



Collaborating To Make Aviation Safer

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FAA Runway Safety Group

The Runway Safety Group serves as the focal point for all FAA runway safety efforts as well as the agency's primary representative to industry, national and international aviation entities on runway safety.

In our efforts to provide more insight into the effectiveness of the Runway Safety Program in reducing risk in the NAS, this presentation will be provided as it relates to one or more of the core Runway Safety Program activities:

Data Monitoring and Analysis (Safety Assurance)

Mitigation Plan Development (Safety Risk Assessment)

Safety Policy Changes

Outreach and Education (Safety Promotion)





Surface Safety

The Runway Safety Metric analyzes the severity and frequency of events involving runway excursions, Category A, B, C, and D incursions, and surface incidents to create a combined risk index

What has the data told us?

The number of runway safety accidents has remained relatively consistent.

The number of runway safety incidents has increased considerably, which is consistent with the FAA policies establishing the value of precursor information on safety events. These policies allow more events to be reported to better inform the runway safety mitigation activities.

NAS Runway Safety Risk has decreased as a result of more informed mitigation activities.

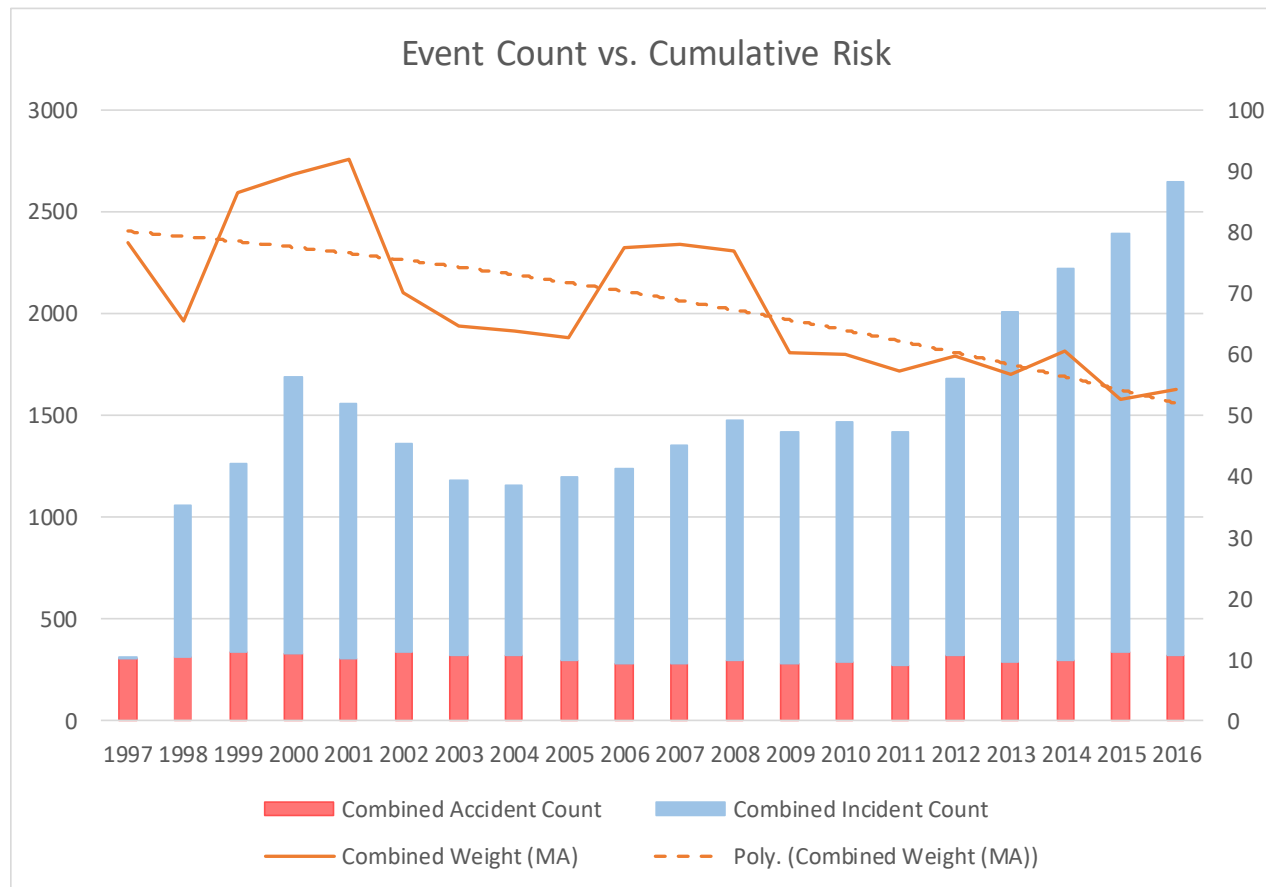




Surface Safety Risk Trend

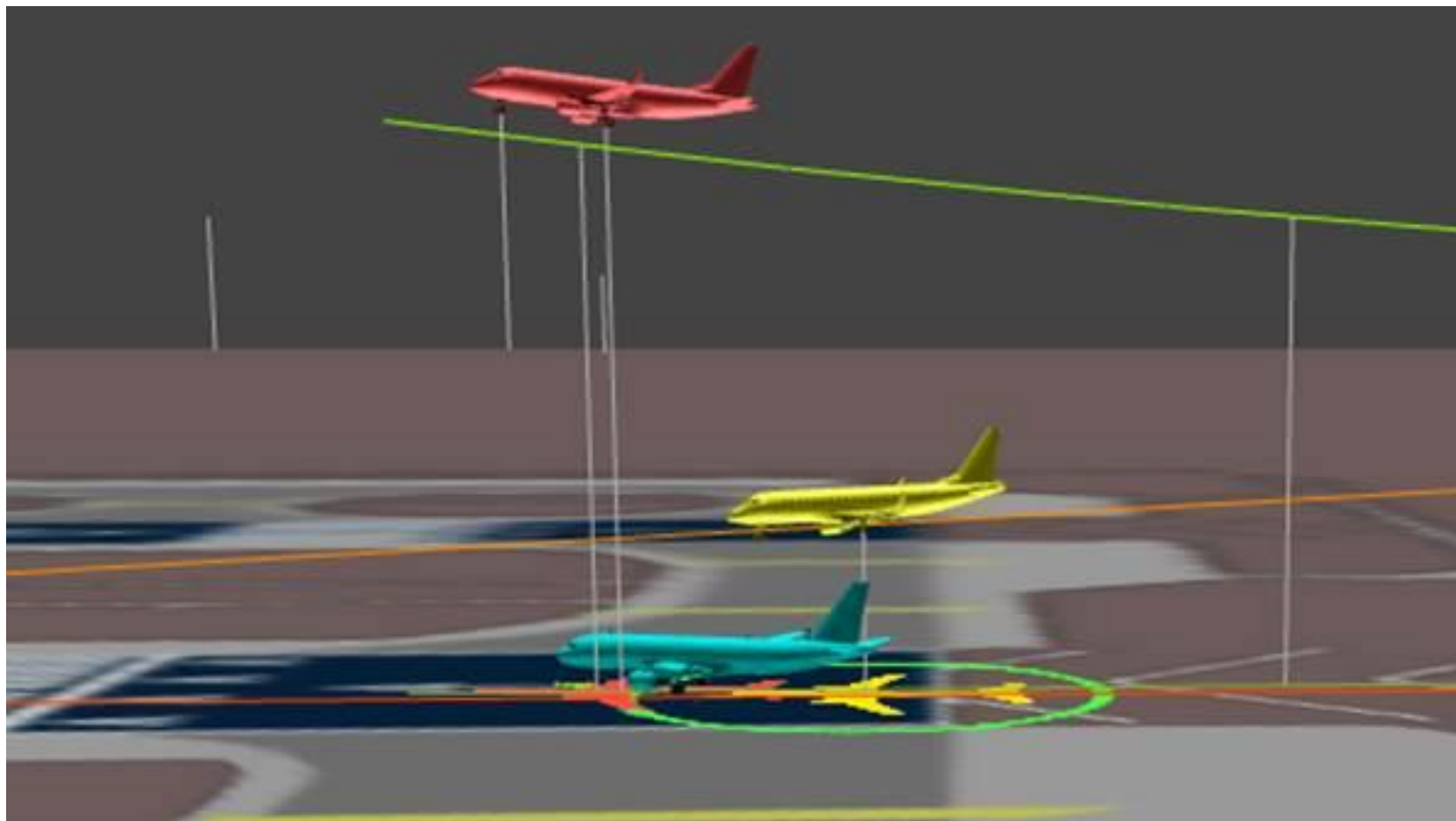
Observations:

- Risk decreased
- Reports increased
- Accidents relatively constant over time



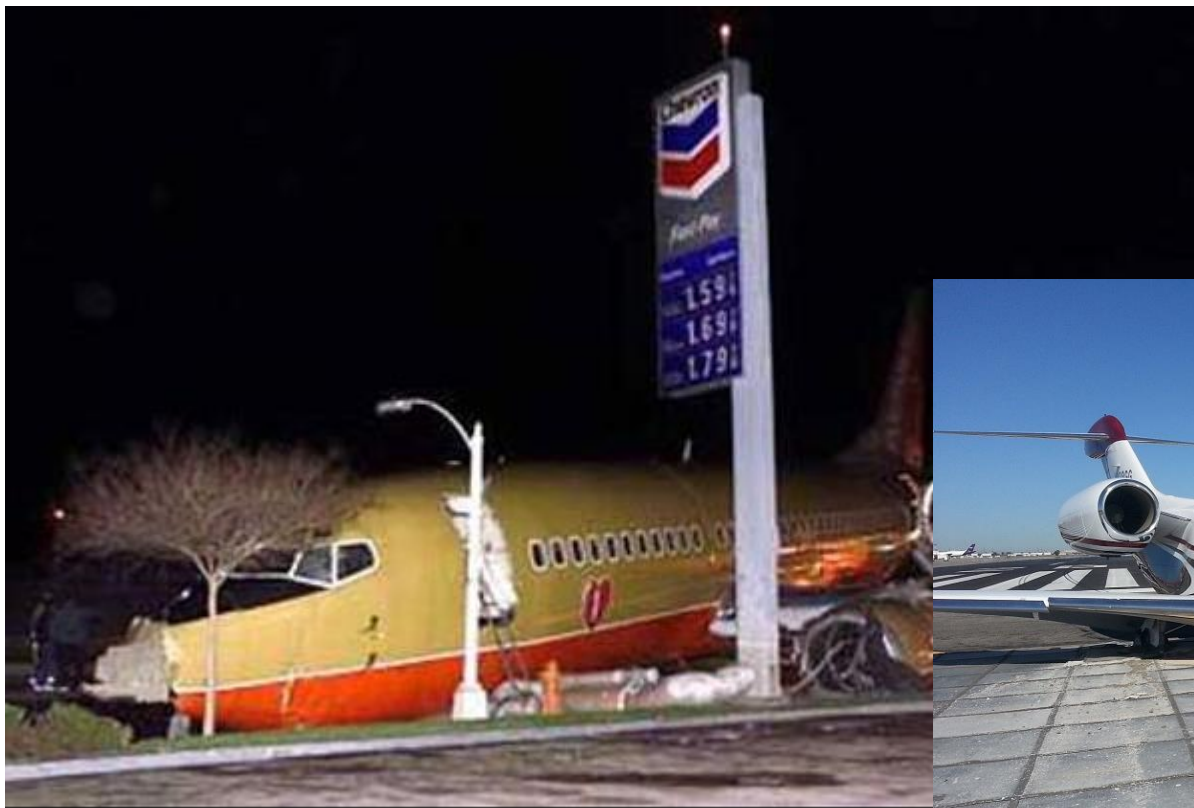


Safety Risk Management: **Reducing the Severity of Runway Incursions**





Safety Risk Management: Reducing the Severity of Runway Excursions





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





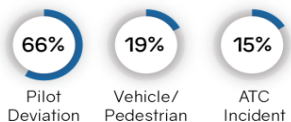
2017 Runway Incursions By The Numbers



12,857
Runway
Incursions

6,150
FY12 - FY16

OVER
10 YEARS



80% Involved General
Aviation Aircraft

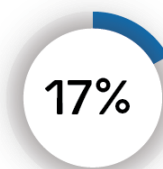


FY17 RUNWAY INCURSIONS

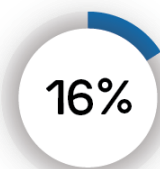
1,341
RUNWAY
INCURSIONS



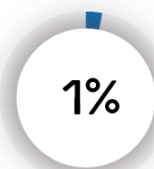
Pilot
Deviation



Vehicle/
Pedestrian



ATC
Incident

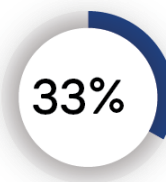


Other

6
A&B
EVENTS



ATC
Incident



Pilot
Deviation





Runway Safety Mitigation Plan Development (Safety Risk Assessment)

Identified Runway Incursions as one of the agency's priority Safety Issues for FY17

Conducted assessment of all FY16 category A, B, and C runway incursions to identify new or improve existing mitigations

Assessed more than 770 runway incursion events based on type to determine primary causal and contributing factors and barriers in place intended to mitigate the severity of the event

While many events could have been assigned several contributing factors and barriers, the primary factor or barrier was identified for purposes of understanding and analyzing these events.





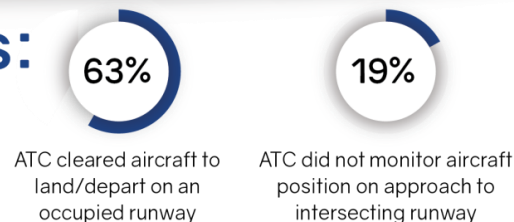
Assessment of A, B, & C Runway Incursion Data

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.

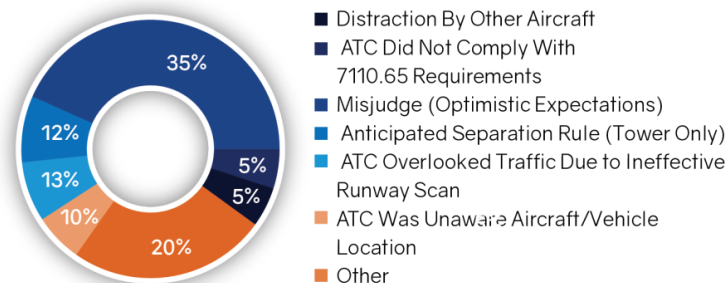
To identify the contributing factors and mitigations, Subject Matter Experts (SMEs) and panel members from Lines of Business (LOBs) across the agency, along with three representatives from various pilot organizations (e.g., Aircraft Owners and Pilots Association, the Air Line Pilots Association (ALPA),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

Reviewed 265 OIs

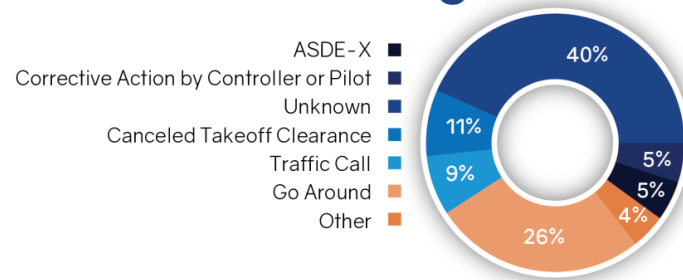
Causes:



Contributing Factor:



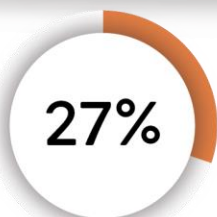
Barriers or Mitigations:



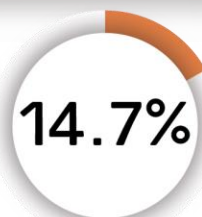


Analysis Summary 361 FY16 Pilot Deviations (PD)

Causes:



Pilot Failed to Hold Short of Runway as Instructed



Pilot Failed to Hold Short of Runway

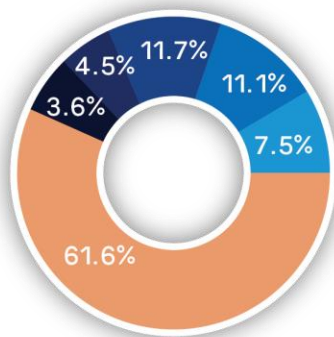


Pilot Did Not Follow ATC Clearance



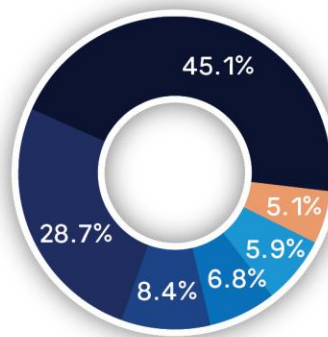
Pilot Departed Without Departure Clearance

Contributing Factor:



- Training
- Expectation Bias
- Distraction
- Inattention
- Confusion
- Communication

Barriers or Mitigations:



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





Analysis Summary of 74 FY16 Vehicle/Pedestrian Deviations (VPD)

Causes:

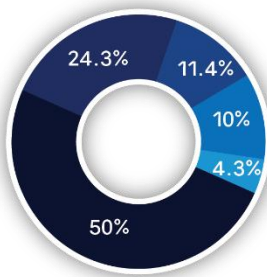
50%

Driver Entered the Runway Without ATC Authorization

50%

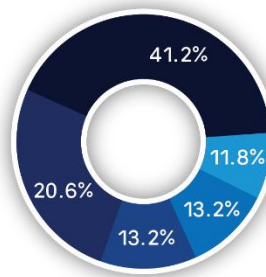
Driver Failed to Hold Short of Runway

Contributing Factor:



- Vehicle Driver Confusion
- ATC Unaware of Location of Vehicle
- Driver Failed to Follow Taxi Instructions
- ATC Did Not Ensure Correct Readback
- Incorrect/Inadequate Phraseology (ATC Speech)

Barriers or Mitigations:



- ATC Instructions to Aircraft
- ATC Instructions to Vehicle
- Airport Signs and Markings
- Vehicle Driver Training
- Surface Surveillance Technology, ASDE-X





Wrong Surface Landings and Approaches

FY2016

330 WRONG SURFACE LANDING EVENTS

REVIEWED
646
REPORTS



34

Facilities Experienced Three or More Events

12%

Involved Commercial Aircraft

88%

Involved General Aviation

90%

Occurred During Daylight Hours

95%

Occurred with a Visibility of 3 Statute Miles or Greater

88%

Events Occurred at Level 9 ATCT and Lower

FY2017





Wrong Surface Departures

FY2016

331 WRONG SURFACE DEPARTURE EVENTS

REVIEWED
635
REPORTS



35

Facilities Experienced
Three or More Events

17%

Involved
Commercial
Aircraft

82%

Involved
General
Aviation

86%

Events Occurred
at Level 9 ATCT
and Lower

86%

Occurred
During
Daylight
Hours

5%

ATC
Error

FY2017





ASDE-X Taxiway Alignment Alerting

- ASDE-X Runway Arrival Prediction has been adapted to alert when an arriving aircraft is aligned with a taxiway
- Runway predictions typically occur when the arriving aircraft is within 1-NM of the runway threshold
- Sample alerts (can be modified through adaptable configuration files):
 - “Warning, Runway Niner Right Occupied, Go-Around”
 - “Warning, Taxiway Tango, Go-Around”





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