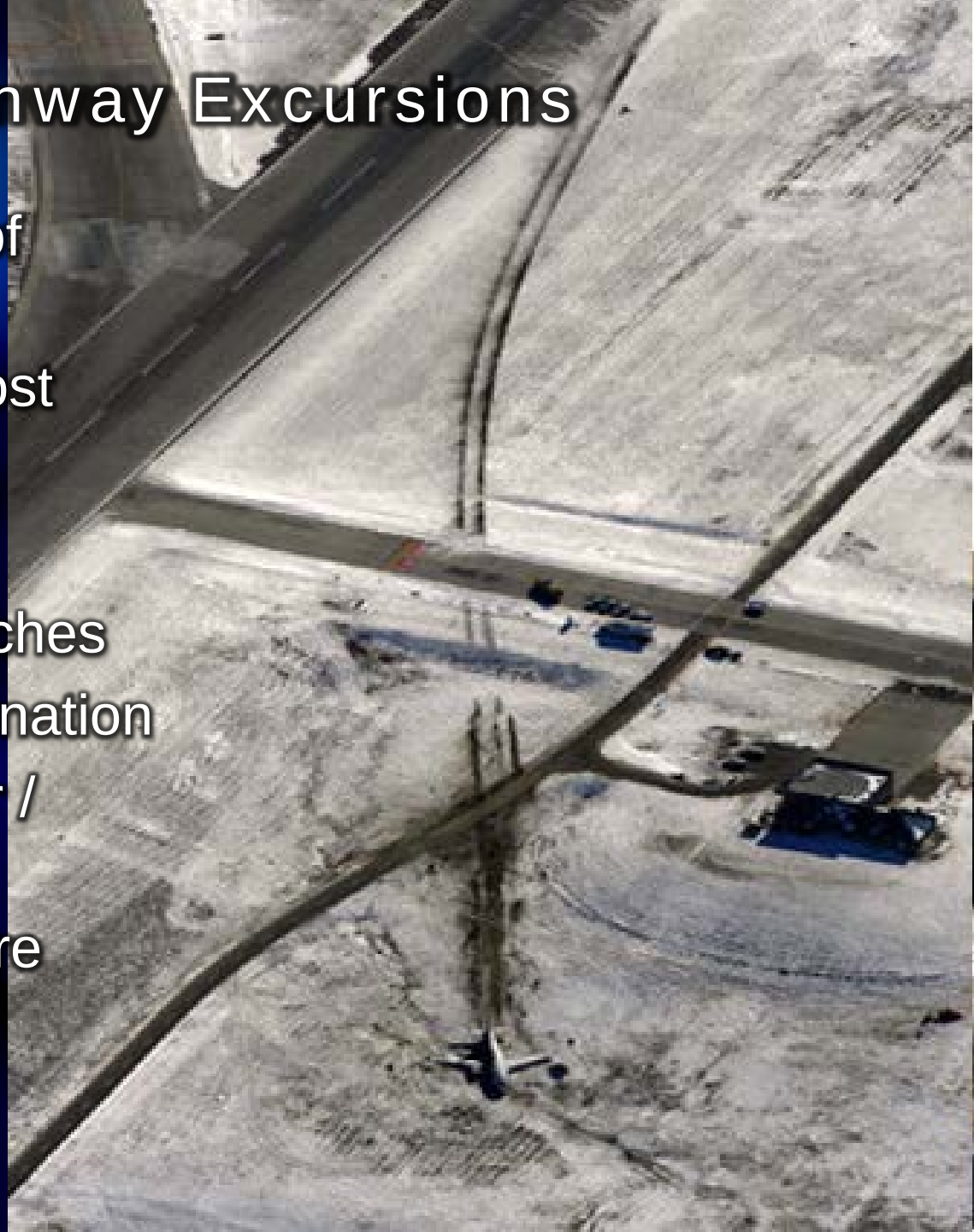
# Risk Factor - RWY 10R/28L is Hard To See!


RWY 10R has been major concern area for ATC and Airport Authority

# Risk Factor - Runway Excursions

- Number # 1 cause of accidents
- Estimated annual cost

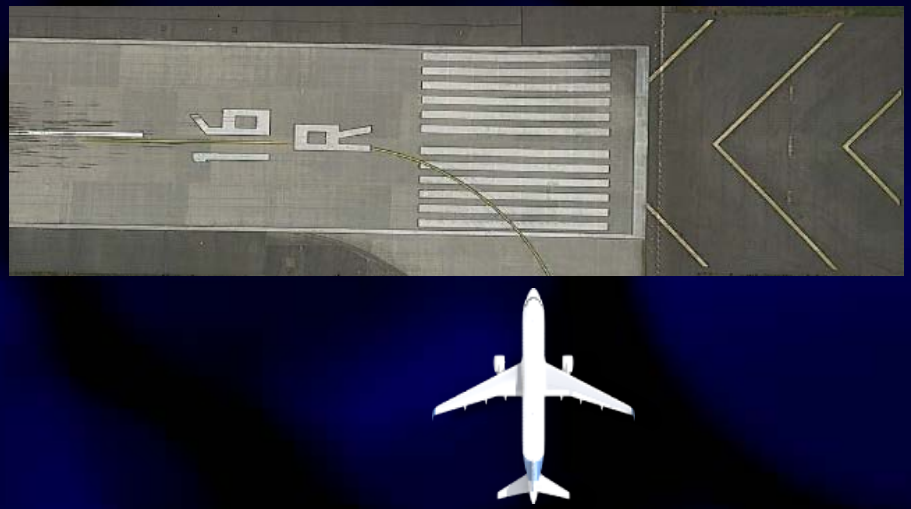
  $900 Million
- Causes
  - Unstable Approaches
  - Runway Contamination
  - Adverse Weather / Wind Conditions
  - Mechanical Failure
  - Pilot Error



# Risk Factors - Flyover Events

*SAFETY IN SECONDS*

**YOU HAVE LESS THAN A MINUTE TO DO THE RIGHT THING**



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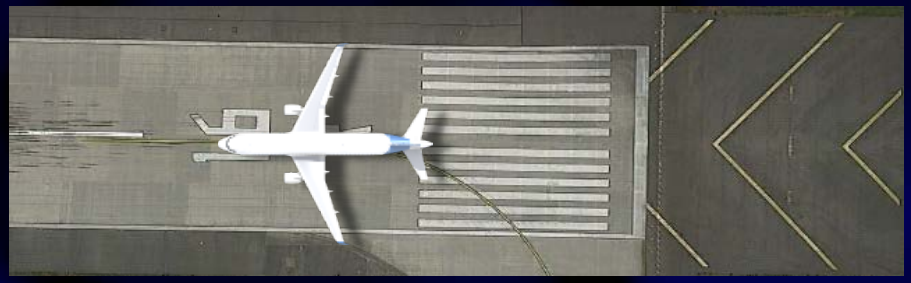

**AA1234**
**Line up**
**And wait**

# Risk Factors - Flyover Events

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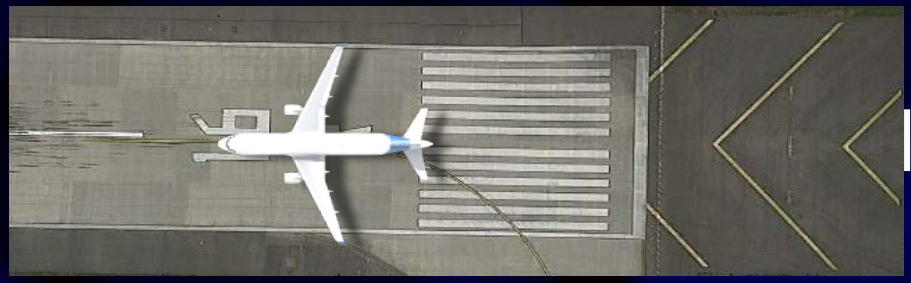


**AA1234**
**Line up**
**And wait**

**1.5 Miles**
**Approximately**
**45 Seconds**

**AA5678**
**Cleared**
**to land**

# Risk Factors - Flyover Events

*SAFETY IN SECONDS*

**YOU HAVE LESS THAN A MINUTE TO DO THE RIGHT THING**

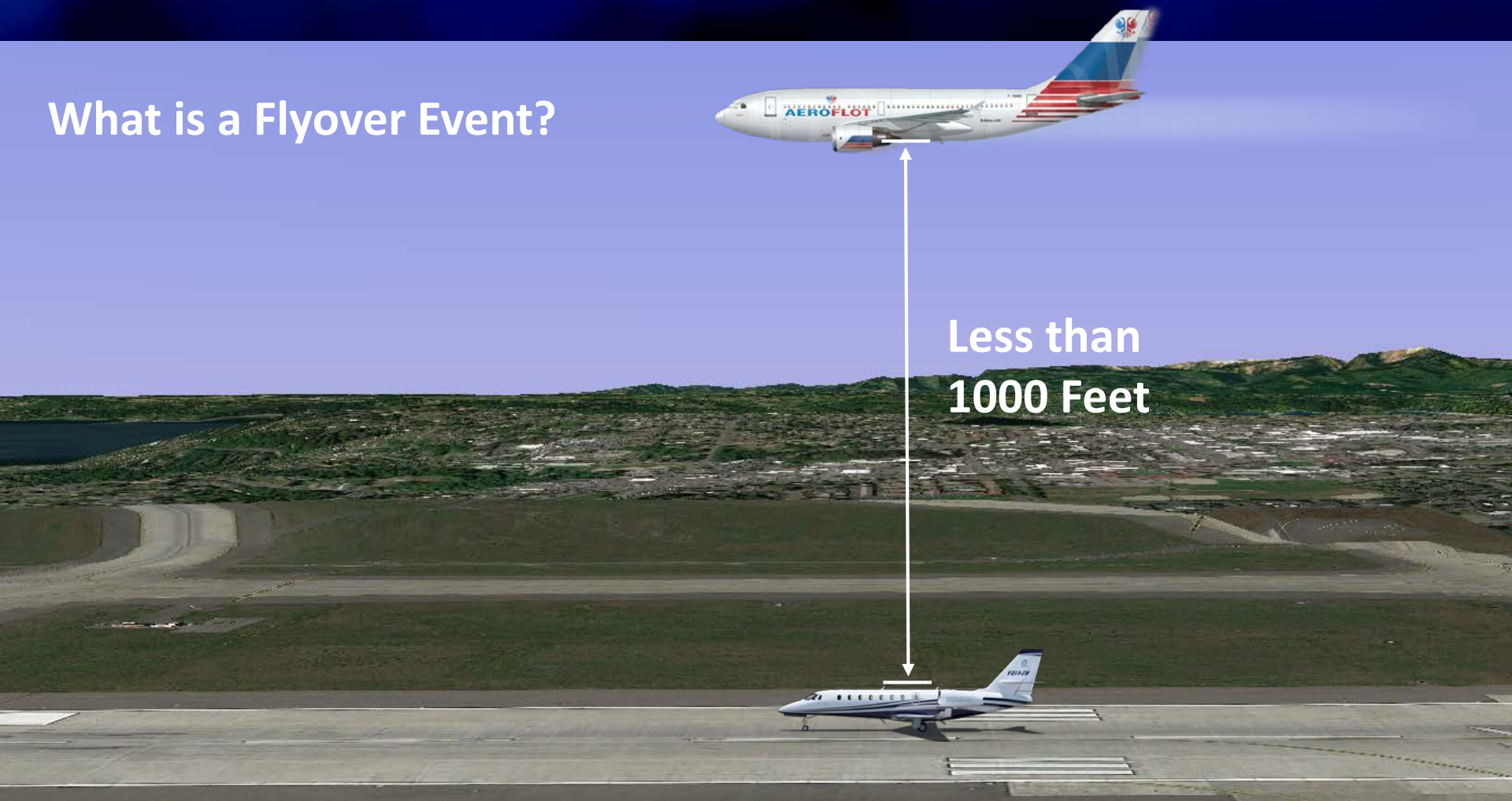
## What is a Flyover Event?

# Risk Factors - Flyover Events

*SAFETY IN SECONDS*

**YOU HAVE LESS THAN A MINUTE TO DO THE RIGHT THING**

**What is a Flyover Event?**



# Flyover Risk Mitigations

**Air Traffic Control:**

- Maintain situational awareness & immediately issue ATC recovery control instructions

**Pilots and Vehicle Drivers:**

- Maintain situational awareness, actively monitor radio, listen for potential threats/mistakes
- Look out the window. Continually scan the taxiway and runway environment for potential threats
- Know where you are, know what airport signage you should see and find it. If unable stop and contact ATC immediately
- Be vigilant. If you see something - say something – broadcast on the radio.

# Runway Safety Best Practices

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To mitigate the risk during surface operations, every user of the airfield should, must and can:

# Runway Safety Best Practices

To mitigate the risk during surface operations, every user of the airfield should, must and can:

- Review Airport Diagram & NOTAMs in advance
- Review & find visual cues you need to be safe
- Use prescribed phraseology and deliver an accurate read back of ATC instructions
- Use your call sign

# New Action Items 2019

- Action Items are a local plan to improve safety in our operation
- Our action items must be achievable within local resources
- Each action item should be specific, include a point of contact and anticipate an estimated completion date

# Reminder – Action Items

Action items may include, but are not limited to:

- Changes in physical features/facilities of the airfield
- Air traffic control procedures
- Airfield access requirements
- Pilot/vehicle operator awareness

# Lets identify our ACTION ITEMS

- ***Identify AIA runway safety concerns and develop excellent mitigations:***

# RUNWAY SAFETY ACTION ITEMS

***Suggested detail for Action Items***

Number : AIA ATCT-2018-001

Define Issue:

Proposed Solution:

Responsibility of : ATCT, Airport, etc.

Point of Contact :

POC email:

Estimated Start Date:

Estimated Completion Date:

# Wrap Up

***Comments, questions?***

Please provide feedback to meeting host

Also, please ensure your contact information is on the sign-in sheet.

***THANK YOU FOR YOUR PARTICIPATION!***