



EASA Safety Information Bulletin

SIB No.: 2010-10R1
Issued: 28 November 2014

Subject: Fuel Tank Safety – Flammability Reduction System (FRS) for High Flammability Exposure Fuel Tanks

Ref. Publications: EASA Executive Director (ED) [Decision 2014/024/R](#) dated 21 July 2014, and the related [Explanatory Note](#).

Revision: This Service Information Bulletin (SIB) revises SIB 2010-10 dated 31 March 2010 to communicate the ED Decision referenced above.

Applicability: Airbus A318, A319, A320, A321, A330 and A340 aeroplanes; and Boeing 737, 767 and 777 aeroplanes, fitted with a centre wing tank, manufactured from 01 January 2012.

Description: This SIB provides information pertaining to the introduction in production of FRS, preventing the development of flammable air / fuel vapour mixtures within specific fuel tanks for new production aeroplanes.

The investigation of the National Transportation Safety Board (NTSB) into the accident of Boeing 747-131 on 17 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 that 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).

This is information only. Recommendations are not mandatory.

- 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 determined that, in order to improve the overall fuel tank safety level, from 01 January 2012 at the latest, all new production airframes having a fuel tank with a high flammability exposure should be fitted with FRS.

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 31 December 2011 will feature a fuel tank with a high flammability exposure, unless this tank is fitted with FRS.

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 models still in production at the end of 2011):

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

Both aeroplane manufacturers have developed FRS using nitrogen enriched air produced by air separation module filtering engine bleed air, and have introduced FRS in production on the affected aeroplane types.

The relevant Type Certificate Data Sheets (TCDS, see references in Table above) have been amended to record the type definition update for new production aeroplanes, associated with the introduction of FRS.

This is information only. Recommendations are not mandatory.

Based on the outcome of a Regulatory Impact Assessment, EASA have decided (See ED Decision 2014/024/R referenced above) not to include FRS retrofit into the forthcoming Part 26 / CS 26, as originally envisaged, nor are there any other plans to require retro-active modification to install FRS on in-service aeroplanes registered in EASA Member States.

At this time, consistent with the ED Decision, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Commission Regulation (EU) No [748/2012](#), Part 21.A.3B.

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