MR JONATHAN MARK LAYTON – HM ASSISTANT CORONER FOR CARMARTHENSHIRE & PEMBROKESHIRE CORONER'S COURT

INVESTIGATION INTO THE DEATH OF RICHARD MOHAMED FEKRY OSMAN

CIVIL AVIATION AUTHORITY RESPONSE TO A REPORT ON ACTION TO PREVENT OTHER DEATHS

PURSUANT TO REGULATIONS 28 & 29 OF THE CORONERS (INVESTIGATIONS) REGULATIONS 2013

Introduction

The UK Civil Aviation Authority ('CAA') would first like to express its sincere condolences to the family and friends of Mr. Osman.

The CAA is a public corporation, established by Parliament in 1972 as an independent specialist aviation regulator. The CAA works so that:

- the aviation industry meets the highest safety standards,
- consumers have choice, value for money, are protected and treated fairly when they fly,
- through efficient use of airspace, the environmental impact of aviation on local communities is effectively managed and CO_2 emissions are reduced,
- the aviation industry manages security risks effectively.

The CAA has carefully considered the Regulation 28 Report to prevent future deaths issued by the Assistant Coroner for Carmarthenshire & Pembrokeshire dated 5 June 2025 ('the Report'), which includes the following recommendations that are relevant to the role and functions of the CAA, insofar as they apply only to aircraft registered and operated within the UK:

> *… That a full review of cockpit fire/smoke procedures be undertaken to include, but not limited to:*
> *- the recognition of an oxygen fire (identifiable by a characteristic noise comparable to that of a blowtorch) and the immediate cutting off this oxygen supply.*
> *- the installation or carrying of protective equipment to deal with any cockpit fires.*
> *- a review of the effectiveness of Halon fire extinguishers to deal with onboard fires.*
> *- a review of regulations (if required) to prevent the use of cigarettes in the cockpit and related flammable items and materials.*
> *- the additional risk analyses to take into account the hypothesis of an overpressure in the oxygen distribution system.*

The CAA was not an Interested Person at this inquest. As such, it did not have access to the inquest evidence. When preparing this response, with a view to explaining the outcome of its review, the CAA has relied on the information contained in the Report, together with regulatory information and safety data held by the CAA and input from regulatory subject matter experts in civilian flight operations,

aircraft airworthiness and aeromedicine.

The CAA's Approach

The CAA has acknowledged the concerns identified by the Assistant Coroner. In particular, those related to the risk of oxygen fire onboard a commercial aircraft, cockpit ('flight deck') fire/smoke procedures, the effectiveness of equipment for dealing with fire and how the current aviation safety regulation framework works to prevent such incidents. This response addresses the recommendations in the report, specifically in relation to large commercial aircraft. It outlines the relevant regulatory requirements, the measures in place to mitigate and respond to such risks, and the CAA's role and function in overseeing these processes.

The CAA is not responsible for the investigation of aircraft accidents or serious incidents on behalf of the UK, which falls to the Air Accidents Investigation Branch ('AAIB'), a body who report directly to the Secretary of State for Transport. Procedures for these investigations are laid down in international protocols, specifically the standards and recommended practices defined in Annex 13 to the Convention on International Civil Aviation, Aircraft Accident and Incident Investigation, and published by the International Civil Aviation Organization ('ICAO').

The CAA understands that the Department for Transport ('DfT') will, therefore, respond separately to those aspects of the Report which relate to aircraft accident investigation. We can confirm that we have exchanged responses with the DfT prior to filing this response with the court.

Regulatory framework

The UK's aviation safety framework is designed to ensure that aircraft systems are developed and maintained to the highest safety standards. As the UK's specialist aviation regulator, the CAA oversees compliance with domestic aviation safety regulations, including those covering the design, certification, operation, and ongoing maintenance of aircraft on the UK register. The CAA is also the UK's competent authority for ensuring compliance with international obligations, including those issued by ICAO.

The process of ensuring commercial aircraft are safe to operate begins with initial airworthiness[1], referring to the design and certification phase, during which aircraft and their systems (including those which mitigate the risk of hazards onboard aircraft) must demonstrate compliance with detailed safety requirements before entering service. For large commercial aircraft, design standards are set out in Certification Specifications ('CS') (CS-25[2] applies to large aircraft). Although applied within individual international jurisdictions, CS are developed with close collaboration between regulators working across international jurisdictions, with extensive input from the wider aircraft design and manufacturing community. In practice, this results in a high degree of international consistency, ensuring that standards are technically robust and harmonised across regulatory systems. Once in service, aircraft must comply with the requirements within the UK Air Operations Regulation[3] which are underpinned by a safety management system: a structured and proactive approach to managing safety risks that supports day-to-day safety management and operational decision making[4]. Alongside this, aircraft must continue to meet ongoing technical and maintenance requirements through a process known as continuing airworthiness[5], including compliance with any Airworthiness Directives

1 *UK Regulation (EU) No. 748/2012 ("UK Initial Airworthiness Regulation")*
2 CS-25 Amendment 28
3 *UK Regulation (EU) No. 965/2012 ("UK Air Operations Regulation")*
4 *UK Air Operations Regulation* ORO.GEN.200; Annex 19 to the Convention on International Civil Aviation
5 *UK Regulation (EU) No. 1321/2014 ("UK Continuing Airworthiness Regulation")*

(ADs) issued to address emerging concerns.

Together, these requirements ensure that systems remain safe and effective over time, including systems for the prevention and management of operational risks including onboard fires.

Fire prevention onboard commercial aircraft

Oxygen systems and pressurisation

Commercial aircraft are typically equipped with gaseous oxygen systems, which are designed to supply oxygen to passengers and crew in the event of emergencies such as cabin depressurisation or severe fume events. These systems play a critical safety role but are not used during routine flight operations, as the aircraft's pressurisation system provides sufficient oxygen under standard conditions.

Design and certification specifications for gaseous oxygen systems onboard commercial aircraft are designed to prevent a fire from occurring, noting the impact of fire risks on such systems, and include multiple safeguards and mitigations.[6] These systems must meet stringent safety requirements; oxygen systems are required to be free from hazards, with design organisations required to demonstrate, through system safety assessments, that the likelihood of an uncontrolled oxygen fire at the aircraft level is extremely improbable and would not result from a single failure of any system or associated component[7]. Risk assessments are comprehensive and should cover equipment failures, operating conditions, components and materials, ignition mechanism and kindling chain. Current design standards for large commercial aircraft already require oxygen systems to be resilient against potential pressure surges and temperature effects[8]. The risk of overpressure in gaseous oxygen systems is addressed through design specifications, requiring oxygen equipment to be protected from rupture. These systems are built with proof and burst pressure factors, and all oxygen systems are required to have overpressure relief valves to safely vent excess pressure.

Smoking and other flammable materials in the flight deck

The Air Navigation Order 2016[9] and the UK Air Operations Regulation[10] provide the legal framework for restricting smoking onboard commercial aircraft. The UK Air Operations Regulation enables the pilot-in-command to prohibit smoking anywhere on board in a range of operational scenarios and whenever considered necessary in the interest of safety.

While there is no specific reference to smoking in the flight deck within these regulations, the CAA is not aware of any UK aircraft operators that allow smoking in any part of an aircraft, including the flight deck. Flight crew receive extensive training in safety and risk management, with a strong emphasis on maintaining a controlled and hazard-free operating environment onboard aircraft. In addition, all safety related occurrences must be reported to the CAA, which enables data to be collected and analysed over time. Following a review of the coroner's request, the UK CAA Safety Intelligence Team have confirmed that there have been no reported UK incidents involving smoking or vaping in the flight deck in the past decade.[11]

Whilst we recognise the legal framework does not expressly prohibit smoking in the flight deck, the CAA's regulatory oversight derived from working closely with operators, and safety data derived from

[6] CS 25.1441, CS 25.869
[7] CS 25.1309(b)
[8] CS 25.1453
[9] Article 243 The Air Navigation Order 2016
[10] *UK Air Operations Regulation* CAT.OP.MPA.240
[11] Mandatory Occurrence Reporting data analysis for period 01/01/15 to 24/06/25

the UK Mandatory Occurrence Reporting Regulation[12], does not currently indicate a safety risk or safety gap that would require regulatory change.

Regarding other flammable materials, aircraft design standards require that all installed equipment in the flight deck and aircraft cabin are fire-resistant and meet specific fire-resistance criteria[13]. Operators are also expected to manage their risks associated with flight crew personal items and equipment, with specific Dangerous Goods approval required for the carriage of certain hazardous materials, in accordance with ICAO specifications. This approval is obtained by applying to the CAA and demonstrating compliance with safety requirements, including staff training and operational procedures[14]. Flight crew are also subject to aviation security screening[15].

The role of ongoing maintenance in prevention

The CAA places significant emphasis on the continuing airworthiness of commercial aircraft as a further layer of safety risk mitigation. All CS systems, including oxygen systems and fire protection equipment, are subject to regular inspection, testing, and maintenance in accordance with approved maintenance programmes. This ensures that any degradation or malfunction is identified and addressed before it may contribute to an incident.

Continuing airworthiness involves a structured programme of regular inspections, maintenance, repairs, and system checks, performed by licensed engineers and approved maintenance organisations. Operators are required to follow a maintenance schedule tailored to each aircraft type, which includes both routine servicing and in-depth checks at defined intervals, as well as specific pre-flight checks[16]. In addition, any defects or unusual findings must be reported, investigated, and resolved before an aircraft can return to service. This process is supported by detailed record-keeping, ensuring traceability and accountability for maintenance actions.

The CAA is responsible for conducting compliance audits of approved maintenance organisations in accordance with the requirements set out in the UK Continuing Airworthiness Regulation.

No new fire risks have been identified by the CAA as a result of this audit programme and the CAA remains satisfied that all known risks fall within existing design, certification and operational controls.

Managing fires onboard commercial aircraft

The regulatory framework is designed to address both the prevention of onboard fires, as well as the ability to detect and respond effectively should they occur.

Under the UK Air Operations Regulation, large transport category aircraft must carry fire extinguishers in the flight deck and cabin, with at least one located in the flight deck. The number of additional extinguishers required in the aircraft cabin are linked to passenger capacity[17].

Halon fire extinguishers have traditionally been used by commercial aircraft operators to meet these requirements due to their effectiveness in confined aircraft environments. However, their use is being phased out due to environmental concerns[18], and from 31 December 2025, Halon-free extinguishers,

[12] Occurrence Reporting | UK Civil Aviation Authority
[13] CS 25.853, Appendix F to CS 25.853
[14] SPA.DG.105 Approval to transport dangerous goods, *UK Air Operations Regulation* AMC3 ORO.MLR.100
[15] *Regulation (EC) No 300/2008 of the European Parliament* (retained EU law)
[16] *UK Continuing Airworthiness Regulation* Annex I (Part-M) GM M.A.301(i); *UK Regulation (EU) 2018/1139 ('UK Basic Regulation')* Annex V, 6.2
[17] *UK Air Operations Regulation* CAT.IDE.A.250
[18] *Regulation (EC) No 1005/2009* (retained EU law)

which must meet the same minimum performance standards will be mandated by CS25.851(a) and the Minimum Operating Standards defined in FAA Advisory Circular AC20-42D. The CAA supports this transition.

All flight crew onboard large commercial transport aircraft are required to undergo regular training on the handling and use of fire-fighting equipment, protective breathing equipment, and the effects of smoke on an enclosed area[19]. In the event of fire in the flight deck, flight crew must also have access to a crash axe or crowbar[20] in order to access panels where fire sources may originate, as well as to portable oxygen to enable movement around the flight deck and aircraft cabin[21].

Conclusion

The CAA's review of the Assistant Coroner's recommendations has concluded that no change to the existing aviation safety regulation framework is currently required. The CAA remains satisfied that the safeguards in place, which are underpinned by airworthiness and operational regulations, design and certification requirements and operator safety management systems provide adequate risk mitigation. As part of this review, subject matter experts have examined relevant safety data held by the CAA under the Mandatory Occurrence Reporting Scheme, which does not indicate there is a risk of fire onboard large commercial aircraft - or the consequences of a flight deck fire - necessitate changes to existing rules. The CAA is also mindful of international requirements directed by ICAO which do not support change to existing fire safety controls at the present time.

However, given the specific concerns identified by the Assistant Coroner, the CAA will continue to carefully monitor safety data and future aviation safety investigation recommendations related to fire risks with a view to taking appropriate action where necessary.

Signed:

Head of Design & Certification (Chief Engineer)

Future Safety & Innovation

Civil Aviation Authority

24 July 2025

[19] *UK Air Operations Regulation* ORO.FC.230; AMC1 ORO.FC.230
[20] *UK Air Operations Regulation* CAT.IDE.A.255
[21] *UK Air Operations Regulation* CAT.IDE.A.235