

ABSTRACT

Title: Smoke, Fire and Fumes in Transport Aircraft: Past History, Current Risk and Recommended Mitigations

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Over the past 50 years, the aviation industry has seen many incidents and accidents due to smoke and fire. Worldwide, in-flight fires are the fourth leading cause of air carrier accident fatalities. Data from recent years indicates the probability of passengers experiencing an in-flight smoke event is higher than 1 in 10,000. On average in North America, there is more than one diversion due to smoke every day.

The Royal Aeronautical Society adopted this research as a Specialist Paper under the name of SAFITA (Smoke, Fire and Fumes in Transport Aircraft) in late 2006. By recognizing the need for mitigation and education in the issue of smoke and fire, Chairman Peter Moxham of the Royal Aeronautical Society Flight Operations Group states that smoke, fire and fumes in transport aircraft are one of the most significant cause of deaths in aircraft today yet many of these events could have been alleviated or, indeed, removed had proper consideration been given in advance; and that most of these events could have been avoided. With the agenda to enhance aviation safety, the Royal Aeronautical Society has endorsed the submission of SAFITA for presentation at ISASI 2007.

The global aviation community needs to continue to improve the multi-layered approach to in-flight smoke/fire/fume. The multiple layers of mitigation include equipment design, maintenance, operations, procedures, training, and regulations. In the ongoing effort to continue to reduce the incident and accident rate, these mitigations need to be embraced to reduce the exposure of SFF events and decrease future accidents and incidents.

This paper provides an in-depth look at the current and past risk of in-flight smoke and fire events for air transport aircraft. It describes what has been done in the past to reduce exposure of in-flight smoke/fire/fumes (SFF), compare what is currently being done, and also make recommendations for future improvements. Historical data addressing smoke- and fire-related accidents, incidents, regulations, research across many disciplines, and from many countries, is chronologically categorized according to their significance to the existing rate of in-flight fires.