

Review of Incidents and Accident of Aircraft with Inflatable Restraints



*Fifth Triennial Cabin Safety Conference
October 31st, 2007*

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Agenda

- *AAIR Applications*
- *AAIR Versions in Service*
- *In Service Metrics*
- *Incidents*
- *Accidents*
 - *Minor*
 - *Major*



Transport Applications (Part 25)

- *Over 27 Commercial Airlines Worldwide*
- *Top Users: Virgin Atlantic; Air Canada
Singapore; Cathay Pacific*
- *Airbus: A380; A340; A330
A319 / 320 / 321*
- *Boeing: B747; B777*
- *Bombardier CRJ 700 / 900*
- *BAE Systems Jetstream 41*



General Aviation and Light Sport

Adam Aircraft A 500 / 700

American Legend Cub

Aviat Husky

Cessna 172 / 182 / 206

Cirrus SR 20 / 22

Cub Crafters Sport Cub

Diamond DA40

Lancair IVP

Mooney GX / Bravo Dx / GX

Piper PA 28 / 32 / 34 / 44

Sport Air

Zenair CH 601 / 2000



AMSAFE
Aviation

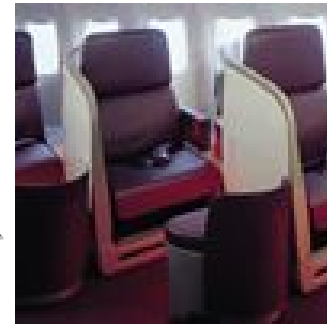
AAIR Design Versions in Service

- *V1.0 February 2001 (updated to V23 in 2005)*
 - *Front Row Econ.*
 - *TC for J-41 Fleet*
 - *6 Airlines Worldwide*
- *V1.5 February 2002*
 - *Front Row Econ.*
 - *Special Economy*
 - *Selected Airbus, Boeing, Bombardier*



AAIR Design Versions in Service (continued)

- *V25 October 2003*
 - *Premium Class (all)*
 - *Side Facing "Nested" Seats*
 - *B/C Pod Seats*



- *V23 Fall 2004*
 - *Single Engine GA*
 - *3 and 4 point restraints*
 - *Supplemental (not req. to meet 23.562)*

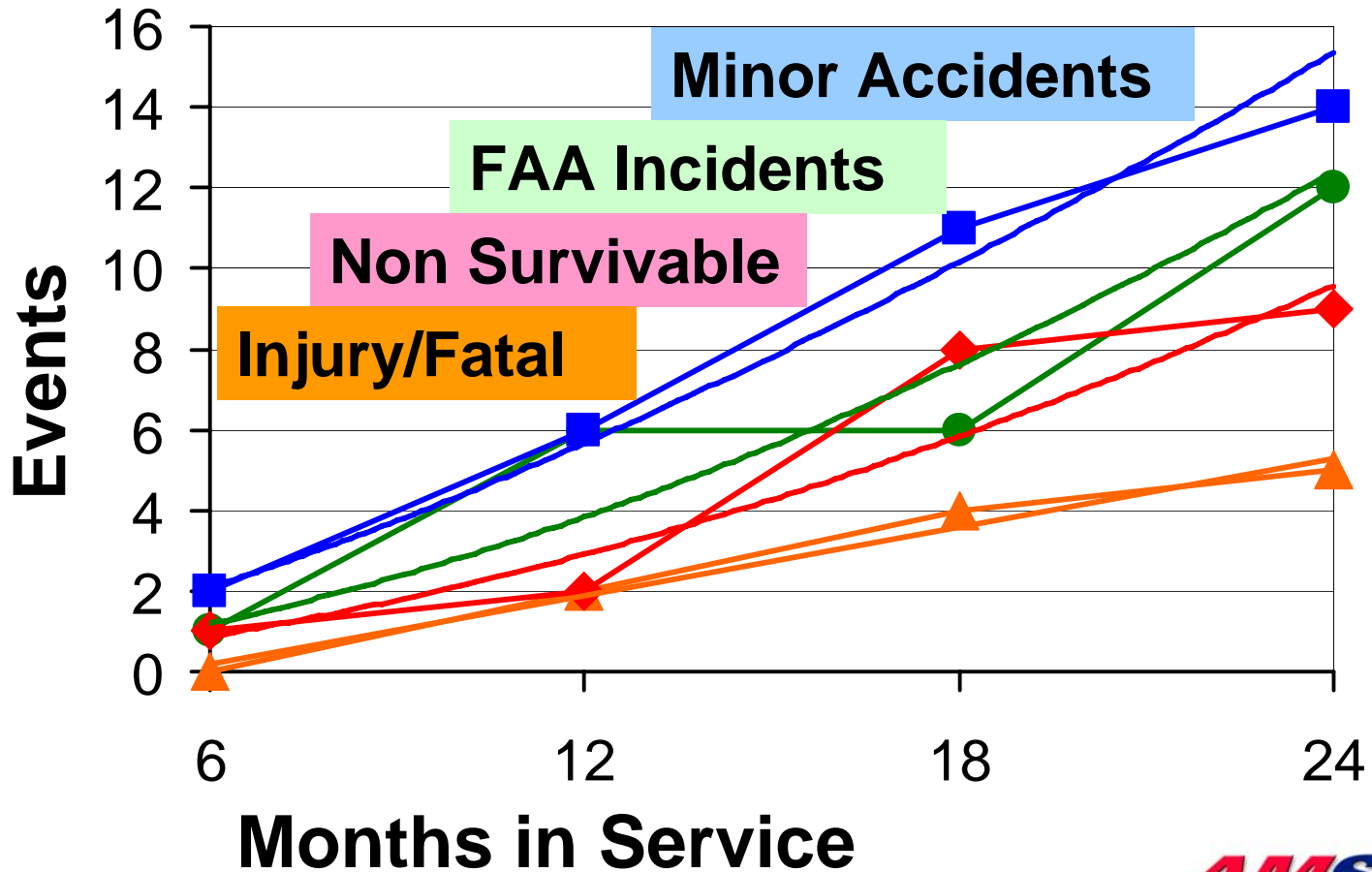


AAIR Field Status (as of June 2007)

- *Total Seat Placements Shipped:* 17,779
 - *Commercial (Part 25):* 6,953
 - *General Aviation (Part 23):* 10,826

- *GA Seat Placements Reported in Service:* 9,416
- *GA Aircraft Reported in Service:* 3,568
- *Additional Aircraft Enter Service at Rate ~134 / month
(14 month average, June '06 to Aug. '07)*

Event Statistics



Example - Impact Tests with and without AAIR

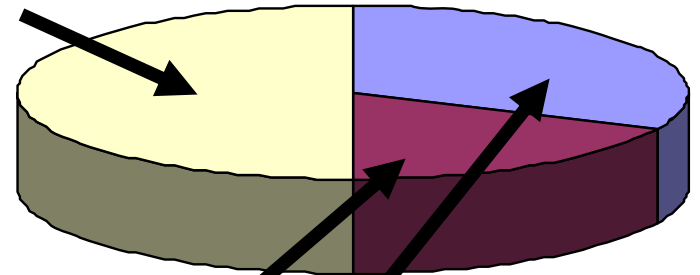


Event Distribution (from July '07 data)

Incident Rate = 40 incidents / 3568 aircraft in service (1.1 %)

Serious/Fatal Accident Rate = 14 accidents / 3568 aircraft in service (0.39 %)

No Injury Accidents: 50 %



Injurious/Fatal accidents: 18 %

Non Survivable Accidents: 32 %

FAA Incidents and Very Minor Accidents

- *Minor Aircraft Damage*
- *No Injuries*
- *Typical Scenarios:*
 - *Hit Fence*
 - *Strike Propeller*
 - *Veer Off Runway*



- *No AAIR Deployments*



Minor Accidents with Major Damage

- *Very Minor Injuries*
- *Scenarios:*
 - *Run Through Ditch*
 - *Strike Trees, Burned*
 - *Flip Over at Low Speed*



- *No AAIR Deployments*



Inflator Auto-Ignition Functioned Perfectly

Injurious Accidents

- *Flight into Terrain*
 - *Seat not Locked in Place*
 - *Insufficient Elevation*



Injurious Accidents (continued)

The Dunn County News

"Occupants Lucky to Survive Plane Crash" by Joel Becker.

" According to Charles' brother, Rick McGuire, who is a 36-year pilot, licensed instructor, former airline pilot, and attorney, said, "My brother's doing real well. They put his foot back on. He can wiggle his toes." Rick said it is fortunate the plane had a number of safety features, adding that the inflatable shoulder harness airbag probably saved his brother's life. "



Concluding Remarks

- *Non-Survivable Accidents are most often caused by Icing. One mid-air collision has occurred. AAIR deploys on these events, but impact is beyond human tolerance or occupant space is compromised.*
- *NTSB is conducting a Safety Study of airbag performance in survivable accidents. AmSafe is cooperating with this study.*
- *No performance or benefit conclusions are made regarding injurious accidents as the NTSB study is in progress and the Factual Reports for several accidents are pending.*
- *Regarding minor incidents, crash sensor threshold appears appropriate. The AAIR has not deployed in minor longitudinal impacts.*