EXPLANATORY MEMORANDUM TO

THE OZONE-DEPLETING SUBSTANCES (GRANT OF HALON DEROGATIONS) REGULATIONS 2025

2025 No. 1276

1. Introduction

1.1 This Explanatory Memorandum has been prepared by Department for Environment, Food and Rural Affairs (Defra) and is laid before Parliament by Command of His Majesty.

2. Declaration

2.1 Emma Hardy MP, Parliamentary Under Secretary of State, at the Department for Environment, Food and Rural Affairs confirms that this Explanatory Memorandum meets the required standard.

2.2 Daniel Roff, Deputy Director for Net Zero and F-gases, at the Department for Environment, Food and Rural Affairs confirms that this Explanatory Memorandum meets the required standard.

3. Contact

3.1 Ademola Adeseun at the Department for Environment, Food and Rural Affairs can be contacted by email at the following address with any queries regarding the instrument: fgas@defra.gov.uk. Alternatively, the department can be contacted by telephone: +44 (0) 3459 335577.

Part One: Explanation, and context, of the Instrument

4. Overview of the Instrument

What does the legislation do?

4.1 This instrument grants derogations from the end-date specified in the assimilated Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer to the Ministry of Defence (MOD) and Loganair with regard to the continued use of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments in certain aircraft.

4.2 The derogations allow MOD and Loganair the continued use beyond 31 December 2025 of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments in MOD's fleet of Dakota, Wildcat, Chinook, Merlin, P-8A Poseidon, A400M, Shadow and C-17 Globemaster aircraft, and in Loganair's fleet of ATR 72-212A and ATR 42-500 aircraft, since there are currently no technically and economically feasible alternatives to using halon in the fire extinguishers on those aircraft.

Where does the legislation extend to, and apply?

4.3 The extent of this instrument (that is, the jurisdiction(s) which the instrument forms part of the law of) is England, Wales, and Scotland.

4.4 The territorial application of this instrument (that is, where the instrument produces a practical effect) is England, Wales, and Scotland.

5. Policy Context

What is being done and why?

5.1 Halons are a type of ozone depleting substance (ODS) used in fire extinguishers and other fire protection systems. At a global level, releases of halons have serious consequences for the environment and for human health. Their long lifespans in the atmosphere enable them to reach the higher atmosphere (stratosphere) where they catalyse the breakdown of ozone, increasing exposure to UV radiation, which can cause skin cancer. Halons also contribute to climate change. While the amounts emitted may be relatively small, because they have very high global warming potential and high atmospheric persistence, they can have a powerful warming effect. It is because of these aggressive effects on the ozone layer and global warming that the international community and the UK Government has put in place legal restrictions that aim to eliminate their use.

5.2 Under the UN Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol), ODS have largely been phased out in developed countries. Remaining ODS use in the UK is very limited, tightly controlled and monitored under the assimilated Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer (the ODS Regulation). It is permitted only in essential applications where no alternatives are available, such as fire extinguishers in ships and aircraft, laboratory, and analytical uses, and as feedstock for other chemicals. Imports and exports must be licensed and annual reports on production and consumption must be submitted to the Montreal Protocol's Ozone Secretariat.

5.3 While the ODS Regulation prohibits the placing on the market of ODS, certain critical uses are permitted. This includes the critical use of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments. Such use is time-limited, but derogations can be granted to permit the continuing use of halon 1211 (and other halon substances) beyond those set time limits where an applicant in a particular case can demonstrate that no technically and economically feasible alternative to halon is available.

Assessment of Loganair application

5.4 Loganair applied for a 12-month derogation to allow the continued use of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments in their fleet of ten ATR 72-212A and six ATR 42-500 aircraft beyond the critical use end-date of 31 December 2025, until 31 December 2026.

5.5 Loganair stated that a contract has been placed to enable them to replace all halon 1211 portable fire extinguishers for the protection of cabins and crew compartment ahead of the 31 December 2025 end-date, but due to setbacks it was unlikely their replacement programme would be complete in time. Loganair have identified 2-bromo-3,3,3-trifluoropropene (2-BTP) as an alternative to halon 1211, being an extinguishing agent with the closest match in size and effectiveness to halon 1211, although not a like-for-like replacement. Portable extinguishers in the ATR aircraft are dual purpose in that they are also utilised to extinguish fires in the aft baggage bay via a bulkhead diaphragm and a network of pipes and nozzles within the baggage bay. The non-halon solution requires replacement of the diaphragm and nozzles in all Loganair's ATR aircraft, but this modification is not yet complete due to supply chain issues. This leaves insufficient time to implement before the 31 December 2025 end-date.

5.6 In assessing Loganair's application and whether or not technically and economically feasible alternatives to using halon are available, the Secretary of State considered information from two expert bodies, the Halons Technical Options Committee (HTOC) (now the Fire Suppression Technical Options Committee (FSTOC)) and the Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol on Substances that Deplete the Ozone Layer, contained in both the TEAP May 2022 Progress Report[1] and TEAP May 2025 Progress Report (Volume 1)[2]. The Secretary of State also reviewed information provided by Loganair on use of Halotron BrX (a brand name for 2-BTP) and their halon replacement programme.

5.7 The 2022 TEAP Progress Report explained that alternatives to halon 1211 were still to be developed for the different sizes of handheld extinguishers that are installed on smaller civil aircraft. However, the latest TEAP Progress Report, published in 2025, suggested that 2-BTP/Halotron BrX is a viable alternative to halon 1211, and that transition from halons is near complete in Europe although not all transitions are complete.

5.8 Loganair have confirmed that their live replacement programme is underway, whereby halon 1211 is being replaced with the 2-BTP/Halotron BrX alternative on all the ATR aircraft fleet in question. Taking into account Loganair's explanation as to why the replacement programme may not be completed by the ODS Regulation's end-date of 31 December 2025, together with the conclusion of the 2025 TEAP Report that, while alternatives may be available, not all transition programmes are complete, the Secretary of State is content that currently no technically and economically feasible alternative to using halon is available in this case, and has decided to grant Loganair a derogation for the relevant aircraft until 31 December 2026.

Assessment of MOD application: Part 1

5.9 MOD have applied for an 18-month derogation to allow the continued use of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments in their fleets of Dakota, Wildcat, Chinook, Merlin, P-8A Poseidon, A400M, and Shadow aircraft beyond the critical use end-date of 31 December 2025, until 30 June 2027.

5.10 MOD have also identified 2-BTP as an alternative to halons in portable fire extinguishers for the protection of cabins and crew compartments in these aircraft. MOD stated that a contract has been placed to enable them to replace all halon 1211 portable fire extinguishers for the protection of cabins and crew compartment ahead of 31 December 2025. However, due to setbacks in their halon replacement programme, this may not be possible. While 2-BTP meets MOD's minimum performance standards, 2-BTP portable fire extinguishers are larger and heavier than the halon 1211 portable fire extinguishers. As a result, new brackets must be designed and tested to ensure they have sufficient strength for the intended use, noting that military air systems typically have broader flight envelopes (essentially the boundaries of safe flight conditions). There has been a delay however with MOD's contractors providing essential airworthiness evidence, and the supply chain cannot deliver remodification of the aircraft in time. As a result, the replacement non-halon portable fire extinguishers and supporting brackets may not be cleared for use and

[1] https://ozone.unep.org/system/files/documents/TEAP-Progress-report-may2022.pdf. TEAP May 2022 Progress Report

[2] https://ozone.unep.org/system/files/documents/TEAP-May2025-Progress-Report-vol1.pdf. TEAP May 2025 Progress Report (Volume 1)

fitted into the relevant air systems before 31 December 2025. MOD expect that the halon replacement programme on all the aircraft will be completed by 30 June 2027.

5.11 In assessing MOD's application and whether or not technically and economically feasible alternatives to using halon are available, the Secretary of State has considered the 2018 HTOC report[3]; TEAP May 2022 Progress Report[4] and 2025 TEAP Progress Report (Volume 1)[5], as well as information provided by MOD on use of 2-BTP and their halon replacement programme.

5.12 The 2018 HTOC Report stated that despite over 20 years of research, the civil aviation industry had not yet been able to find any replacements for halon 1211 that they deemed to be acceptable from an efficiency perspective (i.e. space and weight), a toxicity perspective or both. After publication of the HTOC Report, further investigation identified that, while evaluation of alternatives to halon 1211 had continued, there were still no alternatives available that address all of the space, weight and safety considerations. The 2022 TEAP Progress Report suggested that alternatives to halon 1211 were still to be developed for the different sizes of handheld extinguishers that are installed in military aircraft and helicopters. However, the latest TEAP Progress Report, published in 2025, suggested that 2-BTP is a viable alternative to halon 1211 for these uses, and transition from halons is near complete in Europe, although not all transitions are complete.

5.13 The MOD have confirmed that their live replacement programme is underway, whereby portable fire extinguishers using halon 1211 are being replaced with alternatives on all their Dakota, Wildcat, Chinook, Merlin, P-8A Poseidon, A400M, and Shadow aircraft. Taking into account the MOD explanation as to why the replacement programme may not be complete by the ODS Regulation's end-date of 31 December 2025, together with the conclusion of the 2025 TEAP Report that, while alternatives may be available, not all transition programmes are complete, the Secretary of State is content that currently no technically and economically feasible alternative in this case, and has decided to grant MOD a derogation for the relevant aircraft until 30 June 2027.

Assessment of MOD application: Part 2

5.14 MOD have applied for a separate derogation to allow the continued use of halon 1211 in portable fire extinguishers for the protection of cabins and crew compartments in their existing fleet of eight C-17 Globemaster aircraft until their out of service date of 31 December 2040. These aircraft are leased from the United States of America (USA) Government and form part of a global fleet of 275 C-17 Globemaster aircraft. The UK C-17 fleet are operated as part of the United States Air Force (USAF) C-17 System Program Office and are obligated to maintain the eight UK aircraft to the same configuration as all other aircraft in the global fleet.

5.15 MOD explained in their application that in theory 1,1,1,3,3,3-hexafluoropropane (FE-36) and 2-BTP could possibly be alternatives to Halon 1211 in the C-17 Globemaster. However, MOD stated that they are not considered to be a viable option for the UK fleet because:

[3] https://ozone.unep.org/sites/default/files/assessment_panels/HTOC_assessment_2018.pdf. 2018 HTOC report
[4] https://ozone.unep.org/system/files/documents/TEAP-Progress-report-may2022.pdf. TEAP May 2022 Progress Report
[5] https://ozone.unep.org/system/files/documents/TEAP-May2025-Progress-Report-vol1.pdf. TEAP May 2025 Progress Report (Volume 1)

a) FE-36 is a fluorinated greenhouse gas (F-gas) with higher Global Warming Potential (GWP) than Halon 1211 (9,400 compared to 1,300 for Halon 1211), and may be subject to increasingly strict F-gas legislation during the service life of the aircraft.

b) Portable fire extinguishers using 2-BTP are larger and heavier and so would require structural design modifications to the aircraft.

c) The aircraft are managed by USAF, and they have no plans currently to modify the aircraft to replace such halon uses. Since MOD are contractually obliged to maintain the aircraft leased to the UK to the same configuration as all other 267 aircraft in the global fleet owned by the USA, this creates a technical barrier that prevents, or significantly affects, the ability for the UK to unilaterally implement an alternative extinguisher in only its eight C-17s. The UK are also reliant on all modifications being made via USAF directly with Boeing (the manufacturer of the aircraft). The significant time-period required to implement any alternative – outside of the current contractual arrangements – across the entire fleet is also a technical barrier: it is expected this would not be completed until 2035 at the earliest.

d) It is not economically feasible for the UK to be the sole operator seeking to replace the halon extinguishers across the entire global fleet. Given these circumstances and the timescales involved in the replacement programme, and that there would only be five operational years between implementation and the out-of-service date of the C-17s (between 2035-2040), MOD consider it is not economically feasible to replace the halon extinguishers.

5.16 In assessing MOD's application and whether or not technically and economically feasible alternatives to using halon are available, the Secretary of State has considered the 2018 HTOC report[6]; the TEAP May 2022 Progress Report[7] and TEAP May 2025 Progress Report (Volume 1)[8] referenced at paragraph 5.13 above, and noted their evidence that 2-BTP may be a viable alternative to halon fire extinguishers in military aircraft, although not all transitions are complete.

5.17 Given the explanation provided by the MOD, the Secretary of State is satisfied that due to the nature of the contract they have with the USAF for their C-17s, the aircraft must be kept to the same configuration as all other aircraft in the global fleet. Furthermore, if the UK is the sole country amongst the operators of the entire global fleet seeking to replace the halon portable fire extinguishers, then the total fixed costs would need to be paid for by the UK. In addition, a complete replacement programme for the entire global fleet would take, if started immediately, until 2035 at the earliest, leaving only five operational years left before the 2040 out-of-service date of the fleet. Having considered the evidence provided by the MOD and the HTOC/FSTOC and TEAP reports, the Secretary of State is content that currently no technically and economically feasible alternative to using halon is available in this case, and has decided to grant a derogation for the relevant aircraft until their out of service date of 31 December 2040.

[6] https://ozone.unep.org/sites/default/files/assessment_panels/HTOC_assessment_2018.pdf. 2018 HTOC report
[7] https://ozone.unep.org/system/files/documents/TEAP-Progress-report-may2022.pdf. TEAP May 2022 Progress Report
[8] https://ozone.unep.org/system/files/documents/TEAP-May2025-Progress-Report-vol1.pdf. TEAP May 2025 Progress Report (Volume 1)

What was the previous policy, how is this different?

5.18 Previously, the European Commission undertook most of these control functions on behalf of the UK, including granting derogations in the case of critical uses of halons. Since EU Exit, derogations have been granted by the Secretary of State for the critical use of halons in fire protection systems and fire extinguishers on other aircraft in The Ozone-Depleting Substances (Grant of Halon Derogations) Regulations 2021 No. 1397 and The Ozone-Depleting Substances (Grant of Halon Derogations) Regulations 2023 No. 226.

6. Legislative and Legal Context

How has the law changed?

6.1 The use of halons is controlled in Great Britain under assimilated Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer (the ODS Regulation). The ODS Regulation has a number of general prohibitions relating to halon use. The key provisions for this Instrument are in Articles 6, 13 and Annex VI, which prohibit and require decommissioning of fire protection systems and fire extinguishers containing halons, except for critical uses subject to end dates set out in Annex VI. The critical uses listed in Annex VI include the use of halon 1211 in certain fire protection systems and portable extinguishers on aircraft.

6.2 Relevant definitions of terms in Annex VI are:

- "Cut-off date" means the date after which halons must not be used for fire extinguishers or fire protection systems in new equipment and new facilities for the application concerned.
- "End date" means the date after which halons shall not be used for the application concerned and by which date the fire extinguishers or fire protection systems containing halons shall be decommissioned.
- "New equipment" means equipment for which, by the cut-off date, neither of the following events has occurred:
    - signature of the relevant procurement or development contract.
    - submission of a request for type approval or type certification to the appropriate regulatory authority. For aircraft, submission of a request for type certification refers to a submission of a request for a new aircraft type certification.

6.3 In aircraft, use of halon 1211 in portable fire extinguishers for the protection of cabin and crew compartments has a cut-off date of 31 December 2014 and an end date of 31 December 2025.

6.4 Article 13(4) of the ODS Regulation allows the appropriate authority to grant derogations from the cut-off dates and end dates in Annex VI in specific cases. This means the use of halon can continue beyond those dates, provided an applicant can demonstrate that there is no technically and economically feasible alternative to using halon 1211. A derogation may only be granted by regulations made by the appropriate authority under Article 25D.

6.5 The ODS Regulation applies to Great Britain (GB) only. Northern Ireland remains subject to EU ODS legislation in accordance with the Windsor Framework.

6.6 The Article 13(4) power to grant a derogation is devolved. The appropriate authority in England, Scotland and Wales is the Secretary of State, Scottish Ministers and Welsh Ministers respectively. Scottish and Welsh Ministers have consented to the Secretary of State exercising the Article 13(4) power to grant derogations on their behalf. The grant of the derogations in this instrument is based on such consent and therefore applies to Scotland and Wales as well as to England.

Why was this approach taken to change the law?

6.7 The derogations in question can only be granted by regulations made under Article 13(4) of the ODS Regulation.

7. Consultation

Summary of consultation outcome and methodology

7.1 The consultation requirement as provided for in Article 25D(9) of the ODS Regulation has been satisfied. Before granting derogations (by regulations), the appropriate authority must consult with: a) "*such bodies or persons as appear… to be representative of the interests likely to be substantially affected by the regulations"; and b) "such other bodies or persons as the appropriate authority may consider appropriate"*.

7.2 For Loganair and MOD applications, two expert bodies were considered to be appropriate sources of information. They were the Halons Technical Options Committee (HTOC) (now the Fire Suppression Technical Options Committee (FSTOC)) and Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol on Substances that Deplete the Ozone Layer. FSTOC is one of the five Technical Options Committees of the TEAP and they assess the global production, consumption and availability of halons and their alternatives. TEAP provide technical information on alternative technologies to ozone depleting substances (ODS) such as halon. It was not considered necessary, or possible, to consult directly with either FSTOC or TEAP.

7.3 Likewise, it was not considered necessary to seek input from other academics and experts in the field of halons, since the peer reviewed FSTOC and TEAP reports were comprehensive and had contributions from global experts, including from the UK.

7.4 Loganair and MOD were asked about the supply chain for these aircraft to understand who is involved, whether there is a non-aviation and non-military aspect to them respectively, and if there are other stakeholders outside of the chain who are involved in the use or affected by the use of such aircraft. They both confirmed that there are no other stakeholders outside of the supply chain or who are involved in the use or affected by the use of the aircraft that needed to be approached. The Secretary of State is not aware of any non-aviation or non-military stakeholder involved in the use or affected by the use of these aircraft. Therefore, there are no interests that would be substantially affected by the grant of a derogation other than those of the applicants - i.e. Loganair and MOD. Taking into account the minimal amounts of halon installed on the aircraft and the fact that the units containing it are sealed and not expected to discharge the gas except in the event of a fire, the Secretary of State concluded that there would be no broader public interest in consultation.

7.5 In summary, it was possible to satisfactorily assess both applications, based on the information provided by Loganair and MOD, and information contained in the HTOC/FSTOC and TEAP reports without the need for further consultation.

8. Applicable Guidance

8.1 No guidance is required.

Part Two: Impact and the Better Regulation Framework

9. Impact Assessment

9.1 A full Impact Assessment has not been prepared for this instrument because it relates to maintenance of existing regulatory standards. The only cost associated with these measures is from the release of halon 1211 to the atmosphere. Based on discussions with MOD and Loganair, we are confident that leakage rates are significantly below the threshold that would require an Impact Assessment. If all the fire extinguishers were used and the gas released, there are 700 fire extinguishers across the MOD fleet containing a total of 1,008.1kg of halon 1211. Using the status of halon 1211 as a greenhouse gas to calculate the financial cost of emissions, this is equivalent to 1.76 ktCO2e at a global warming potential of 1,750 (calculated using the Intergovernmental Panel on Climate Change Assessment Report (AR) AR5 without feedback). For the Loganair fleet, there are 42 fire extinguishers containing a total of 50.4kg of halon 1211. This is equivalent to 0.09 ktCO2e at a global warming potential of 1,750 (calculated using the Intergovernmental Panel on Climate Change Assessment Report (AR) AR5 without feedback). If all this gas were released to the atmosphere it would impose total costs of £466,799 (calculation based on £252/tCO2e according to the guidance paper on 'Valuation of greenhouse gas emissions: for policy appraisal and evaluation - GOV.UK (www.gov.uk)'[9]). However, it is very unlikely that all the fire extinguishers will be used during the period covered by the derogations. Granting the derogations will create a small risk of damage to the stratospheric ozone layer, in the event of a fire in one or more of the aircraft requiring the use of fire protection systems or fire extinguishers, however the likelihood of a fire occurring is expected to be low given the high safety standards required in this environment.

Impact on businesses, charities and voluntary bodies

9.2 There is no, or no significant, impact on business, charities or voluntary bodies because the costs of ozone depleting substance and greenhouse gases are societal.

9.3 The legislation does not impact small or micro businesses.

9.4 There is no, or no significant, impact on the public sector.

10. Monitoring and review

What is the approach to monitoring and reviewing this legislation?

10.1 There is no requirement to review the granting of derogations covered by this statutory instrument.

[9] https://www.gov.uk/government/publications/valuing-greenhouse-gas-emissions-in-policy-appraisal/valuation-of-greenhouse-gas-emissions-for-policy-appraisal-and-evaluation

Part Three: Statements and Matters of Particular Interest to Parliament

11. Matters of special interest to Parliament

11.1 None.

12. European Convention on Human Rights

12.1 As the instrument is subject to negative procedure and does not amend primary legislation, no statement is required.

13. The Relevant European Union Acts

13.1 This instrument is not made under the European Union (Withdrawal) Act 2018, the European Union (Future Relationship) Act 2020 or the Retained EU Law (Revocation and Reform) Act 2023 ("relevant European Union Acts"), as it does not relate to withdrawal from the European Union.