



NTSB National Transportation Safety Board

Collaboration

for

Runway Safety

Presentation to: Safety
Standdown USA 2011

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Outline

- **NTSB Basics**
- **Incursions**
- **Excursions**
- **Confusions**

NTSB Basics

- **Independent agency, investigate transportation accidents**
- **Determine probable cause(s) and make recommendations to prevent recurrences**
- **Single focus is safety**
- **Primary product: Safety recommendations**
 - **Acceptance rate > 80%**

Runway Safety

For commercial aircraft, 1995-2008:

- Of 1429 accidents involving major or substantial damage , 431 (30%) were runway related**
- Those 431 runway related accidents included**
 - 417 excursions**
 - 10 incursions, and**
 - 4 confusions**
- 41 of those 431 accidents (10%) were fatal**
- 34 of those 41 fatal accidents (83%) were excursions**

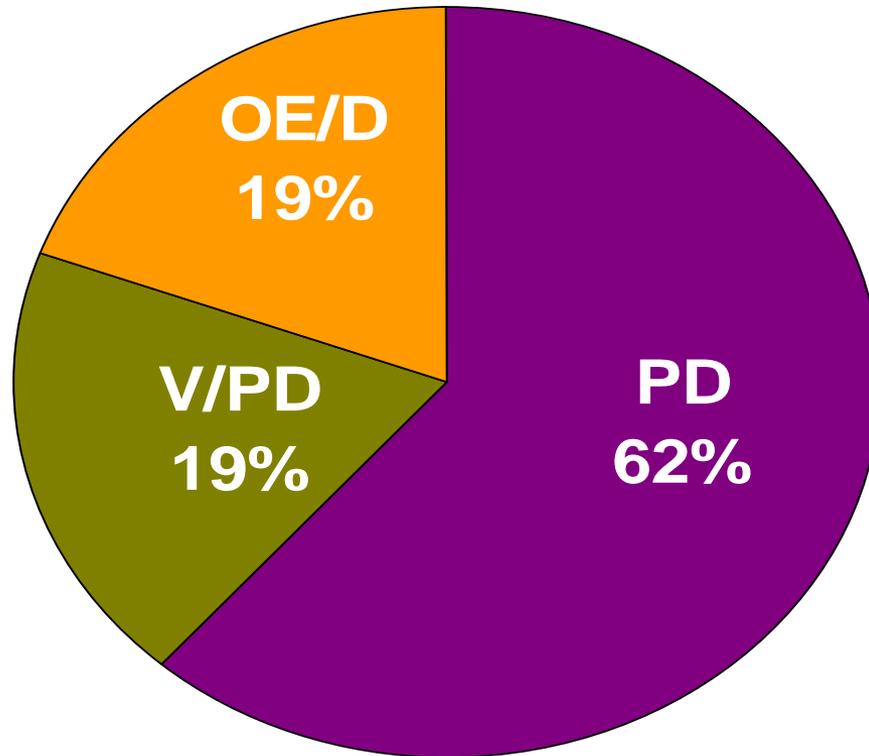
Runway Incursions

- **Previously defined by FAA as hazard created by airplane or vehicle on the runway when it should not have been**
- **Now generally defined as airplane or vehicle on the runway when it should not have been, whether or not hazard was created**
- **Runway incursion at Tenerife had most fatalities (583) of any aviation accident**

Recent Examples

- **December 31, 2010: A runway incursion occurred at the Denver International Airport involving a airport vehicle and an Embraer RJ-190**
- **March 19, 2010: A runway incursion occurred at the Phoenix Sky Harbor International Airport (PHX) involving a Cessna 208 and a Boeing 737-700**
- **January 31, 2011: A runway excursion led to a runway incursion at the Dayton International Airport involving an Embraer E145**

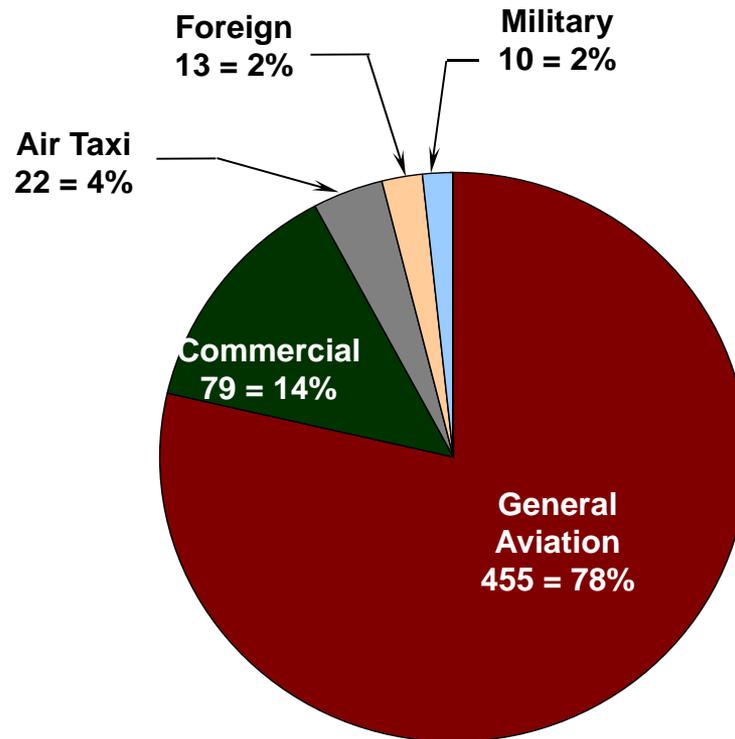
Type of Runway Incursions



FY 2006-2011

Source: FAA

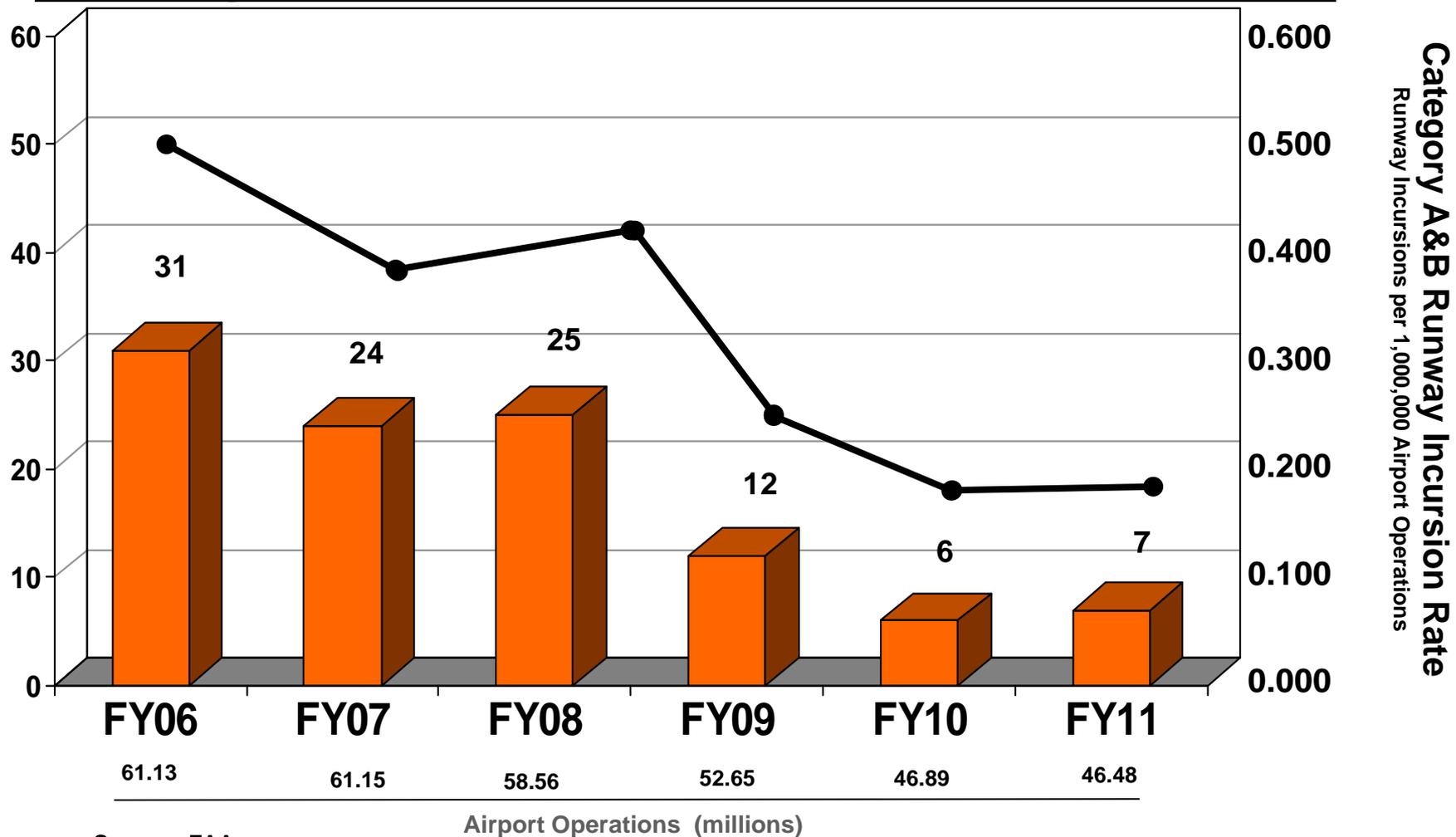
Runway Incursion Pilot Deviations by Type of Operation



579 Pilot Deviations

Source: FAA

Category A&B Runway Incursions



Source: FAA

NTSB Recommendations

- Immediate Collision/Incursion Warning in the Cockpit**
- Specific Clearance for Each Runway Crossing**
- Cockpit Moving Map Displays to Alert re Wrong Runway**

Current Process

- **ATC identifies type of problem**
- **Handling of problem depends largely on ATC's identification of who made the last mistake**
- **If ATC says ATC made last mistake: handled by ATC**
- **If ATC says pilot made last mistake: handled by FAA Flight Standards**

Suggested Process

- **Use same process, irrespective of who made last mistake**
- **Bring all involved parties (pilots, controllers, vehicle drivers) together, find out what happened**
- **No enforcement action (absent criminal, intentional wrongdoing)**
- **Ascertain totality of circumstances**

Runway Excursions

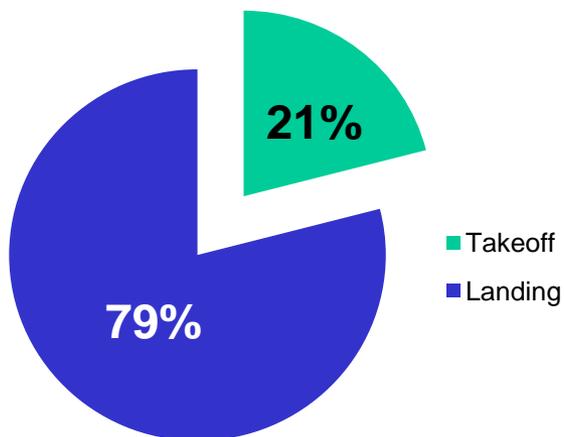
- Includes takeoff overruns, landing overruns, and departing the runway laterally during takeoff or landing
- Does not include landing short
- Occur more than 40 times as often as runway incursions
- More fatal accidents (but at a lower rate) than runway incursions

Recent Examples

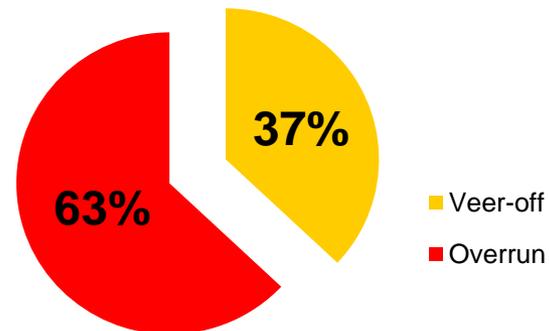
- **July 30, 2011: Caribbean Airlines Flight 523 overran the runway at Cheddi Jagan International Airport, Georgetown, Guyana**
- **April 4, 2011: United Airlines Flight 497 exited runway laterally at Louis Armstrong New Orleans International Airport after emergency landing due to warning of smoke in an equipment bay**
- **December 29, 2010: American Airlines Flight 2253 overran the runway at Jackson Hole Airport**

Runway Excursions

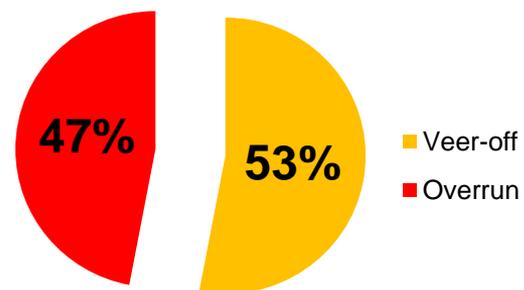
Total Excursions



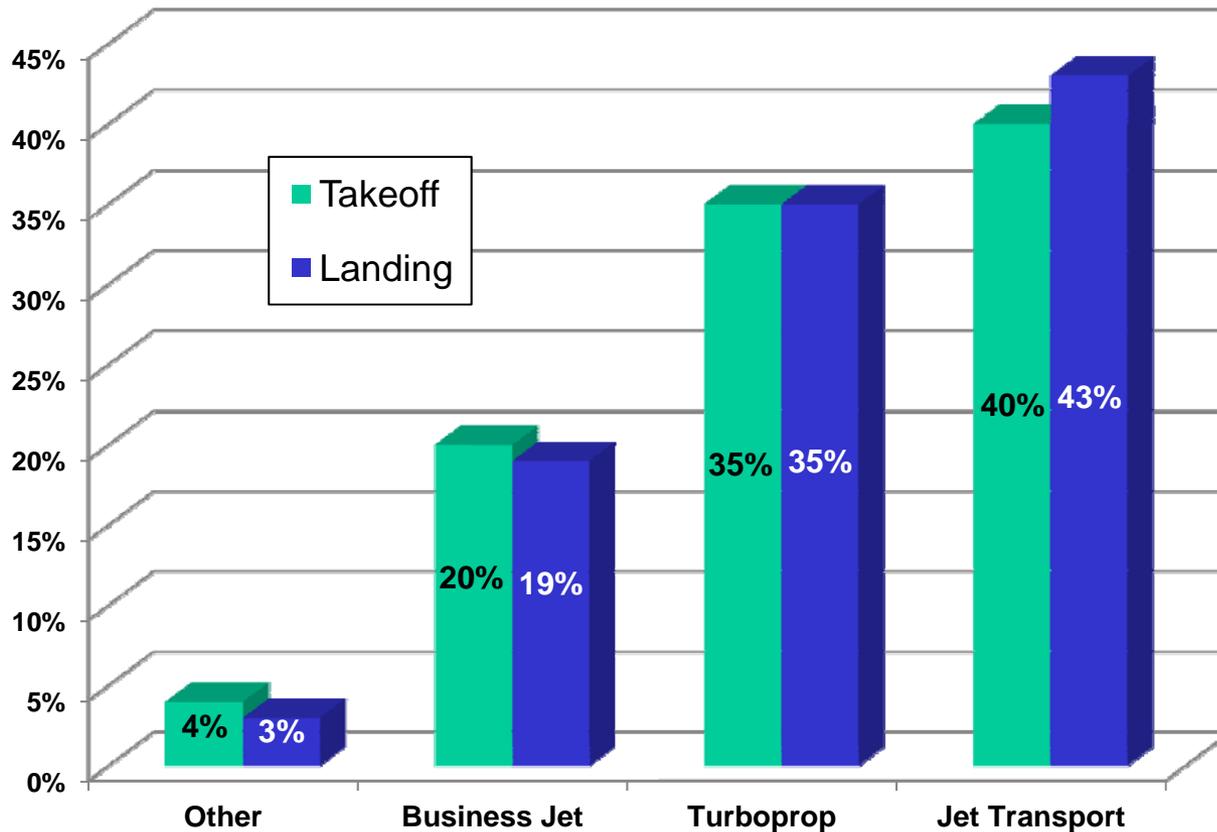
Takeoff Excursions



Landing Excursions



Runway Excursions by Aircraft Type



NTSB Recommendations

- **Owatonna, MN, 2008: Current information for landing distance assessments**
- **Denver, CO, 2008: Gusty crosswinds**
- **Chicago, IL, 2005: Landing distance assessments w/ 15% margin; braking condition reports; thrust reverser delay**
- **Burbank, CA, 2000: Runway safety areas; arresting systems**

Runway Confusions

- Includes using other than dedicated or assigned surface (usually a runway) for takeoff or landing, e.g., taxiway other than runway, or wrong runway
- Less than 1% of runway related accidents involving major or substantial damage

Recent Examples

- **Atlanta Hartsfield International Airport, 2009:**
Boeing 767, cleared to land on Runway 27R,
landed on taxiway M

- **Seattle-Tacoma International Airport, 2004:**
deHavilland DHC-8, cleared to land on Runway
16R, landed on Taxiway T

NTSB Recommendations

Atlanta

- **Determine if ASDE-X can detect improper operations such as landings on taxiways**
- **If so, implement modifications accordingly to provide alerts to air traffic controllers**
- **Amend FAA Order 7210.3, “Facility Operation and Administration,” to help assure that airport lighting control panels create desired lighting intensities**
- **Revise AC 150/5345-56A, “Specification for L-890 Airport Lighting Control and Monitoring System (ALCMS)” to help assure that airfield lighting meets FAA requirements**

Recommendations (con't)

Seattle

- **Conduct research to establish marking standards for use on taxiways at airports with a recurring taxiway landing problem**
- **Revise Advisory Circular 150/5340-1H, “Standards for Airport Markings,” accordingly**
- **Meanwhile, allow Seattle-Tacoma International Airport, as an interim solution, to apply large nonstandard taxiway identification markings to taxiway T**

Thank You!!!



Questions?