ATSRAC: Background, Results and Future Impact on the Aviation Industry

presented to

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Who is ATSRAC?

- Aging Transport Systems Rulemaking Advisory Committee

- Initially chartered 19 January 1999

- Re-chartered:
  - 25 January 2001
  - 28 January 2003
  - 21 January 2005

- See www.mitrecaasd.org/atsrac/index.html
Background

- Two major 1996 accidents caused national USA attention to aviation safety

- Growing number of flights will create more accidents, even with a lower rate

- White House Commission on Aviation Safety and Security - 22 August 1996
Gore Commission Report

Final Report published 12 February 1997

1.9 In cooperation with airlines and manufacturers, the FAA’s Aging Aircraft Program should be expanded to cover non-structural systems
Initial ATSRAC Members

Chairman: Kent Hollinger

- FAA
- DoD
- ALPA
- ATA
- AIA
- NASA
- GAMA
- Flight Safety Foundation
- JAA
- Transport Canada
- AECMA
- General John Loh
- Boeing
- Airbus
- NEMA
- SAE (DuPont)
Added ATSRAC Members

- AirTran Airways
- Dassault
- IATA
- IAM
- International Federation of Airworthiness
- NADA/F
- NBAA
- Northwest Airlines
- Garrett Aviation Services
Initial Five Tasks

- Sampling inspection of the fleet
- Review of fleet service history
- Improvement of maintenance criteria
- Review and update standard practices for wiring
- Review air carrier and repair station inspection and repair training programs and recommend actions to address aging systems
Status of Initial Tasks

- All tasks are complete
- ATSRAC approval of Final Reports during January 2001 meeting
- Final Reports with recommendations forwarded to FAA
Task 1 Results

✈ Non-intrusive Inspections of 81 aircraft

➢ Aged up to 82,000 hours and 92,000 cycles

➢ 3,372 individual discrepancies (sorted by risk)

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- Immediate Fleet-wide Safety of Flight Concern – 0

- Potential Hazard or Frequently Occurring Item - 182
  ➢ SB’s required for 3 and enhanced inspection guidelines for 2

- Defects noted - 3,190
Task 1 Results (continued)

 NTN intrusive inspections of 6 retired aircraft
 ➢ Aged up to 100,241 hours and 100,017 cycles
 ➢ Targeted specific wire types and aircraft zones
 ➢ On-board visual inspection and NDT
 ➢ Wires removed and 25 laboratory tests applied
 ➢ Recommendations:
   ➢ 1 general - education of inspection & maintenance personnel
   ➢ 9 research - degradation, chaffing, contamination, NDT, AFCB
   ➢ 90 specific - splices, heat shields, clamping
Typical Aircraft Zones (1 of 4)

B747 Electronics Rack, E&E Bay
Typical Aircraft Zones (2 of 4)

A300 Cockpit
Typical Aircraft Zones (3 of 4)
Typical Aircraft Zones (4 of 4)

L1011 Under Floor Panels
Defects Found by NDI
Hot Stamp Damage
Installation Problems

- Contact with hot duct
- Power feeder chafing
Clamping Problem

ENL1: LM1020
Further Information

Intrusive Inspection Report available at:

http://www.mitrecaas.org/atsrac/intrusive_inspection.html
Task 2 Results

 Reviewed 714 Service Documents
  - Boeing - 27 upgraded to Alert status
  - Airbus - 3 upgraded to Alert status
  - Lockheed - no further action required

 Reviewed 79 ADs with repetitive inspections
  - Recommended 8 for terminating action
Next Four Tasks (Phase II)

- Federal Register 29 May 2001 p. 29203
  - Wire system certification requirements
  - Standard format and content of SWPM
  - Enhanced training program for wire systems
  - Enhanced maintenance criteria for systems
Status of Phase II Tasks

- All tasks are complete
- Final Reports with recommendations forwarded to FAA in 2002
- Small airplane recommendations forwarded to FAA in January 2003
Task 6 Results

✈ Created new FAR 25 Subpart H for Electrical Wiring Interconnection Systems
  ➢ Consolidated current wiring regulations
  ➢ Wire system separation
  ➢ Wire system identification
  ➢ Wire system safety assessments

✈ Revised current FAR 25 sections and created Advisory Circulars
Task 7 Results

- Defined minimum content for Electrical Standard Wire Practices Manual (ESWPM)
- Defined standard format for new ESWPM
- Created a Master Breakdown Index (MBI) for use with existing ESWPM
Task 8 Results

✈ Created an Advisory Circular titled "Aircraft Electrical Wiring Interconnection Systems Training Program"

✈ Applicable to air carriers, maintenance providers, OEMs and STC holders

✈ Voluntary incorporation is encouraged
Task 9 Results

- SFAR to require OEMs to implement and communicate an Enhanced Zonal Analysis Program (EZAP) to airlines
- Created Special Maintenance Program Requirements for >30 seat airplanes
- Created new FARs to require training on electrical systems (see AC from Task 8)
Numerous recommendations to FAA:

- Industry standard for EWIS routing
- Aging circuit breakers (cycling by industry)
- Arc Fault Circuit Breakers (AFCB)
- Effects of additives on wiring qualification
- Maintenance training requirements
- Improved shield terminators
Current Schedule

- Notice of Proposed Rule Making (NPRM) scheduled for 6 October 2005
- Final Rules and Advisory Circulars are expected by year end 2006
- Inclusion of airplanes with <30 seats is required for new designs but is still under consideration retroactively (ATSRAC split)
Future Public Meetings

- 10 – 12 January 2006 @ ATA
- 4 – 6 April 2006 @ Airbus North America
- Sunset of ATSRAC
Are There Any Questions?