

Feb 03

SE 39

**Loss of Control
Joint Safety Implementation Team
Implementation Plan
for
Criteria for Flight in Icing Conditions for New Airplane Designs**

Statement of Work:

To reduce fatal accidents due to loss-of-control, recommend and support the development of amended icing certification criteria, for new airplane designs not equipped with evaporative (i.e. hot wing) systems, that include performance and handling qualities requirements for the following:

- Residual ice
- Intercycle ice
- Delayed anti-icing/de-icing system activation
- De-icing/anti-icing system malfunction

Lead Organization for Overall Project Coordination (LOOPC):

AIA

Safety Enhancement:

New designs for airplanes not equipped with evaporative systems accommodate flight in an expanded icing envelope and additional de-ice/anti-ice system malfunctions.

Score: 2007-(0.0) 2020-(0.3) 100%-(6.5)

Outputs:

Output 1:

Regulations and guidance materials are in place that adopt the principles embodied in the final reports of the ARAC Ice Protection Harmonization Working Group and the ARAC Flight Test Harmonization Working Group to establish new icing certification criteria, for airplanes not equipped with evaporative systems, that include performance and handling qualities requirements for the following:

- Residual ice
- Intercycle ice
- Delayed anti-icing/de-icing system activation
- De-icing/anti-icing system malfunction

Resources: ANM-100 (LOOC), NASA, ARAC Ice Protection HWG, ARAC Flight Test Harmonization Working Group

Total government/industry resources: \$1.4M (see separate worksheet for details)

Timeline: 3 years to issue final rules and associated AC material

Actions:

1. The ARAC Ice Protection Harmonization Working Group publishes expanded icing envelope.
2. The ARAC Flight Test Harmonization Working Group publishes recommendations that address airplane performance and handling characteristics in icing conditions.
3. The FAA issues regulatory and guidance material as appropriate.
4. The JAA issues regulatory and guidance material as appropriate.

Relationship to Current Aviation Community Initiatives:

- ARAC Flight Test Harmonization Working Group
- ARAC Ice Protection Harmonization Working Group
- FAA Icing Plan
- NASA Aerospace Operation Systems Icing Project Plan

Performance Goals & Indicators for Outcomes/Outputs:

Goal: Amended icing certification requirements for all new airplane designs

- Indicator: Manufacturers agree that new material meets intent of ARAC FGSHWG
- Indicator: FAA publishes new icing certification criteria
- Indicator: JAA publishes new icing certification criteria

Programmatic Approach:

Organizational Strategy

The LOC JSIT identified Bob Robeson, AIA, as the JSIT project lead for Criteria for Flight in Icing Conditions for New Airplane Designs. The project lead will assist with the implementation of the activities outlined in this Implementation Plan and will, when requested, provide progress reports to the CAST. Implementation of this project is viewed as a shared responsibility and tasks will be divided between the FAA and organizations/persons in industry. The Lead Organization for Overall project Coordination (LOOPC) is AIA. The Lead Organizations for Output Coordination (LOOC) are identified in each Output of this Implementation Plan. The roles and responsibilities of the LOOPC and LOOC are described in the CAST approved JSIT Process Document.

Implementation Activities

Numerous accidents have involved airframe icing as contributory or causal factors. The intent of this project element is to ensure that the proposed rulemaking product of the ARAC Flight Test Harmonization Working Group (FTHWG) includes those criteria that are significant to loss-of-control. Implementation of this project element will consist of:

- Providing the FTHWG with these criteria, and
- Supporting continued research regarding the effects of airframe icing on the performance and handling characteristics of aircraft

Key Products and Milestones:

- Amended FAR/JAR Part 25 that includes new icing certification criteria – 3 years
- Amended AC/ACJ material that includes new icing guidance material – 3 years

Plan and Execution Requirements:

Changes to certification rules and guidance materials only affect new airplane designs. Design changes, by nature, take a long time and require significant resources. Incorporating new safety features into new airplane designs is technically feasible and desirable. However, it takes many years for these changes to have a significant impact on overall fleet safety, given the time it takes to develop a new airplane and for these airplanes to become a significant part of the fleet.

Risk Description:

- Normal policy/rulemaking process and timeframe (e.g., ARAC, harmonization, etc.)
- Potential failures to implement recommendations of the ARAC into regulatory and advisory material
- New airplanes will represent a miniscule part of fleet in 2007
- Potential economic burden on manufacturers and operators
- Potential inadequate resource availability for manufacturers and operators and FAA

Risk Mitigation Plan:

- CAST will support timely and successful completion of ARAC activity
- Pending successful change to Part 25, industry will continue to comply with the more stringent JAA icing requirements

Impact on Non - Part 121 or International Applications:

All operators of the airplane will be impacted by changes to the design.