Australian Government
Civil Aviation Safety Authority

Airworthiness Bulletin

AWB 26-007 Issue 3 - 17 March 2025

Eutectic Seal Waste Receptacle Fire Extinguishers

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters. Recommendations in this bulletin are not mandatory.

1. Effectivity

Aircraft fitted with toilet or galley automatic built-in fire extinguishers utilising Halon 1301 or FE-36 fire extinguishing agents.

2. Purpose

This AWB provides information on automatic toilet (lavatory) or galley built-in fire extinguishers that utilise Halon 1301 or FE-36 fire extinguishing agents which may be prone to loss of fire extinguishing agent due to other factors not relating to any sort of fire event.

3. Background

Automatic built-in fire extinguishers that are installed in aircraft toilet or galley waste receptacles (see Figure 1) are a requirement under paragraph 90.270 (3)(b) of CASR 1998. The likely fire threat in the toilet or galley waste bin would involve Class A materials (paper and paper products), with the typical ignition source being burning material discarded into the receptacle, such as a lit cigarette. The waste receptacles are designed to contain the likely fire. No fire detection system is provided in the waste receptacle. Toilet or galley waste receptacles are equipped with a built-in automatic fire extinguisher that discharges automatically into the receptacle upon the occurrence of a fire. In order to accomplish this, the extinguisher bottle incorporates a eutectic seal at the end of the bottle's discharge pipings directed into the waste bin. In the event of a fire, the heat generated will melt the eutectic seal at the discharge pipings, releasing the agent directly into the waste bin to extinguish the fire.

A relatively small amount of agent (100 grams of Halon 1301 or FE-36) is effective in extinguishing a toilet waste receptacle fire.

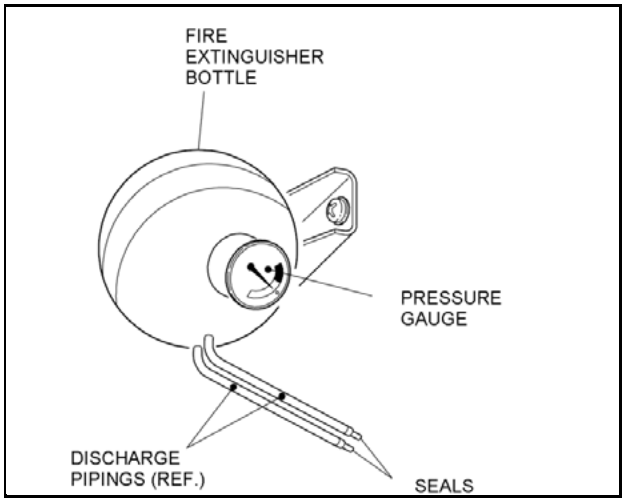

Figure 1 - Automatic lavatory fire extinguisher

Temperature/Pressure Stress Cycling Effects on Extinguisher Serviceability - Several SDRs have been reported to CASA by different operators, where toilet or galley automatic built-in fire extinguishers using Bromotrifluoromethane (commercially known as Halon 1301) or Hexafluoropropane (commercially known as FE-36) as the fire extinguishing agent, have lost their contents due to displacement of the eutectic seal over a period of time, see Figure 2.

The fire extinguishers can be susceptible to premature failure when exposed to temperature/pressure stress cycling.

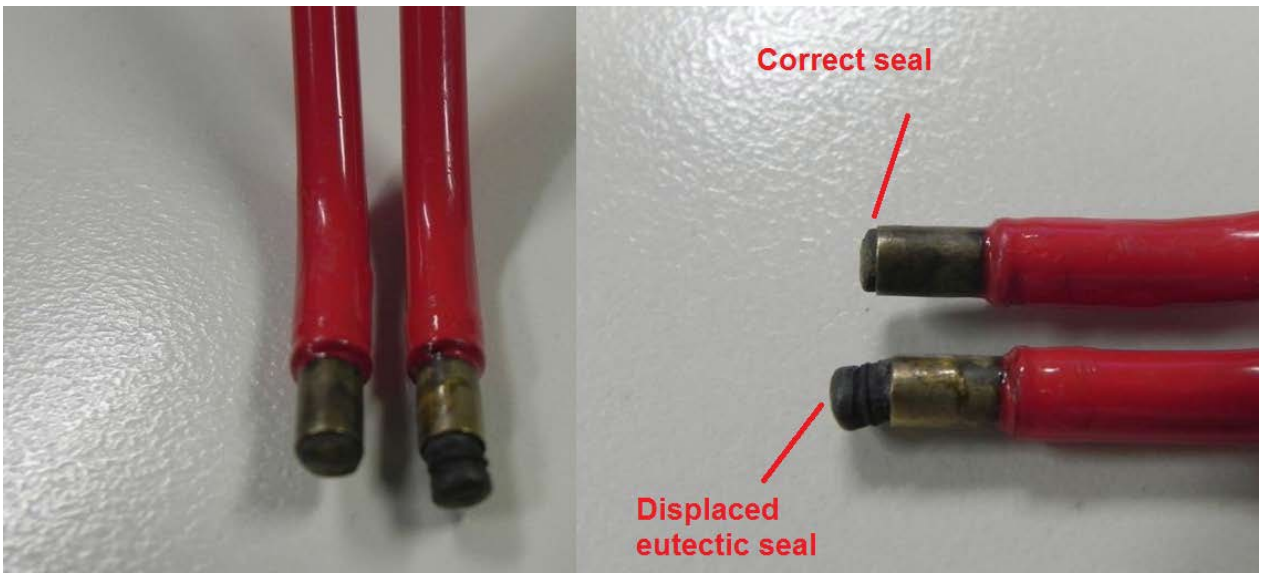

Figure 2 – Displaced Eutectic seal in discharge pipings

In information provided by a manufacturer, Bromotrifluoromethane has a high expansion ratio, which when the ambient temperature rises, so the pressure inside the extinguisher increases significantly. When the ambient temperature approaches the 50°C mark, the

pressure inside the extinguisher can reach in excess of 420PSI, which is almost double the nominal operating pressure of 200-220PSI at 25°C. See Figure 3.

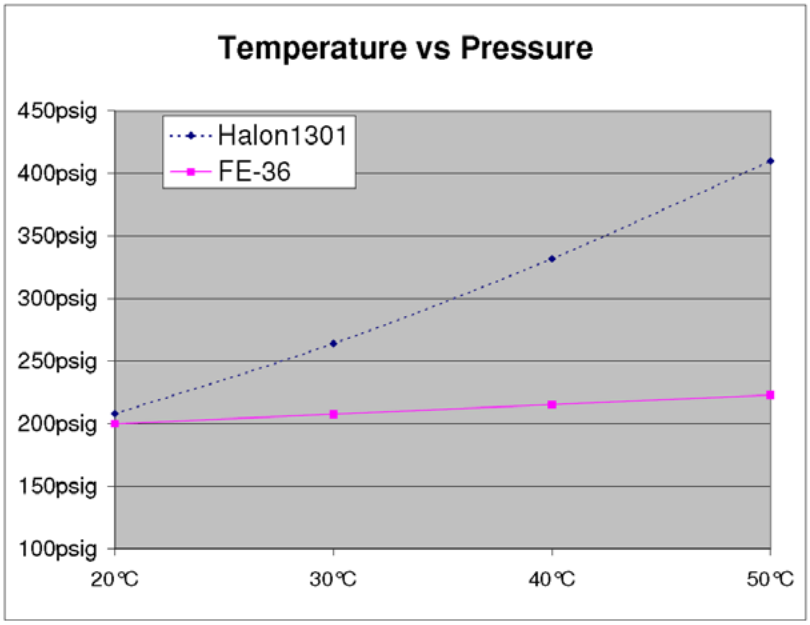

Figure 3 – Change in pressure due to temperature change with Halon 1301 and FE-36

In 1999 a report published by United Nations Environmental Programme (UNEP) – *New Technology Halon Alternatives*, found Halon 1301 has the environmental potential for ozone depletion and global warming. One type of replacement for Halon 1301 is Hexaflouropropane (commercially known as FE-36) fire extinguishing agent.

Fire extinguishing agent technology is extremely dynamic and the International Halon Replacement Working Group (IHRWG) Task Group 7 and the FAA have established a Minimum Performance Standards for toilet waste receptacles.

Extinguisher Manufacturing Defect Effects on Extinguisher Serviceability -

Recently the UK CAA that oversights a manufacturer of Eutectic Seal Waste Receptacle Fire Extinguishers, FFE released a revised UK Civil Aviation Authority Safety Notice Number SN-2024/004 Version 2 because the CAA become aware that the affected FFE fire extinguishers have also been fitted in galley waste bins as well as the previously notified toilet waste bins.

The introduction section of the Safety Notice states the following;

'Therefore, the purpose of this Safety Notice is to alert owners and operators of affected aircraft models, as detailed in Table 1, regarding the inspection/check of the Toilet and Galley Waste Bin Fire Extinguishers. The affected fire extinguishers are used in passenger toilets and galley waste bins installed on a number of different aircraft types, including those identified, but not necessarily restricted to those detailed in Table 1 of this Safety Notice. Some aircraft installations have fire extinguisher models that incorporate a sight gauge and/or utilise other features that can ensure the timely identification and removal of any fire extinguisher that has suffered premature discharge. Accordingly, this Safety Notice addresses aircraft types for which affected fire extinguishers may not yet have been inspected, and provides recommendations

based on those published by FFE, the fire extinguisher manufacturer, in their Recommendation Letter FE 4120-DC.

Note 1: The EMBRAER types identified in Table 1 have affected fire extinguishers installed and these actions are already addressed by ANAC SAB BEA 2024-01.

Note 2: BAE SYSTEMS issued AOM 24-003V-1 on 29 Feb 2024, incorporating FFE Recommendation Letter FE 4120-DC.

Note 3: ATR issued AOM 2024/01 on 25 Jan 2024, which has been mandated by EASA AD 2024-0132.

Note 4: Bombardier have confirmed that the affected FFE extinguishers have been used in both toilet and galley waste bins on their aircraft.'

Affected Aircraft Types, Part Numbers and Serial Numbers:

FE-36 Toilet & Galley Waste Bin Fire Extinguishers (see P/Ns in table below) manufactured by FFE Ltd, serial numbers 70472 through 113558 inclusive, and with a manufacturing date before 12 Jun 2023 with part numbers shown in Table 1.

Part Number	Gauge Incorporated	Aircraft Type/Model Designation(s)
BA24320L-1	No	ATR 42/ATR 72
BA24320H-1	No	BAe146/AVRO RJ Series
BA24320H-1	No	EMBRAER: - ERJ 170-100 and ERJ 170-200 - ERJ 190-100 and ERJ 190-200 - EMB-145 and EMB-135 - EMB-545 and EMB 550
BA24320A-1 BA24320F-1	Yes	Bombardier CL-600-2B16 604 Variant/Challenger 604, 605 and 650
BA24320P-1	Yes	MHI CL-600-2B19 Regional Jet 100 (previously Bombardier CRJ 200/Challenger 850)

Table 1 – FE-36 Toilet & Galley Bin Fire Extinguishers PN by Aircraft Type

(Taken from UK Civil Aviation Authority Safety Notice Number SN-2024/004 Version 2)

For further information see:

- United Nations Environment Programme (UNEP) Halons Technical Options Committee Technical Note No. 1, 1999 and
- FAA Report DOT/FAA/AR-99-63 - *Options to the Use of Halons for Aircraft Fire Suppression Systems*.
- UK Civil Aviation Authority Safety Notice Number SN-2024/004 Version 2 Issued 10 March 2025.

Note: a copy of FFE Recommendation Letter FE 4120-DC is attached as Appendix 1 to the Safety Notice.

4. Recommendations

Inspections of the toilet or galley built-in fire extinguishers may not necessarily detail checks to ensure the integrity of the eutectic seal. Check the integrity of the eutectic seal when carrying out an inspection of the automatic fire extinguishers.

Owners, operators and maintainers of Australian registered aircraft listed in Table 1 are recommended to obtain and review a copy of the UK Civil Aviation Authority Safety Notice Number SN-2024/004 Version 2.

CASA recommends that operators carry out the instructions of FFE Ltd Recommendation Letter FE 4120-DC for all FFE manufactured automatic built-in fire extinguishers that are installed in aircraft toilet or galley waste receptacles.

Please note that although the FFE letter only refers to Toilet Compartment Fire Extinguishers the procedure is also applicable to affected extinguishers when fitted in Galley Waste Bins.

CASA notes that for the operators and maintainers of ATR42 / ATR 72 aircraft EASA has issued an airworthiness directive EASA AD 2024-0132 “ATA 26 – Fire Protection – Lavatory Compartment Fire Extinguishers – Inspection / Replacement”, that mandates inspections and replacement of the toilet built-in fire extinguishers only. However, operators and maintainers of these aircraft should be aware that galley built-in fire extinguishers may be fitted to ATR42 / ATR 72 aircraft.

5. Reporting

CASA asks all owners, operators and maintainers to report any discharged or displaced eutectic seals found on Eutectic Seal Waste Receptacle Fire Extinguishers that are considered to be due to effects of temperature/pressure stress cycling or a manufacturing defect using the SDR system.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

Airworthiness and Engineering Branch
National Operations and Standards
Civil Aviation Safety Authority
GPO Box 2005, Canberra, ACT, 2601