

## Approach and Landing Accident Reduction Joint Safety Implementation Team

### Implementation Plan For Aircraft Design

**Statement of Work:** SE-24

The purpose of this project is to promote incorporation of fault tolerant design principles for flight critical system components and to facilitate critical-point, flight-realistic-condition, certification testing/analysis. Changes to flight critical system components will be considered a major change unless the applicant can show the change is in fact a minor change and monitors the continued airworthiness (in-service failures) of these systems using a risk assessment focused methodology.

**Score:**                      2007-(0.0)                      2020-()                      100%-()

**Lead Organization for Safety Enhancement Completion (LOOSEC):**

AIR-1 (LOOSEC)

**Outcome:**

Develop and issue revised guidance material accomplishing the objectives of this project to be applied during certification of new designs and continued airworthiness evaluations.

**Output 1**

- Develop a process to identify key safety information during airplane systems development and certification at the manufacturers, and to ensure effective communication and protection of such information during maintenance, operation, and training functions at air carriers, maintenance and repair organizations..

**Resources:** AIR (LOOC); manufacturers

**Timeline:** 7/31/07 – Issue KSI Team report. 3/31/08 – Issue AC guidance for KSIs

**Actions:** The FAA will issue guidance instituting the Key Safety Information process as recommended by the Certification Process Study. The Key Safety Information identifies areas (design, components, systems, maintenance procedures, etc) that should not be modified without thorough review and understanding of the original basis of certification.(New type certificates)

**NOTE:** *CAST October 2006, revised output to be the KSI white paper vice the AC. SE-172 will consider the need for an AC.*

**Output 2**

- Issue design guidance to ensure flight critical system components are fault tolerant and are subjected to critical-point, flight-realistic-condition, certification testing/analysis.

**Resources:** AIR-1 (LOOC) and Manufacturers

**Timeline:** Completed

**Actions:** Review AC's 23.1309-1B (Equipment, Systems, and Installations in Part 23 Aircraft), 25.1309-1A (System Design and Analysis) and 25-7 (Flight Test Guide for Certification of Transport Category Airplanes to insure these AC's adequately address flight critical component fault tolerance, error tolerance, unintended functions, and hazard assessment to include critical point flight envelope testing (including computer modeling and simulation) and reliability requirements (Note: 1309 addresses critical components). Issue new guidance on the control of design changes to flight critical components (including STC/PMA) (Note: The FAA does not believe that draft AC 25.1309-1B, fully addresses fault tolerance from an analysis standpoint. The FAA is utilizing an ARAC Phase II effort to task ARAC to address these issues. Fault tolerance is difficult to test, since failures must be introduced to determine the tolerance of the fault.)

**Output 3:**

Continuing airworthiness processes that adequately monitor and assess fleet performance to verify that the level of safety intended by the product's original basis of certification remains unchanged, by application of safety risk management processes to identify and prioritize safety critical threats/trends and mitigating corrective action.

**Resources:** AIA (LOOC) Manufacturers, and Operators

**Timeline:** 6/30/07

**Actions:**

Manufacturers and operators will review SAE ARP 5150 (Safety Assessment of Transport Airplanes in Commercial Service) to ensure their continuing airworthiness process(es) incorporates risk management techniques that help ensure that the original design level of safety is not degraded.

**Relationship to Current Aviation Community Initiatives:**

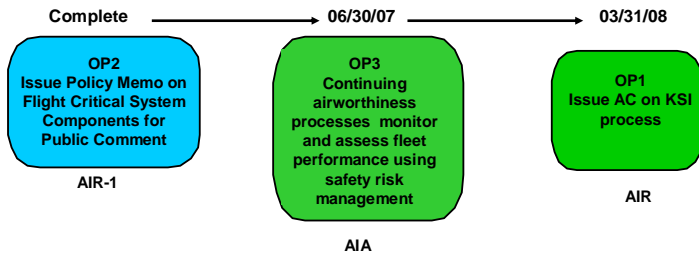
- Aviation Rule Making Advisory Committee (ARAC) on Advisory Circular (AC) 25.671 (both the AC and the rule, Part 25) (existing tasks)
- ARAC on AC 25.1309-1A (System Design and Analysis)
- ARAC on AC 25.1329-1A (Automatic Pilot Systems Approval)
- ARAC on AC 39-xxx (Safety Risk Management for Part 25 Aircraft and engines)
- The Special Aging Systems Task Force
- KSI Task Team

**Possible Barriers to Implementation and Mitigation Actions**

**Impact on Non - Part 121 or International Applications:**

This project would impact commercial and corporate operators utilizing smaller aircraft certificated under Parts 23 and 25 of the FAA Regulations. The project would also impact foreign manufactures and operators because of our Bi-Lateral agreements. However, JAA/EASA and ICAO are both represented on the CAST.

# SE-24R2 ALAR: Aircraft Design – Continuing Airworthiness



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## Issues

1. On 6/1/06 CAST approved this second revision to SE24.

10/05/2006



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