

FAA Call to Action on Runway Safety

Short-term Actions

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Background Information

On August 15, 2007 the Administrator issued a “call to action” to the industry to re-energize and re-focus on the issue of runway safety.

- **Participants included all sectors of the aviation industry:**
 - Airframe and Avionics Manufacturers,
 - Operators,
 - Airports,
 - Labor and FAA's air traffic and aviation safety personnel.

The group committed to a list of five short-term actions that could be accomplished within the next 60 days to help improve runway safety.



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Short-term Actions

- Airport safety teams will be reviewing all aspects of operations at the 20 airports where we have seen risk areas for surface operations as well as other airports whose runway geometry may cause confusion.
- 73 airports which are currently required to complete enhanced runway entrance markings by September 2008 are being asked to complete that work within the next 60 days.
- The group agreed to better communicating of training, best practices and other information as well as incorporating taxiing scenarios into pilot simulator training.
- A review of cockpit and clearance procedures will be conducted by both operators and the Air Traffic Organization (ATO).
 - Operators will be striving to reduce or eliminate pilot distractions while taxiing.
 - The ATO will be conducting a review of clearance procedures to include requiring specific tax clearances, clearance to cross any runway, clearances to land and standardization with ICAO.
- The FAA reaffirmed its commitment to a voluntary, self-disclosure reporting system for its air traffic safety workforce. The goal of such programs is to encourage reporting of safety issues so that they might be addressed proactively.



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Analytical Task

Identify the 20 airports that would have the greatest impact on reducing runway incursions.

- Three factors were considered:
 - **Runway Incursion Rate** (RI's per 100,000 tower operations)
 - **Runway Incursion Severity** (A, B, C, D)
 - **Threat Areas identified in the Wrong Runway Study**
 - Short taxi time, airport complexity, one taxiway to multiple runways, close proximity to multiple runway thresholds, runways used as taxiways, short runway – less than 5,000', multiple options – excess of 4, single runway
- These factors were then weighed to identify airports that have:
 - **Increasing** Runway Incursion Rate (Previous 24 months) and/or,
 - **Higher** Runway Incursion Severity (Previous 24 months) and/or,
 - **High number** of Threat Areas as identified in the Wrong Runway Study.



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RSAT evaluations in next 60 days

Airport Name	ID	State	ASDE-X	RWSL
Hartsfield-Jackson Atlanta	ATL	GA	*	**
Boston Logan	BOS	MA	**	
Denver Intl	DEN	CO	**	**
Dallas/Ft. Worth Intl	DFW	TX	**	**
Ft. Lauderdale/Hollywood	FLL	FL	**	**
John F. Kennedy Intl	JFK	NY	**	**
Las Vegas McCarran	LAS	NV	**	**
Los Angeles Intl	LAX	CA	**	**
Long Beach/Daugherty	LGB	CA		
Orlando Intl	MCO	FL	**	**
Miami Intl	MIA	FL	**	
General Mitchell Intl (Milwaukee)	MKE	WI	*	
Chicago O'Hare Intl	ORD	IL	**	**
Dekalb-Peachtree	PDK	GA		
Philadelphia Intl	PHL	PA	**	**
Reno/Tahoe Intl	RNO	NV		
San Francisco Intl	SFO	CA		
Norman Y. Mineta San Jose Intl	SJC	CA		
John Wayne Airport-Orange CO	SNA	CA	**	
North Las Vegas	VGT	- 5 NV		

* Operational

** Scheduled



Ground operations – Wrong Runway Departures



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Analytical Task

On August 27, 2006 Comair Flight 5191 crashed following a wrong runway departure in Lexington, KY.

- Review Incident/Accident data for events that involved aircraft departing from, or taxiing into position, on the wrong runway
- Conduct comprehensive review of events involving confusion in ground operations



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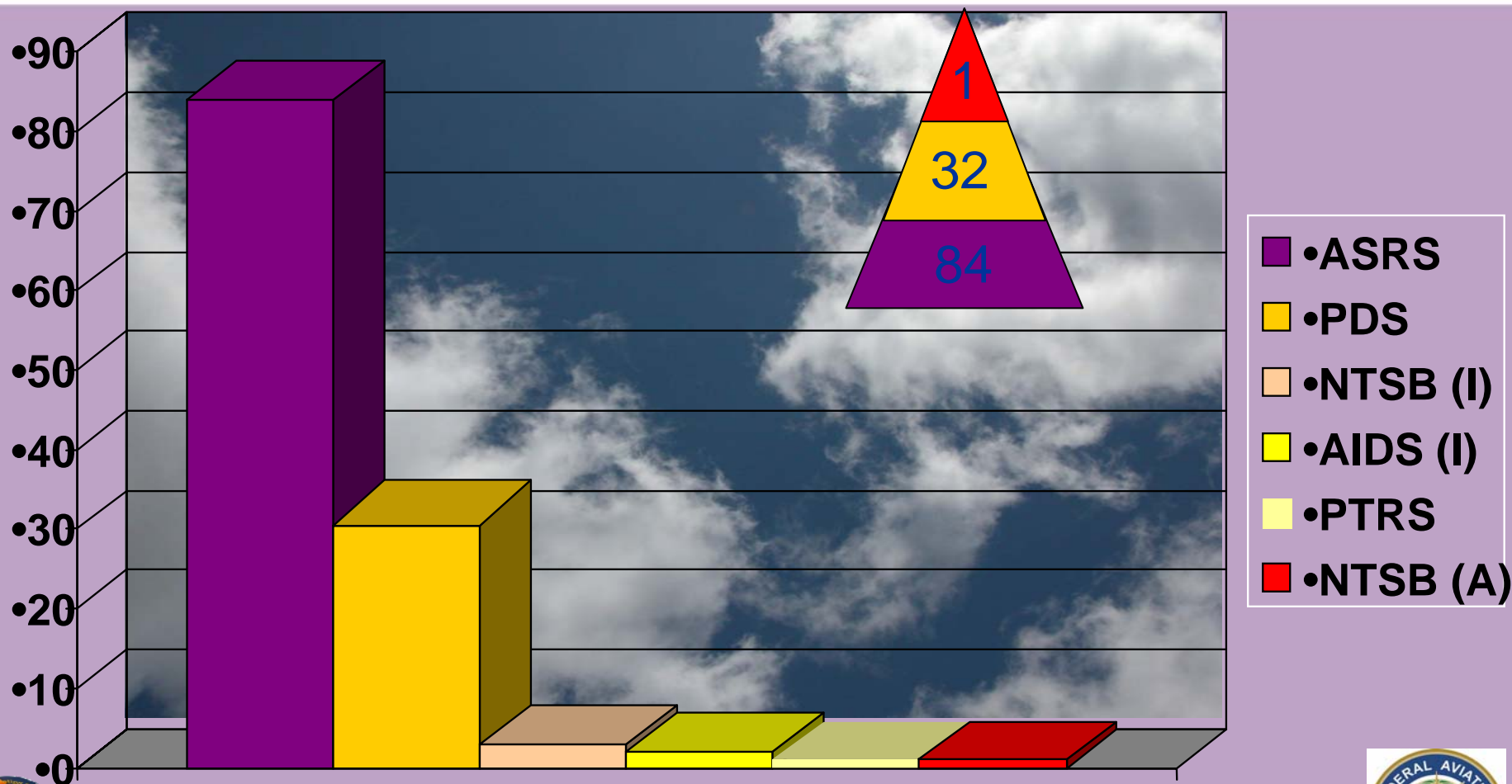
Findings – Part 121 Operations

- Wrong runway departures have occurred over time at many airports
- Airports with the highest number of overall reports have similar characteristics:
 - CLE, HOU, SLC, MIA, ORD
 - Multiple runway thresholds in close proximity to one another
 - Airport layout requires use of same taxiway to reach the departure end
 - Some require pilots to taxi across multiple runways
 - ATC Clearance 'cleared for takeoff' provided prior to final runway
 - Terminal building in close proximity to runway threshold



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Findings – Part 121 Operations



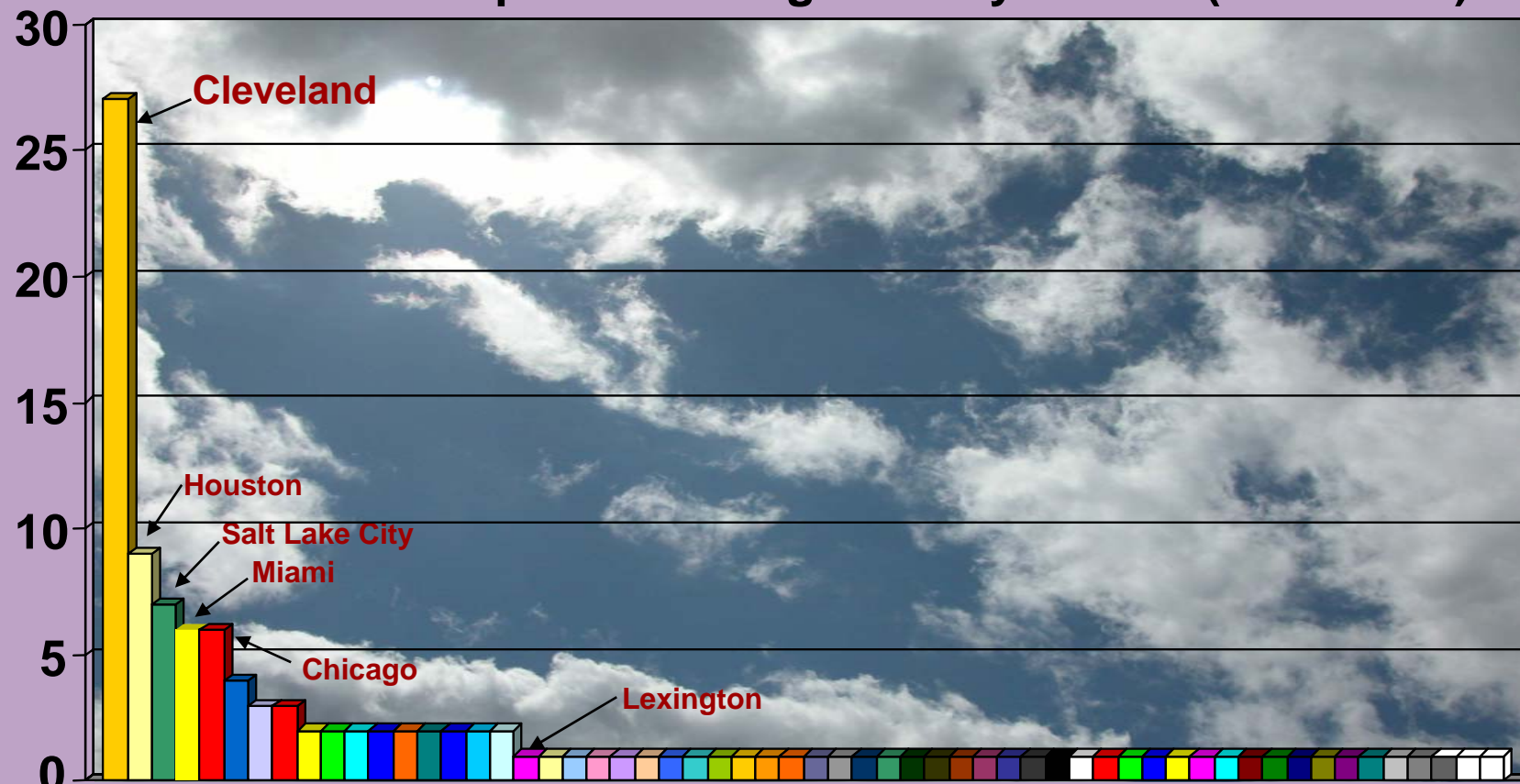
NOTE: ASRS database with certain exceptions captures ~ 18% of reports received by NASA on monthly basis



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Findings – Part 121 Operations

Air Carrier Reported Wrong Runway Events (1981-2006)

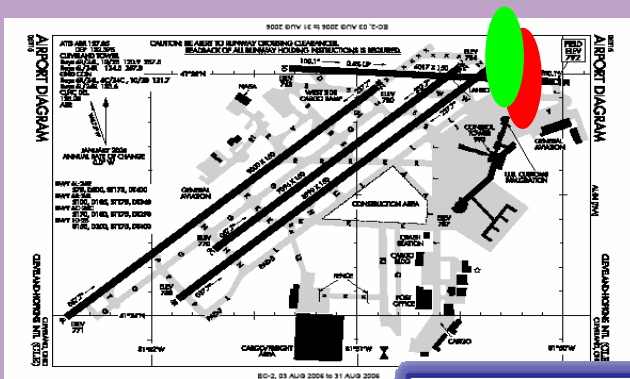


NOTE: ASRS database captures only 18% of all reports received by NASA on monthly basis

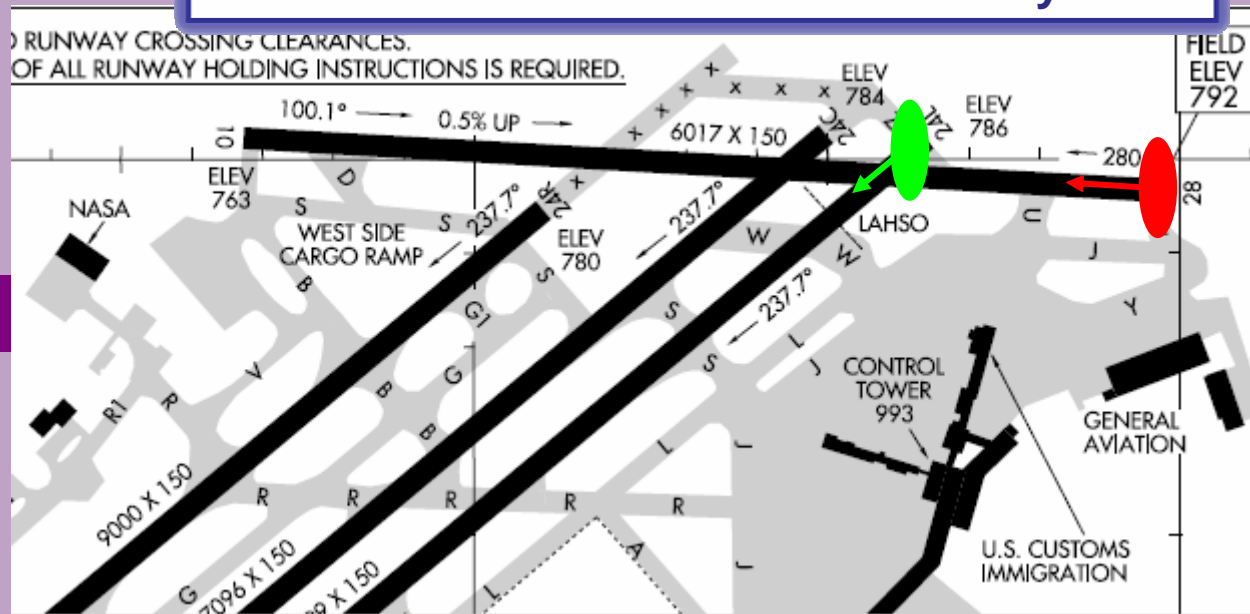


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Cleveland-Hopkins Intl (CLE)



Aircraft cleared for takeoff on runway 24L



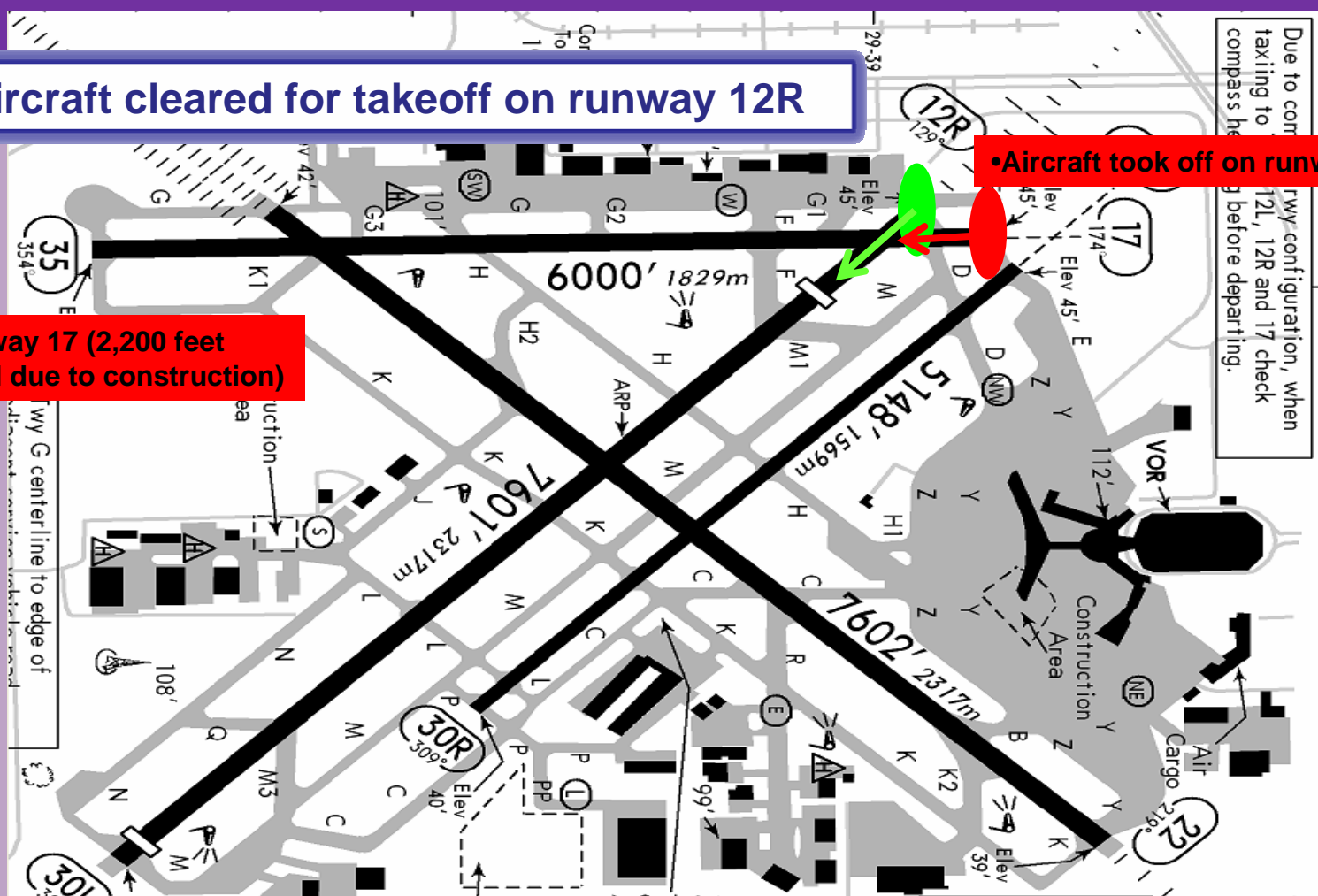
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Houston Hobby Airport (HOU)

Aircraft cleared for takeoff on runway 12R

Aircraft took off on runway 17

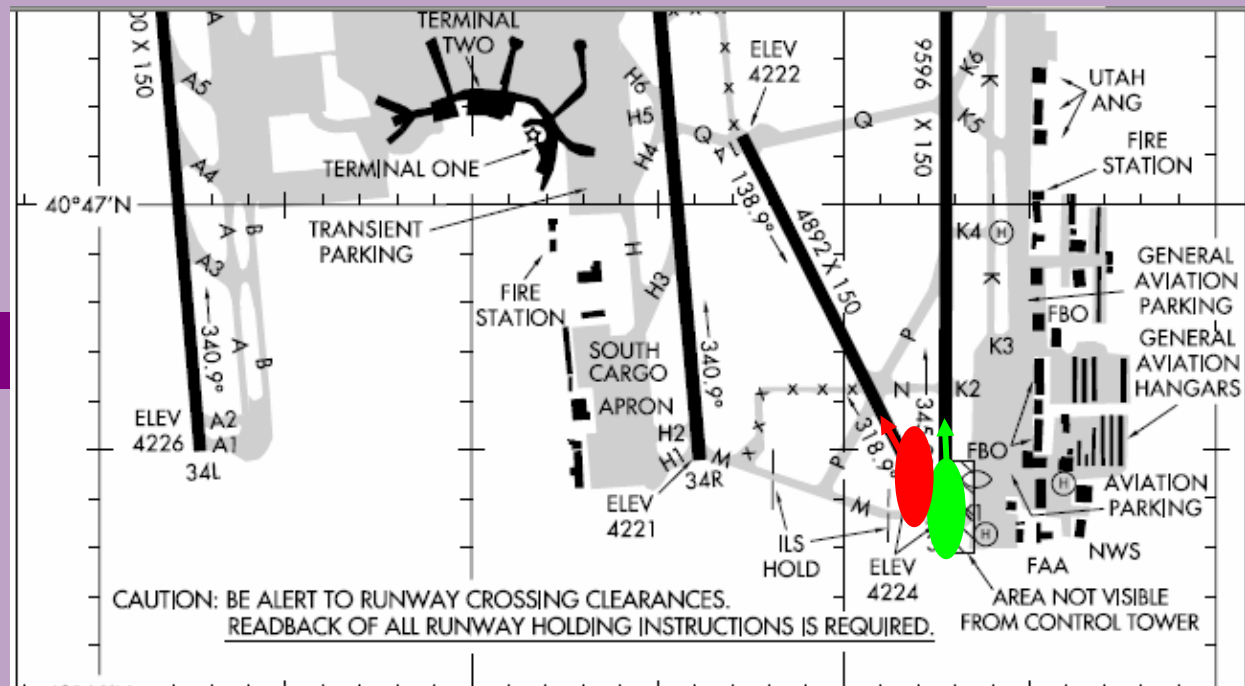
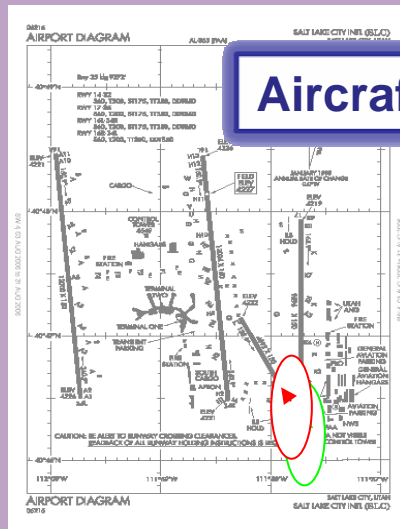
Runway 17 (2,200 feet closed due to construction)



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Salt Lake City International (SLC)

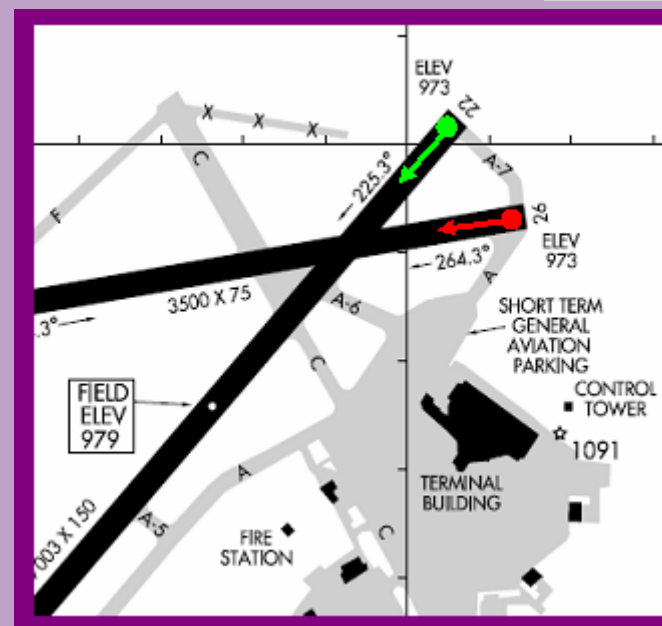
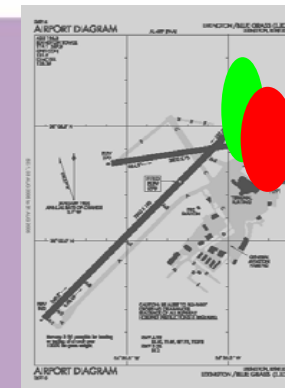
Aircraft cleared for takeoff on runway 35



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Lexington Blue Grass (LEX) 2006

- **Aircraft was cleared for departure on Runway 22 but departed on Runway 26**
 - Comair flight 5191 crashed approximately ½ mile from the end of runway 26
- **Similar non-fatal events have occurred prior to this event**
 - Cleared for 22 but lined up on 26 (1993)
 - Poor visual cues and lighting also cited in other taxiing related events by air crews
- ***Similar non-fatal events have occurred after this event***



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Findings – Part 129 Operations

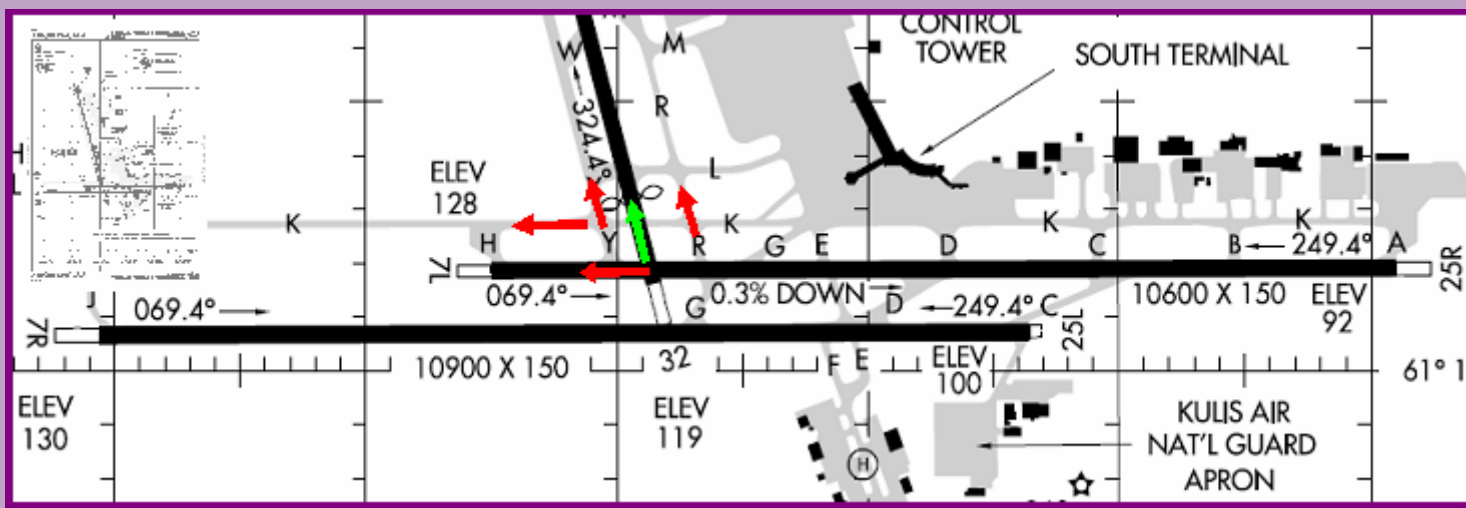
- **Foreign Part 129 wrong runway events account for *7 of the 617* total events**
 - **Same characteristics to Part 121 events**
 - Crew taxied to or departed from a runway/taxiway other than the one assigned from ATC
 - 4 of the 7 events occurred at Anchorage when the crew was cleared for departure on runway 32
 - The other events occurred in SEA, JFK and PHL



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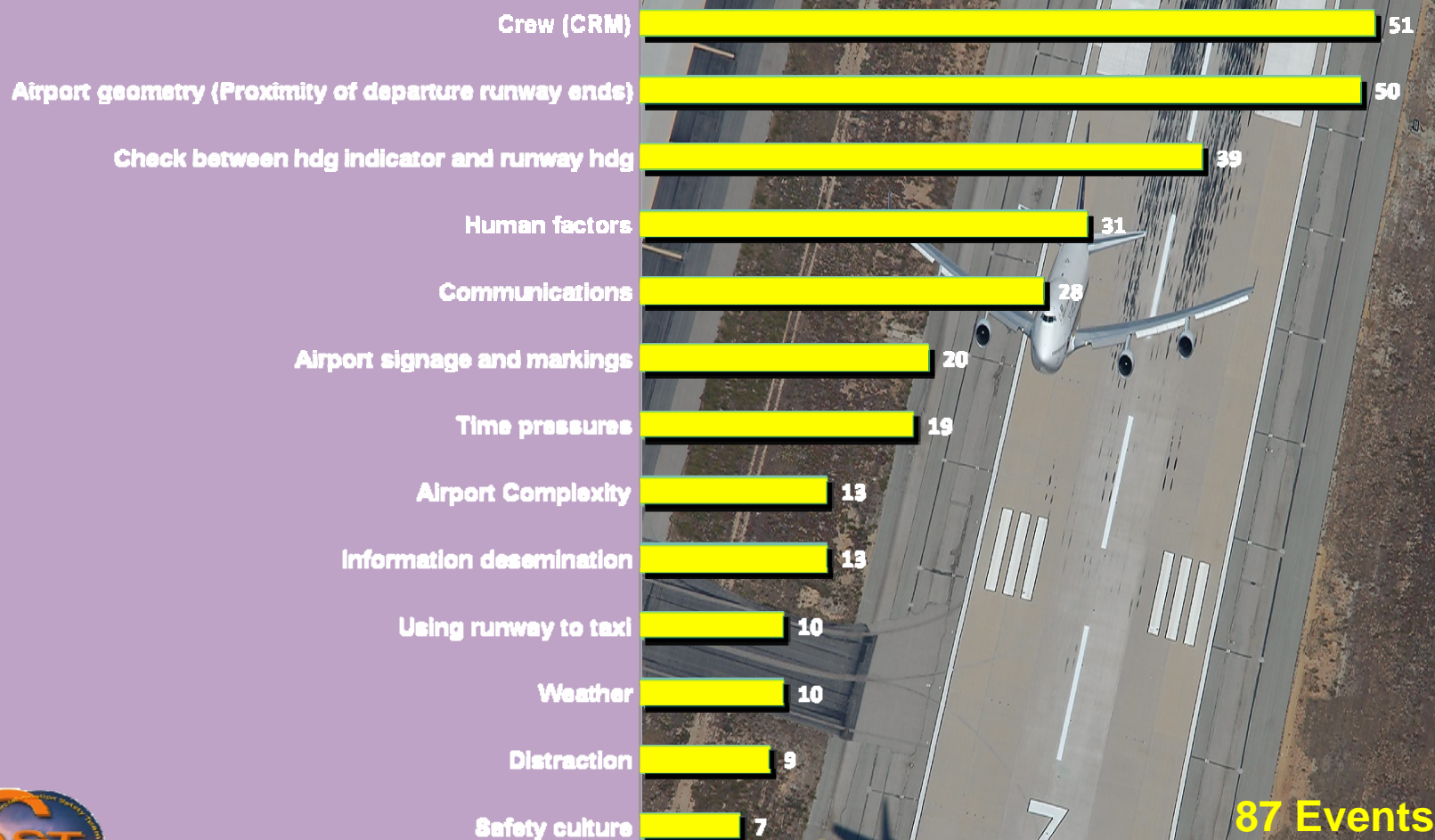
Ted Stevens Anchorage International (ANC)

- 1983 – Korean Airlines DC-10 was cleared to taxi to Runway 32. The DC-10 crew inadvertently taxied onto Runway 6L/24R and struck PA-31 on Runway 6L
- 2002 – China Airlines A-340 The crew was cleared for takeoff on Runway 32; but, departed from taxiway K
- 2002 – aircraft lined up on taxiway R for takeoff instead of Runway 32
- 2005 - EVA635, an all cargo MD11 was issued a takeoff clearance for Runway 32. EVA635 departed from taxiway Y



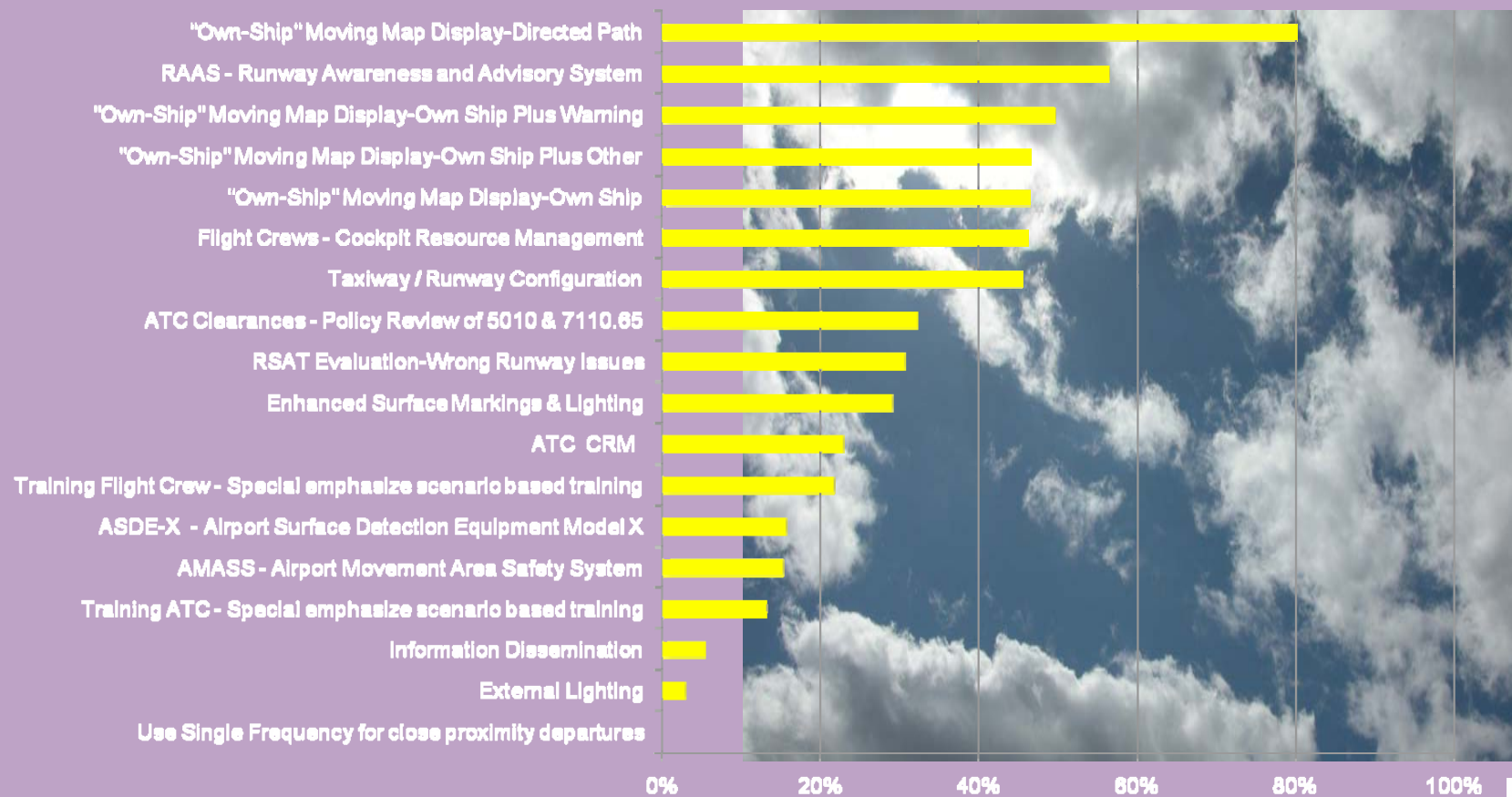
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Part 121 Top Contributing Factors



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JIMDAT Mitigation Assessment



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Cleveland Mitigation Review

- **24% of Part 121 events occurred in Cleveland**
 - Majority of events have similar characteristics to incident review
 - Multiple runway thresholds in close proximity to one another
 - Airport layout requires use of same taxiway to reach multiple departure ends
 - Use of runway as taxiway
 - Terminal building in close proximity to runway threshold
 - Complex airport layout
- **Cleveland has had a significant reduction of events in the past few years**



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Cleveland Mitigation Review - Findings

- **Conducted interviews with airport administration, FAA personnel, ALPA representatives and local pilots**
- **In the 90's government and Industry representatives began a cooperative effort to address wrong runway departures**
- **Mitigations**
 - Airport signage & lighting
 - Adopted FAA standards, runway location signs
 - Obtained waivers from the standards to address signage/lighting on runways used as taxiways
 - Implemented holding position markings
 - In-pavement and elevated runway guard lighting
 - Taxiway centerline lights (deactivates runway side lights)



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Cleveland Mitigation Review - Findings

- **Mitigations** (continued)

- **Airport redesign**

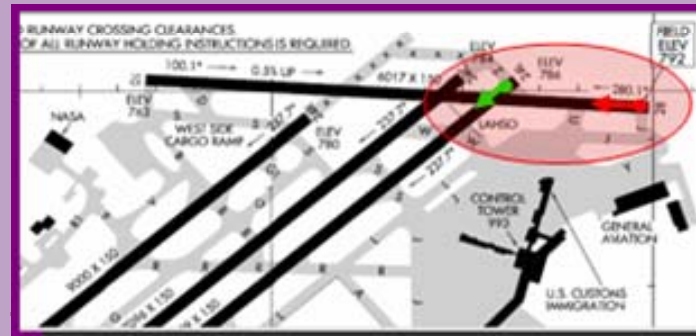
- Removal of taxiways
 - Decreased confusion
 - Increased taxi times
 - Addition of a taxiway
 - Limited impact due to intersection departure requirements
 - Construction of third parallel runway
 - Provide greater separation during simultaneous instrument approaches
 - Will allow Cleveland to procedurally stop using the center runway as an active runway and eventually convert it to a taxiway
 - Relocation of runway thresholds
 - Decouple multiple runway crossing



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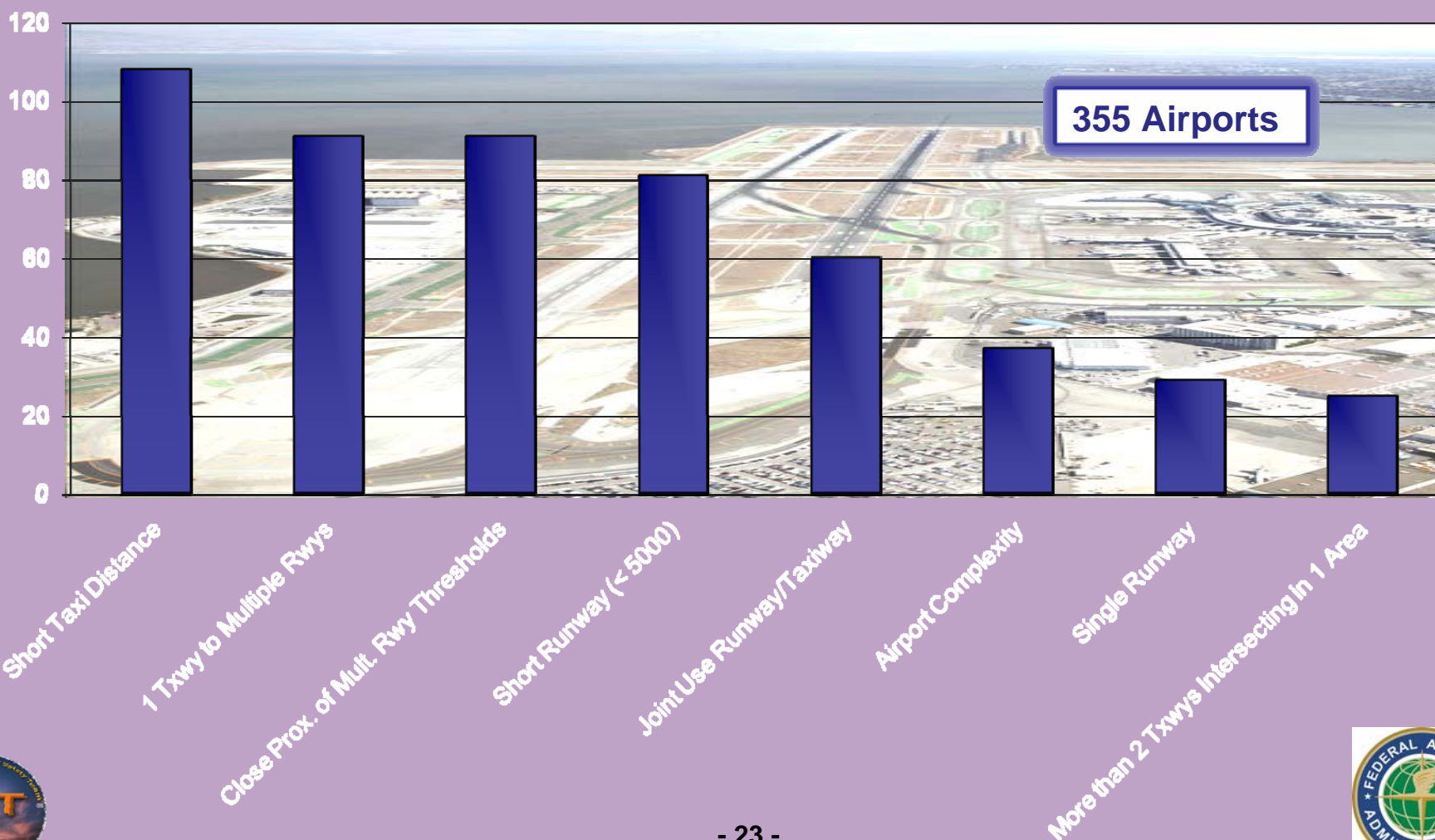
Cleveland Mitigation Review - Findings

- **Mitigations** (continued)
 - **ATC & Flight crew procedures**
 - ATC conducted tower controller briefings following each incident
 - Implemented TIPH (taxi into position and hold) clearances for 24L and 24C
 - ATC visually verify the aircraft location prior to issuing takeoff clearance
 - Pilot community added areas of concern to Jeppesen charts
 - Air-carriers placed special emphasize on heading checks prior to departures
 - One major air-carrier eliminated its taxi checklist to maximize the heads up time for both pilots



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Part 139 (Class 1) Airport Review



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Next Steps

- **Focused Analysis**

- *JIMDAT to seek level 'F' approval from CAST*
- *Develop implementation strategies and cost basis*
- Provide AVSMT/CAST with recommendations

- **Broad View (Ground OPS)**

- Develop a matrix of contributing factors and their interactions
- Provide AVSMT/CAST with recommendations
 - We expect the solutions to be applicable to Runway Incursion and other events

- **International Collaboration**

- CAST shared analysis at the Runway Confusion Workshop (May)
- CAST, IATA, ATA, RAA, NATCA to jointly analyze Runway Incursions



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Look Ahead

- **Ability to repeat analysis quickly to monitor areas of concern and effectiveness of mitigations**
 - ASIAS Events Monitoring System (EMS)
 - To monitor activity on airports, establish occurrence rates, and compare a single airport to its peers over three time- lines to identify trends



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Questions?

