

# Runway Safety Solutions – Preventing Incursions

## Aerodrome Operations Perspective

Presented to: ICAO Global Runway Safety Symposium

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Administrator for Airports

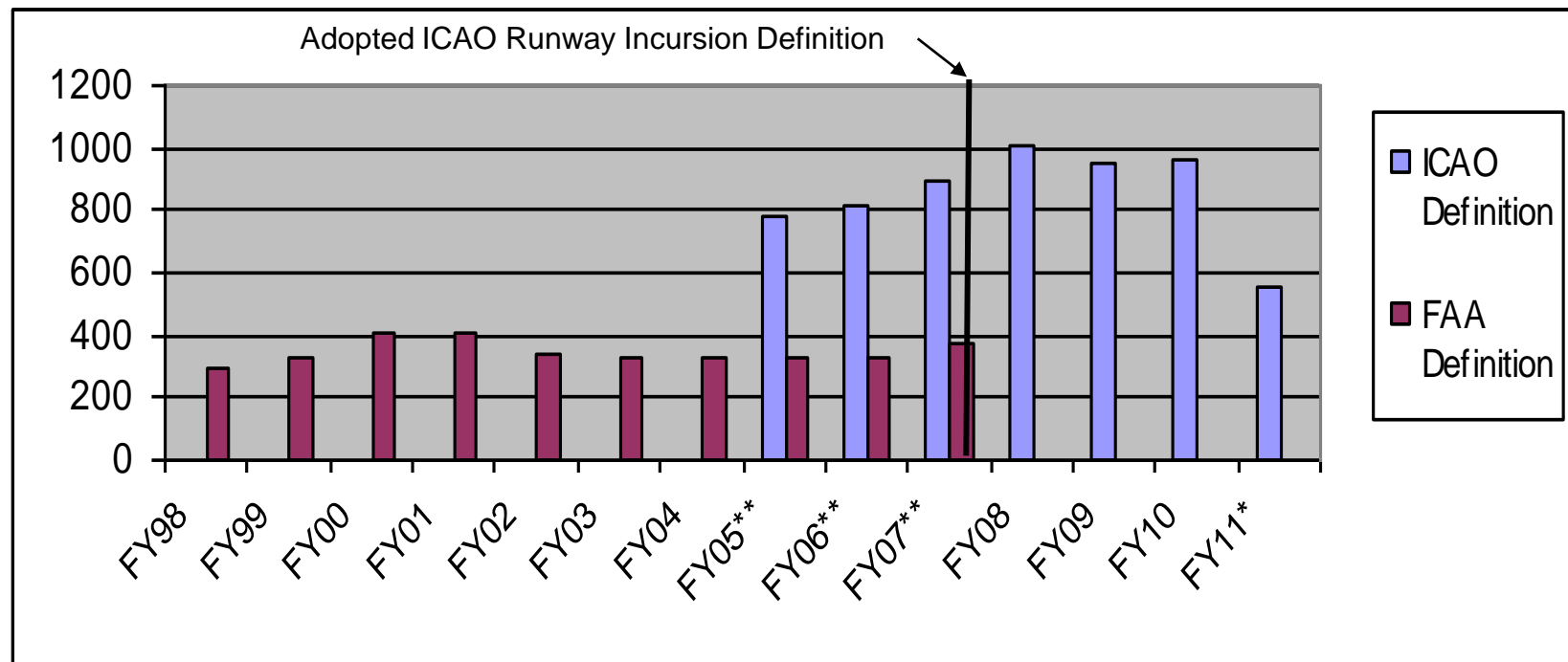
Date: May 25, 2011



Federal Aviation  
Administration



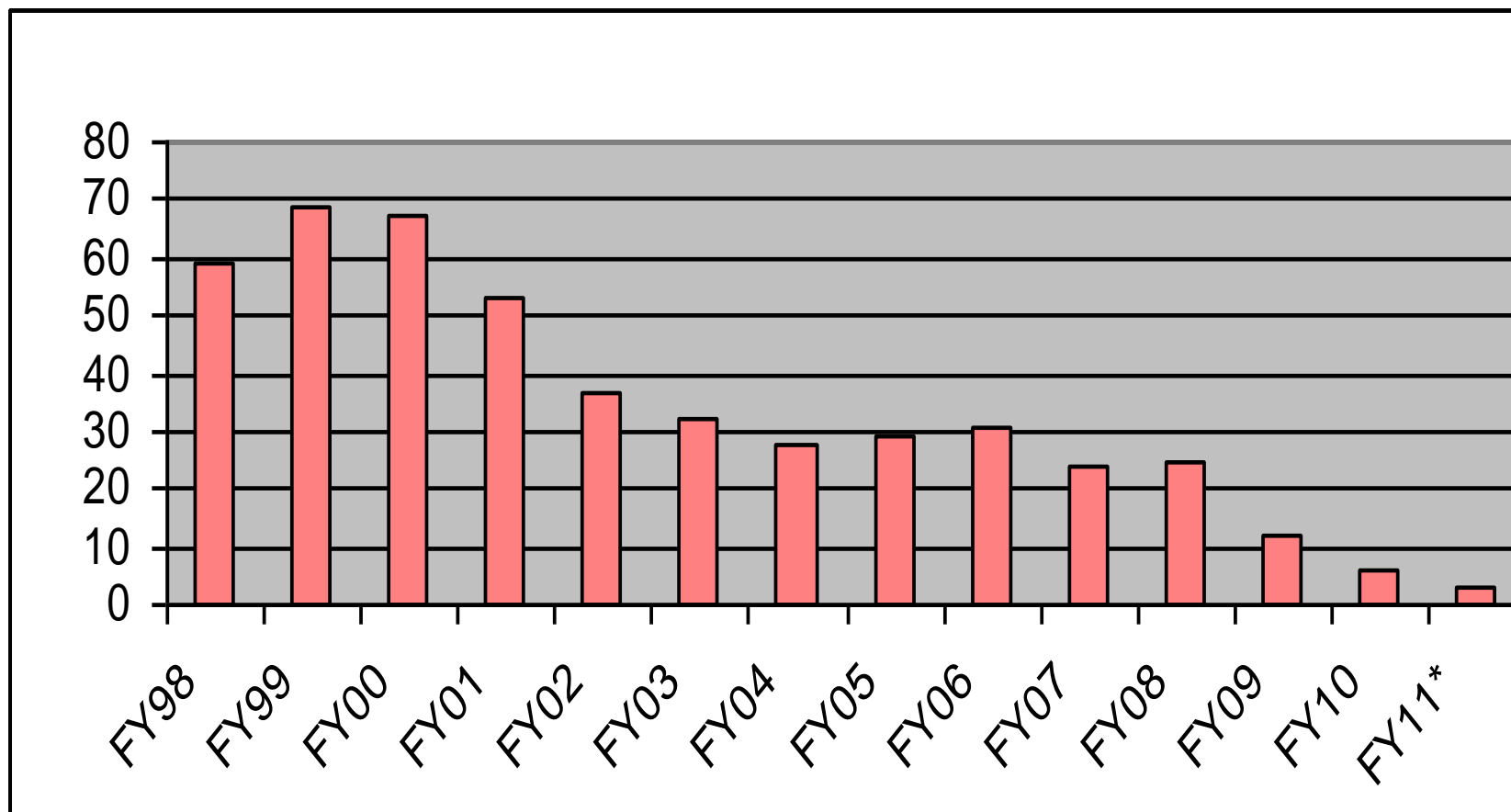
# Variability of Runway Incursions



\*FY11 data through May 1, 2011

\*\*ICAO numbers for FY07, FY06, and FY05 are estimates based on applying the ICAO definition to FAA incursions definition data.

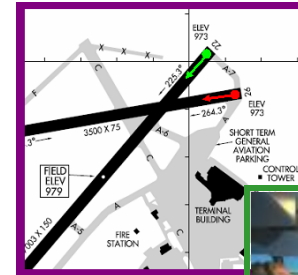
# Serious Runway Incursion Trend



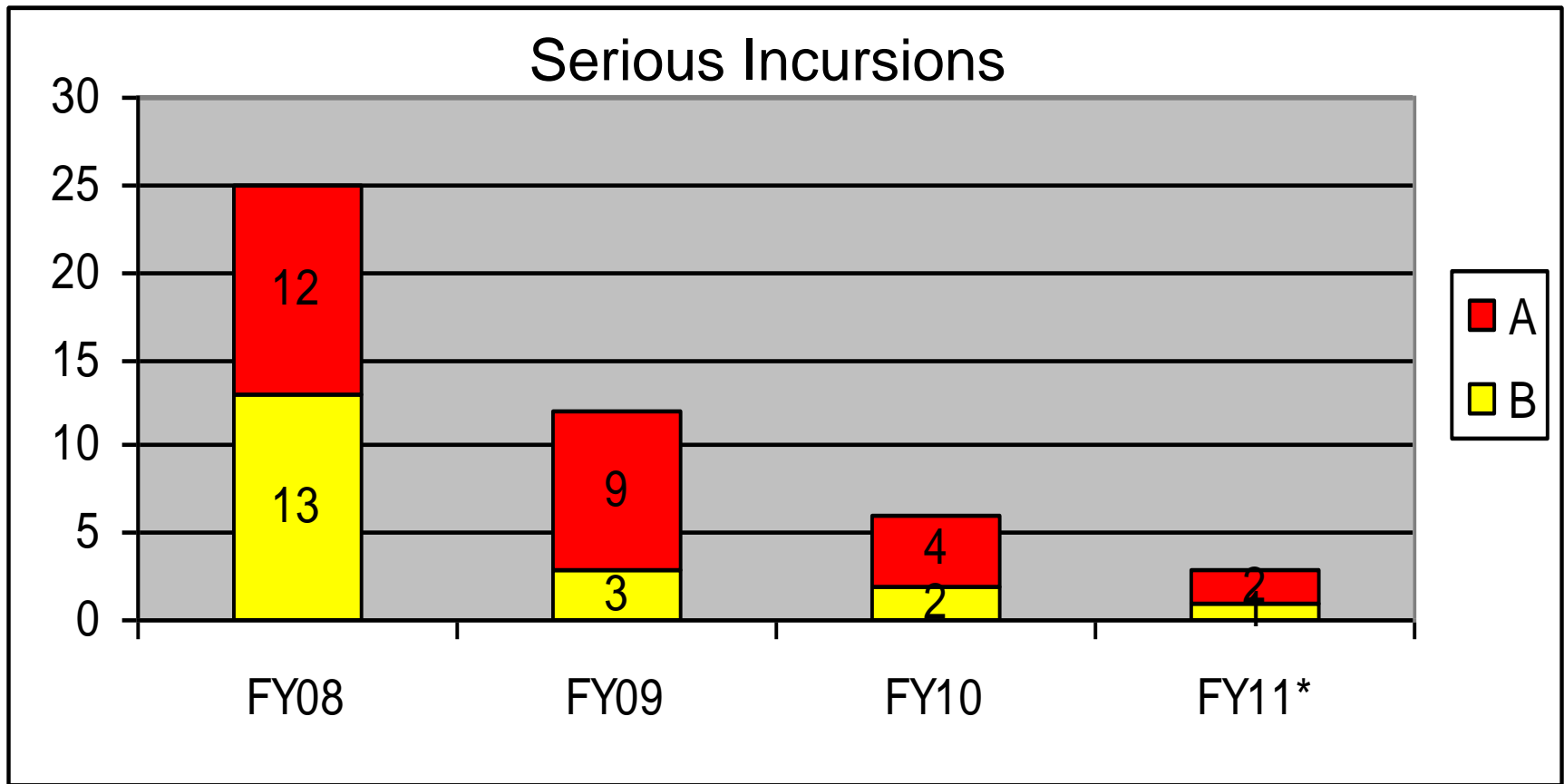
\*FY11 data through May 1, 2011

# Call to Action – August 2007

- **Safety Reviews at Aerodromes where Wrong Runway Departures & Incursions Causing Greatest Concern**
- **Training across the Aviation Industry**
- **Accelerate Deployment of Enhanced Taxiway Markings**
- **Review Cockpit Procedures and Air Traffic Control Procedures**
- **Implement Voluntary Self-Reporting for Air Traffic Personnel**

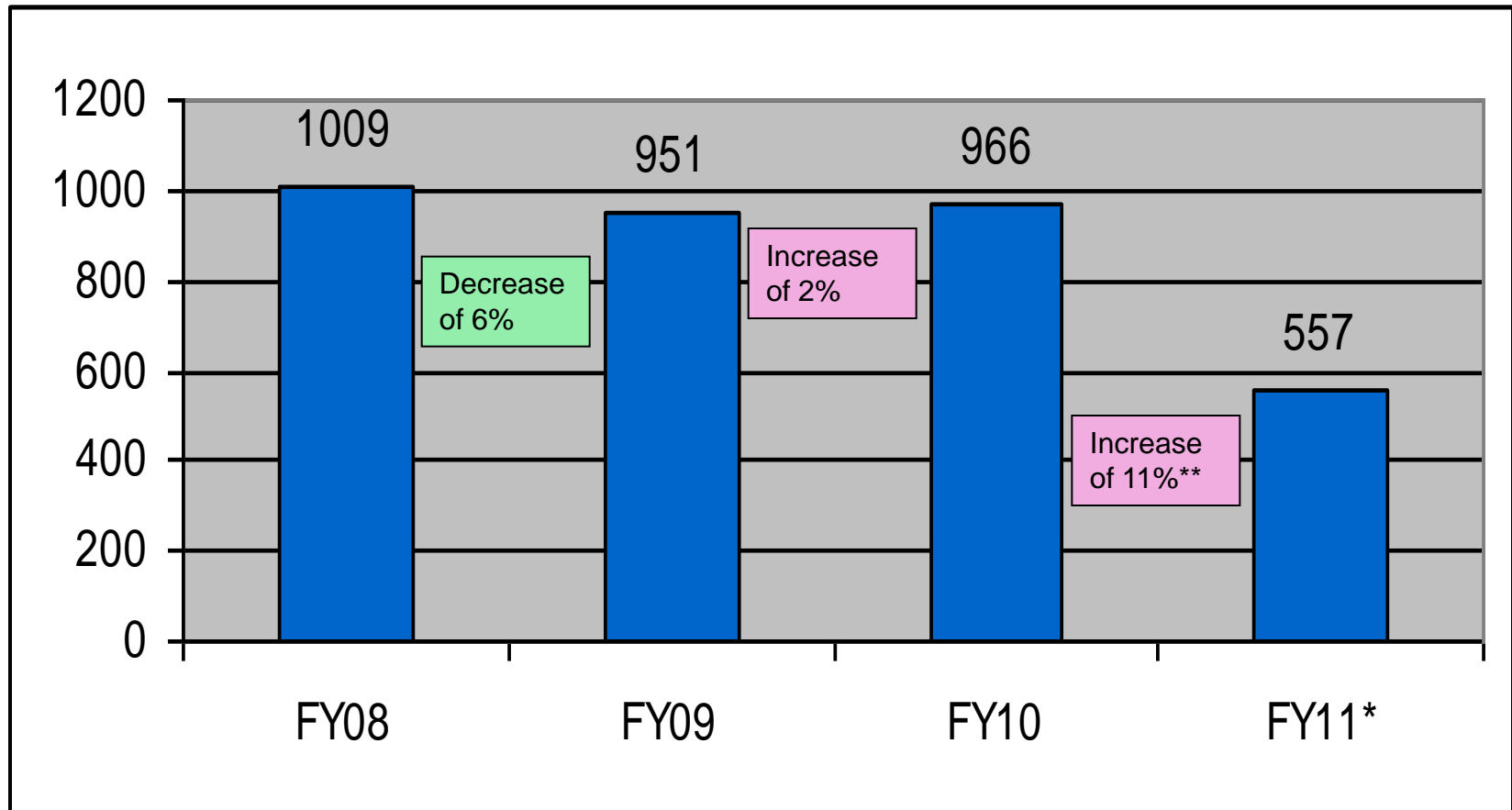


# Decrease After Call to Action



\*FY11 data through May 1, 2011

# Did we become complacent?



\*FY11 data through May 1, 2011

\*\*Difference from Oct 1 through May 1 in both FY10 and FY11

# Enhanced Airport Markings



**Enhanced Taxiway Centerline**




**Surface Holding Position Signs**


[http://www.faa.gov/airports/airport\\_safety/signs\\_marking/](http://www.faa.gov/airports/airport_safety/signs_marking/)

# Recurrent Driver's Training


## Airport Markings




**HOLDING POSITION:**  
Hold short of runway




**ILS CRITICAL AREA HOLDING POSITION:** Hold short of ILS Critical Area or approach airspace




**TAXIWAY/TAXIWAY HOLDING POSITION:** Hold short of intersecting taxiway when directed by ATC



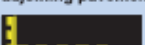
**NON-MOVEMENT AREA BOUNDARY:**  
Defines boundary of movement area and non-movement area



**TAXIWAY EDGE:** Defines edge of usable full strength taxiway pavement - adjoining pavement NOT usable






**DASHED TAXIWAY EDGE:** Defines edge of taxiway where adjoining pavement IS available for aircraft use



**ENHANCED CENTERLINES:**  
Indicates approaching holding position marking

## Ground Vehicle Guide to Airport Signs & Markings

### Airport Signs - Action and Purpose

<p><b>4-22</b> TAXIWAY/RUNWAY HOLDING POSITION: Hold short of runway</p> <p><b>26-8</b> RUNWAY/RUNWAY HOLDING POSITION: Hold short of runway</p> <p><b>8-APCH</b> RUNWAY APPROACH HOLDING POSITION: Hold short for aircraft on approach or departure</p> <p><b>ILS</b> ILS CRITICAL AREA HOLDING POSITION: Hold short of ILS Critical Area or approach airspace</p> <p><b>(E)</b> NO ENTRY: Identifies areas where AIRCRAFT entry is prohibited</p> <p><b>B</b> TAXIWAY LOCATION: Identifies taxiway on which vehicle/aircraft is located</p> <p><b>22</b> RUNWAY LOCATION: Identifies runway on which vehicle/aircraft is located</p>	 <p><b>RUNWAY BOUNDARY:</b> Exit boundary of runway or approach protected areas</p>  <p><b>ILS CRITICAL AREA BOUNDARY:</b> Hold short of ILS Critical Area or approach airspace</p> <p><b>J→</b> TAXIWAY DIRECTION: Defines direction &amp; designation of intersecting taxiway(s)</p> <p><b>↙L</b> RUNWAY EXIT: Defines direction &amp; designation of exit taxiway from runway</p> <p><b>22↑</b> OUTBOUND DESTINATION: Defines direction to take-off runway(s)</p> <p><b>MIL</b> INBOUND DESTINATION: Defines directions for arriving aircraft</p>  <p><b>TAXIWAY ENDING MARKER:</b> Indicates taxiway does not continue</p>
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NOTE: Certain signs will appear combined in arrays. Many signs may also appear painted directly on the surface of the taxiways.

### ATCT Light Gun Signals

**STEADY GREEN**  
Cleared to cross, proceed or go

**FLASHING GREEN**  
Not applicable to vehicles

**STEADY RED**  
STOP

**FLASHING RED**  
Clear the taxiway/runway

**FLASHING WHITE**  
Return to starting point on airport

**ALTERNATING GREEN/RED**  
Exercise extreme caution



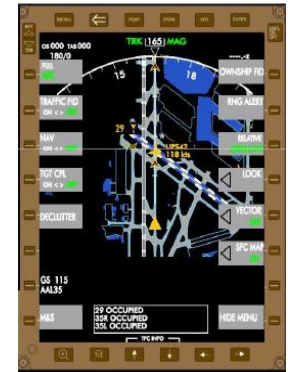
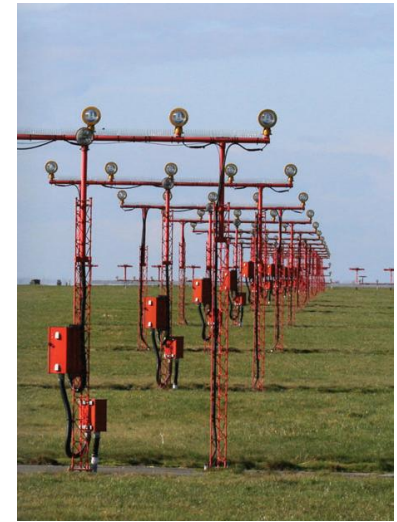
Tower Frequency \_\_\_\_\_ Ground Frequency \_\_\_\_\_ ATIS Frequency \_\_\_\_\_ Tower Phone Number ( ) - \_\_\_\_\_

FAA Office of Runway Safety and Office of Airport Safety & Standards  
<http://www.faa.gov/runwaysafety>

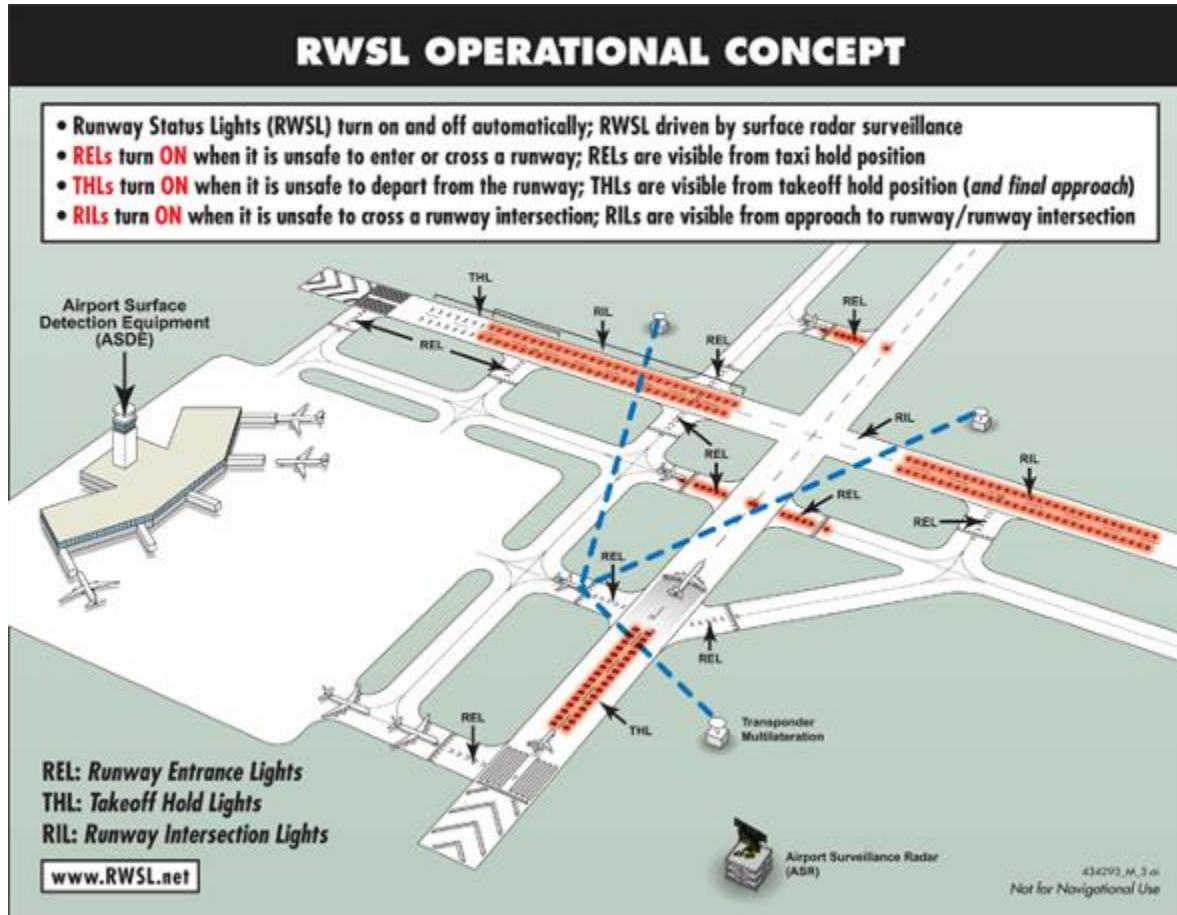
07/2009



# Technology Adoption



# Runway Status Lights

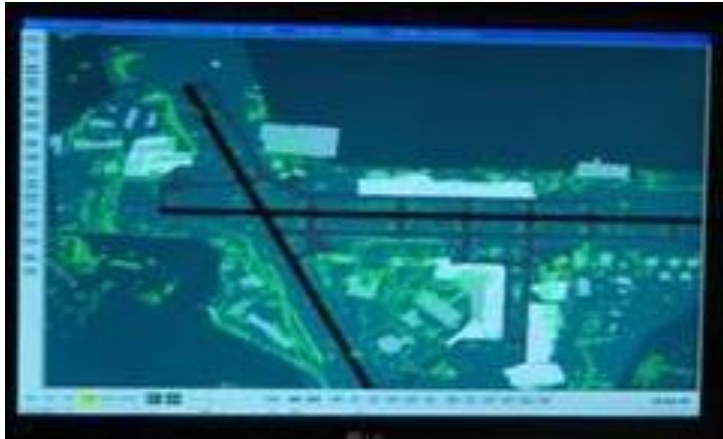


# ASDE-X Display





# Low Cost Surface Surveillance



*Airport map display*



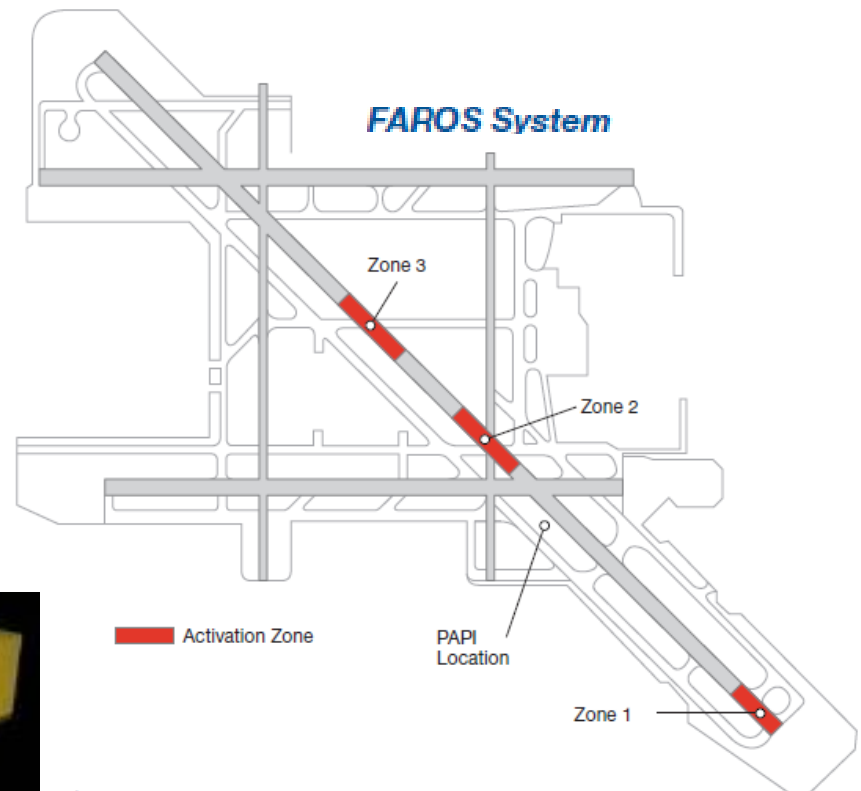
*Video camera display*



# GPS Vehicle Transponders



# FAROS



# Runway Safety Fatality Data

1995 – 2008

1429 total 492 fatal accidents (33%)

## Number of Fatal Accidents (Onboard Fatalities)

<b>Incursions:</b>	<b>5</b>	<b>(129)</b>
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<b>Excursions:</b>	<b>31</b>	<b>(680)</b>
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<b>Confusion:</b>	<b>2</b>	<b>(132)</b>
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# Lack of Runway Safety Area





# Engineered Materials Arresting System (EMAS) Installations



Baton Rouge Metropolitan Airport, LA



Roanoke Regional Airport, WV



Little Rock Airport, AR



Greater Binghamton Airport, NY

Photos Courtesy  
of ESCO

# Successful EMAS Capture



**EMAS capture of a Falcon 900 at Greenville Downtown Airport, SC  
July 17, 2006**

# Successful EMAS Capture



Yeager Airport (CRW),  
Charleston, WV,

January 19, 2010





# Successful EMAS Capture

Teterboro, NJ  
October 1, 2010



# Runway Condition Reporting

## Methodology Developers

- Airports



- Airplane Manufacturers



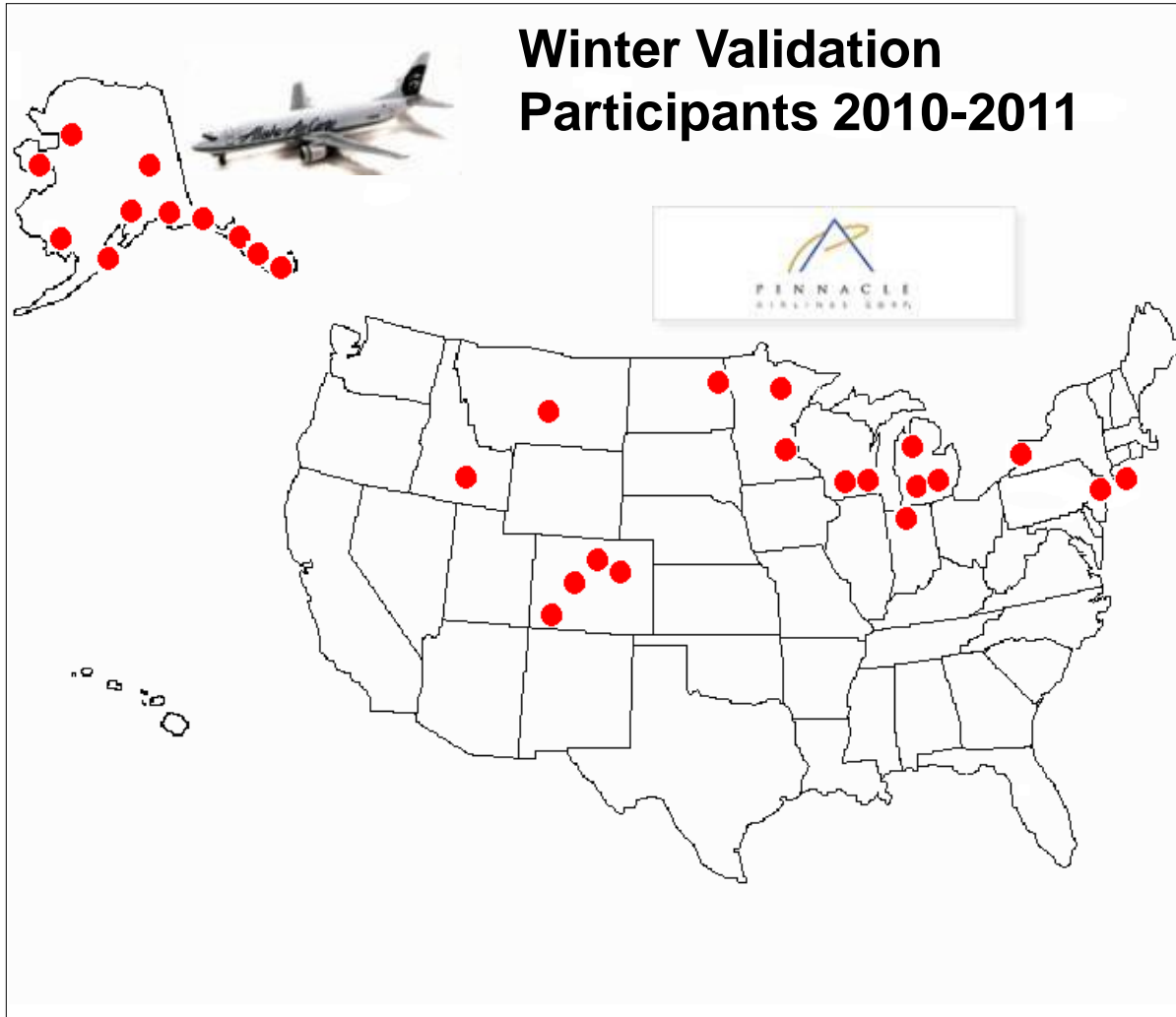
- Airplane Operators  
(Air Carriers, Charter, On-Demand, Fractional Ownership)



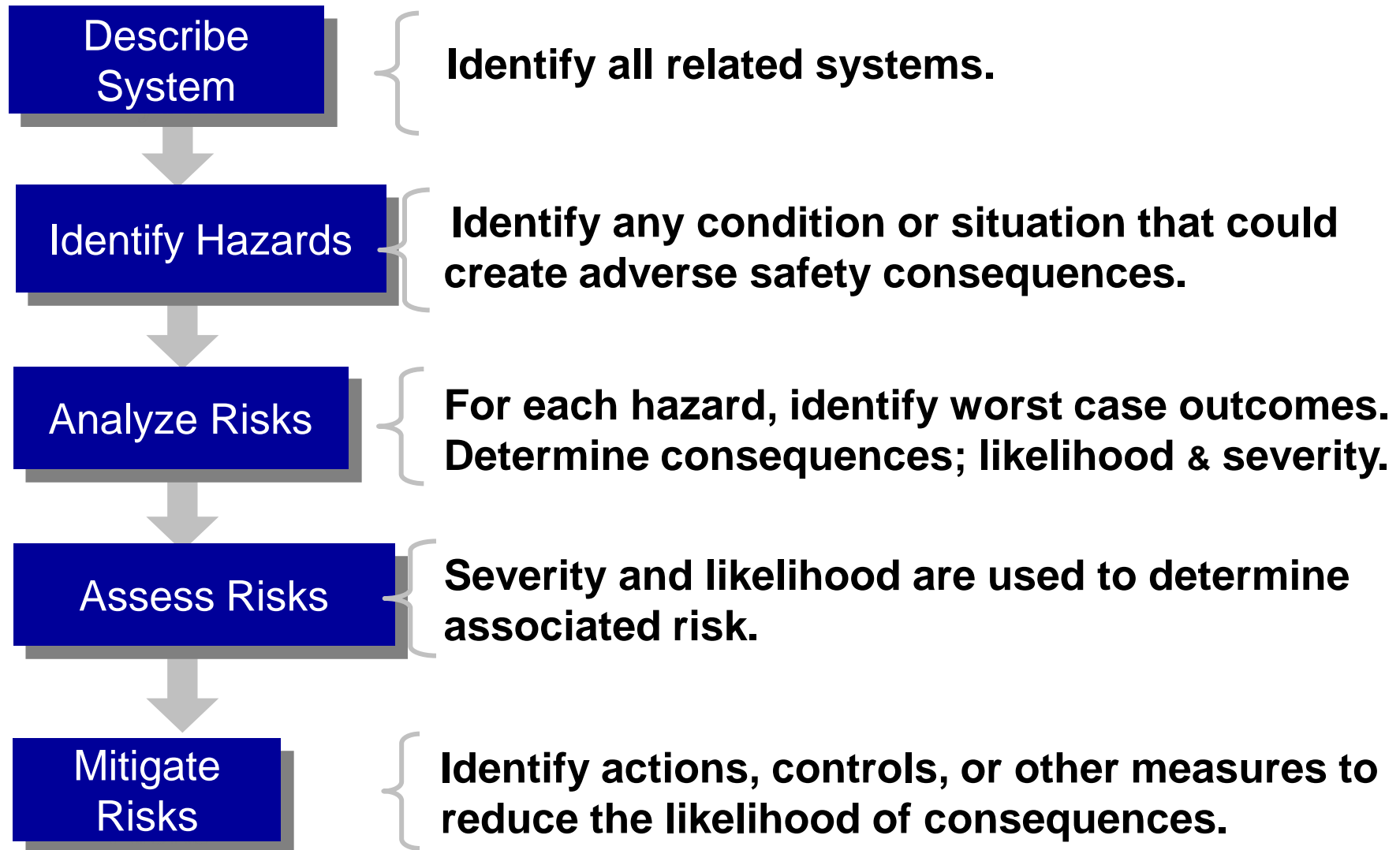
- Industry Organizations



## Winter Validation Participants 2010-2011



# Safety Risk Management (SRM)



# For Additional Information

[www.faa.gov/airports/runway\\_safety/](http://www.faa.gov/airports/runway_safety/)

