



EASA Safety Information Bulletin

SIB No.: 2010-10

Issued: 31 March 2010

- Subject:** **Fuel Tank Safety – Flammability Reduction System (FRS) for High Flammability Exposure Fuel Tanks – Production Cut-in**
- Applicability:** **New production Airbus A318, A319, A320, A321, A330-200 and A340 and Boeing 737, 767 and 777 aeroplanes, fitted with Centre Wing Tank**
- Description:** This Service Information Bulletin provides information pertaining to the introduction in production of Flammability Reduction Systems (FRS) preventing the development of flammable air / fuel vapour mixtures within specific fuel tanks for new production aeroplanes.
- Recommendation:** The National Transportation Safety Board (NTSB) investigation of the Boeing 747-131 accident on the 17th of July 1996 (Trans World Airlines Flight 800) determined that the probable cause of the accident was an explosion of the centre wing fuel tank, resulting from ignition of the flammable air / fuel vapour mixture in the tank. The NTSB recommendations issued after the Boeing 747 accident were to eliminate the flammability exposure of the air / fuel vapour mixture and to make improvements to the safety of specific fuel tank designs by reducing the probability of creating an ignition source within the fuel tank.
- Regulators and industry have done extensive work over the past years in order to establish by which means fuel tank explosions could be prevented
- The traditional certification approach of controlling ignition sources within the fuel system has been reinforced; the relevant requirements of Part 25 were made more stringent and design reviews were conducted (JAA INT/POL/25/12 and FAA SFAR 88).
 - Regarding the flammability exposure of the air / fuel vapour mixture, requirements applicable to new designs were published in CS 25 Amendment 1, revised in Amendment 6. For in-service products, in 2004 and 2008 EASA conducted two Regulatory Impact Assessments (RIAs). In accordance with the RIAs' conclusions, EASA has determined that, in order to improve the overall fuel tank safety level, from the 1st of January 2012 at the latest all new production airframes having a fuel tank with a high flammability exposure should be fitted with a FRS.
Note: The question of FRS retrofit on in-service aeroplanes is a separate issue that is not addressed in this SIB and will be subject of a specific Notice of Proposed Amendment (NPA).

This is information only. Recommendations are not mandatory.

National Aviation Authorities and Operators should therefore be aware that:

- The FRS, when installed in production, becomes part of the aeroplane minimum configuration. It must therefore remain installed and can only be dispatched inoperative in accordance with the provisions of the approved Master Minimum Equipment List (MMEL).
- No large transport aeroplane having made its first flight after the 31st of December 2011 will feature a fuel tank with a high flammability exposure, unless this tank is fitted with a Flammability Reduction System.

A high flammability exposure tank is defined by having a fleet average flammability exposure level exceeding 7%. The fleet average flammability exposure is determined in accordance with appendix N of CS 25 at Amendment 6.

The flammability exposure of current large transport aeroplanes fuel tanks were assessed for showing compliance with FAR 26.33. The centre wing tank of the following models were identified as having a fleet average flammability exposure above 7% (the table lists only models still in production at the end of 2011, as known at the date of issuance of this SIB):

Airbus	TCDS
A318/A319/A320/A321	EASA.A.064
A330-200	EASA.A.004
A340	EASA.A.015
Boeing	
737-600/-700/-800/-900	EASA.IM.A.120
767	EASA.IM.A.035
777	EASA.IM.A.003

Both aeroplane manufacturers have developed or are in the process of developing, FRS using nitrogen enriched air produced by air separation module filtering engine bleed air. Both manufacturers have started or will soon be starting the introduction in production of these systems on some of the affected aeroplane types.

As FRS modifications are certified, the relevant Type Certificate Data Sheets (TCDS) will be amended to record the type definition update for new production aeroplanes, associated with the introduction of FRS.

Contact: For further information contact the Airworthiness Directives, Safety Management and Research Section, Certification Directorate, EASA.
E-mail: ADs@easa.europa.eu