

THE SIXTH TRIENNIAL INTERNATIONAL AIRCRAFT FIRE AND CABIN SAFETY RESEARCH CONFERENCE

***Atlantic City, New Jersey, USA
October 25-28, 2010***

CALL FOR PAPERS

Background

The Aircraft Fire and Cabin Safety Research Conference is held every three years and organized by the Cabin Safety Research Technical Group (CSRTG). CSRTG members are drawn from major aviation regulatory authorities including the Civil Aviation Authority (CAA) of the United Kingdom, the United States Federal Aviation Administration (FAA), Transport Canada Civil Aviation (TCCA), the National Agency of Civil Aviation (ANAC) of Brazil, the Civil Aviation Safety Authority of Australia (CASA), and the Civil Aviation Authority of Singapore (CAAS). Abstracts for paper presentations at the conference should be no more than 400 words and should be submitted electronically by April 1, 2010, to:

Ms. April Horner
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Presentations based on the papers should have a duration of approximately 20 minutes. General topic areas are as suggested below although other applications will be considered within the general constraints of airplane fire and cabin safety research. The general focus is to be large public transport airplanes. Background information and previous conference topic areas may be reviewed at www.fire.tc.faa.gov. Topics will include:

1 Fire and Cabin Safety Research –The Challenges

Research Progress and Future Directions

State-of-the-art and optimising research to improve post-crash survivability and other cabin safety aspects.

Prioritization/Support and Safety Data Systems

Papers that provide guidance in research directions and priorities, making effective use of safety data or better methods of gathering/organizing/analyzing safety data.

Implementation of Findings

2 Crash Dynamics

Structural Strength and Load Attenuations

Airframe Structures - Current and enhanced structural impact tolerance criteria that would be formulated to maintain the airframe protective shell and minimize airframe and occupant loads. Application and verification of the effects of enhanced structural impact criteria. Results of structural impact tests that measure the impact environment and loads. Composite material structures, fuel systems, or unique structural configurations (such as lower lobe seating).

Cabin Interior Components - Current and enhanced impact structural retention criteria applicable to cabin interior components such as seats, overhead luggage bins, galleys, and other significant items of mass. Application and verification of the effects of enhanced impact criteria. Results of structural impact tests that measure the impact environment and component retention loads.

Computer Modeling

Airframe Structures Models - Application and verification of crash dynamics computer modeling algorithms that predict the impact environment and loads imposed on the airframe structure. Presentation and correlation of the results of analyses and structural impact tests. Application to composite material structures and/or unique structural configurations.

Seat/occupants Models - Application and verification of crash dynamics computer modeling algorithms that predict the impact environment and loads imposed on airplane seats and their occupants. Presentation and correlation of the results of analyses and structural impact test. Application to energy absorbing structures, composite material structures, and/or unique structural configurations.

Human Injury Criteria

Enhanced occupant injury criteria for airplane occupants exposed to an impact environment. Enhanced occupant injury criteria for airplane side facing seats. Enhanced occupant injury criteria for the head, neck, pelvis, and lower extremities body regions. Development and validation of anthropomorphic test devices and their relationship to occupant injury criteria. Airplane accident studies that place special emphasis on occupant injuries and the respective injury mechanisms. Improved restraint or protection systems.

2 General Fire Topics

Programs:

Past, Present, and Future

Accidents, Incidents, Technology Changes

Rule Changes:

Past, Present, and Future

Views, Needs

3 Materials Fire Safety

Fuselage Burnthrough Resistance

Test method development or the development of burnthrough resistant materials. Alternative methods of compliance.

Thermal/Acoustic Insulation

Test method development or the development of compliant materials. Materials such as tapes and hook and loop.

Material Flammability:

Materials used in the pressurized area of the fuselage. Materials in hidden areas such as ducting, and wire and cable. Composites in aircraft.

Fire Test Methods

Vertical Bunsen Burner Test for Cabin & Cargo Compartment Materials

45-Degree Bunsen Burner Test for Cargo Compartment Liners and Waste Stowage Compartment Material

Horizontal Bunsen Burner Test for Cabin, Cargo Compartment, and Miscellaneous Materials
60-Degree Bunsen Burner Test for Electric Wire
Heat Release Rate Test for Cabin Materials
Smoke Test for Cabin Materials
Oil Burner Test for Seat Cushions
Oil Burner Test for Cargo Liners
Radiant Heat Testing of Evacuation Slider, Ramps, and Rafts
Fire Containment Test of Waste Stowage Compartments
Two Gallon per hour Oil Burner Certification Testing for Repaired Cargo Compartment Liners
Recommended Procedure for the 4-Ply Horizontal Flammability Test for Aircraft Blankets
Magnesium in Aircraft:
Material development, Test Method Development

4 Advanced fire resistant materials

Synthesis, processing, Modeling, characterization, testing, and fire behaviour of low heat release rate/fire resistant materials suitable for aircraft cabin interiors or secondary/primary structures.

5 Systems fire safety

Halon Replacements:

Papers can address the development minimum performance standards and test methodologies for non halon aircraft fire suppression agents/systems in cargo compartments, engine nacelles, hand held extinguishers, and lavatory trash receptacles. Development of new agents and/or systems for the above-mentioned applications.

Fuel Tank Fire and Explosion Protection:

How and when aircraft fuel tanks are flammable as well as methods to reduce or eliminate fuel tank explosions. Nitrogen inerting of the fuel tanks. Research devoted to new systems and/or rule compliance.

Fire Detection and Suppression:

Research in the area of advanced detection systems for cargo compartments as well as detection systems for use in hidden areas of the aircraft. Suppression or extinguishing systems, such as water mist, for use in the cabin and/or hidden areas.

Flammability of Batteries/Fuel Cells

Fires in Nonpressurized Areas:

Fires in engine nacelles, dry bays and systems and structure outside the pressure vessel.

Fire Protection in Cargo:

Freighters, Hazardous Materials

6 Evacuation

Computer Modeling

Application of computer models for evacuation studies and combustion effects together with validation/accuracy/sensitivity assessments, use in certification decisions, airplane design, and accident investigations. Application to very large transport airplanes.

Human Behaviour in Emergencies

Experimental results from evacuation trials, human behaviour in emergencies, enhanced recognition of smoke and fire, cabin spatial arrangements, and non-visual position cues.

Data Analysis

Experimental methods, analytical methods, and integration of data from different sources/experiments.

Symbology/Pictorials

Evaluation of briefing methods and materials aboard transport airplanes, as well as alternative techniques and strategies. Results of studies examining use of pictorials and symbols for safety information transfer.

Passenger Education

State of the art in passenger education and training, current problems in passenger education, experimental results of passenger education studies, and futuristic education techniques and methods.

7 Operational Issues

Cabin crew training

Assessments of safety training methods and studies looking at areas of potential safety benefits and associated security issues, e.g. video surveillance. Cabin crew interaction with flight deck.

Cabin Crew Procedures

Effectiveness of pre-flight, in-flight and emergency safety and security procedures.

Safety Briefings

Use of improved safety briefing methods and provision of safety information (including dangerous goods) to passengers pre-and post-boarding.

Passenger Management

Effective strategies for safety and security aspects of passenger management during flight and emergency conditions.

Cabin Environment

Development/improvement of cabin air quality standards. Health and safety aspects associated with cabin air quality. New technologies for improved cabin air quality.