Air Show Safety: an Overview

Remarks of
John Cudahy, President
International Council of Air Shows
to the
National Transportation Safety Board
January 10, 2012
Washington, DC
Presentation Overview

- Industry profile
- Industry relationship with FAA
- Overview of air show safety program
- Safety statistics
Industry Profile

- $250 million - $300 million in revenue per year
- 10-12 million spectators per year
- 300-325 air shows annually in U.S.
- 278 aerobatically-certified air show pilots
- Nearly 10,000 individual performances/year
Air Show Profile

- Largely volunteer driven
- Extremely site dependent
- All shapes and sizes
  - Military and civilian
  - At airports and along waterfronts
  - Large and small
  - New and well-established
- As small as 3,000 and as large as 350,000 spectators
- Safety is primary concern
Non-North American Air Shows

- No prohibition on aerobatics directed toward crowd
- Much smaller separation distances
- U.K. regulations closest to U.S.
  - Similar philosophy and approach
  - Rigorous pilot evaluation program
Air Show Performer Profile

- Principally current or former airline and military pilots
- Disciplined and highly skilled aviators
- Largely part-time
- Varied types of aircraft
International Council of Air Shows

- Non-profit trade association
- Industry focal point for 45 years
- 850+ member organizations
- Established to help promote air show safety
- Administrator of Aerobatic Competency Evaluation (ACE) program for 20 years
- Safety receives major commitment of staff time and association resources
Industry Relationship with FAA

- FAA Order 8900.1, Volume 3, Chapter 6
  - 108 pages, 89 of which address air shows
  - Developed and amended many times with considerable industry input
- Relationship is collaborative, safety-focused
- FAA is visible, respected, knowledgeable
- FAA has monitors at nearly every air show
- ICAS, FAA are partners on ACE program
- FAA has been helpful in enabling industry Safety Management System (SMS) efforts
Air Show Safety Program

- Air show safety program established in 1951 after fatal spectator accident in Colorado
- Time tested at nearly 20,000 air shows by 600 million spectators over 60 years
- Principal focus is spectator safety
- Four principal components
  - Separation distances
  - Sterile aerobatic box
  - No aerobatic energy directed at crowd
  - Rigorous industry evaluation programs
- Thorough performer briefing is essential
Aerobatic Competency Evaluation Program

- FAA program administered by ICAS
- Based around rigorous and regular peer evaluation, on the ground and in the air
- Altitude step-down process:
  - 800 feet
  - 500 feet (after 8 shows at 5 sites)
  - 250 feet (after 12 shows at 6 sites)
  - No restriction (after 16 shows at 8 sites)
- Evaluations at least once a year AND when moving to new altitude AND when adding a new aircraft

Air show safety program based on four components
Explicit separation distances for performing aircraft
Explicit separation distances for performing aircraft
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## Separation distances from spectator areas

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No aerobatic energy toward the crowd
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Rigorous industry evaluation programs
Rigorous Industry Evaluation Programs

- Similar to those used by military, air carriers

- Aerobatic Competency Evaluation (ACE)
  - FAA program administered by ICAS and EAA
  - Peer evaluations once a year AND when moving to new altitude AND when adding a new aircraft
  - Altitude step-down process
    - 800 feet
    - 500 feet (after 8 shows at 5 sites)
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- Formation and Safety Team (FAST)
  - Demonstrate proficiency, adopt common procedures
  - Ground and flight evaluations required
Does it work?
North American Air Show Spectator Fatalities, 1951-2011

No spectator fatalities at North American air shows since 1952
Non-Fatal accident
Captain Chris Stricklin in USAF Thunderbirds F-16 at Gunfighter Skies Air Show September 14, 2003 Mountain Home AFB, ID

Initial point of impact
Final resting spot of wreckage

1,500 foot line
1,000 foot line
500 foot line

Spectator Area
North American Air Show Performer Fatalities, 1988-2011

ICAS assumes responsibility for pilot evaluations and day-to-day administration of ACE Program

ICAS launches SMS initiative in winter of 2007-2008
ICAS Safety Management System Initiative

- “Safety First” industry awareness program
- Full-time Director of Safety
- Education and training
- Data generation efforts
  - ICAS Confidential Reporting System
  - ICAS Safety Incident Procedures
- Identifying and mitigating root causes of incidents and accidents
Summary

- Closely monitored by federal regulators
- Time-tested spectator safety program that has produced superlative spectator safety record
  - Separation distances
  - No aerobatic energy toward crowd
  - Sterile aerobatic box
  - Rigorous industry evaluation programs
- Industry has routinely and pro-actively addressed safety concerns within air show community
- Industry recently adopted and is implementing Safety Management System philosophy and procedures
Questions?