International Civil Aviation Organization

WORKING PAPER

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ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 31: Aviation Safety — Emerging Issues

STATUS OF HALON REPLACEMENT IN THE UNITED STATES

(Presented by the United States)

EXECUTIVE SUMMARY

Halogenated hydrocarbons (Halons) are the principal fire extinguishing agents used in civil aviation. As has been discussed at the past two ICAO assemblies and other international fora, the civil aviation community has committed to move past this reliance on halon and incorporate the use of alternative agents or fire protection systems. Robust international support for this transition is critical to ensure the civil aviation community has the capability to move beyond its reliance on halon. The approach for this transition must take into consideration the myriad of political, environmental, economic, and safety-related issues affecting this replacement, and demands a comprehensive, integrated, and globally focused set of solutions, so as not to adversely affect parallel interests.

Action: The Assembly is invited to:

a) consider the information contained in this working paper;
b) commit to a continued collaboration on the issue of halon replacement, management of national halon reserves available to civil aviation, and to ensure that safety remains the highest priority in these efforts; and
c) support the revised Assembly Resolution regarding halon replacement presented in A38-WP/36, and consider the anticipated recommendations of the U.S. Halon Replacement HARC in future efforts.

Strategic Objectives:	This working paper relates to the Safety and Environmental Protection and Sustainable Development of Air Transport Strategic Objectives.
Financial implications:	Not applicable.
References:	Doc 9958, *Assembly Resolutions in Force* (as of 8 October 2010)

1. INTRODUCTION

1.1 Halogenated hydrocarbons (Halons) are the principal fire extinguishing agents used in civil aviation. As has been discussed at the past two International Civil Aviation Organization (ICAO) assemblies and other international fora, the civil aviation community has committed to move past this reliance on halon and incorporate the use of alternative agents or fire protection systems. Robust international support for this transition is critical to ensure the civil aviation community has the capability to move beyond its reliance on halon. The approach for this transition must take into consideration the myriad of political, environmental, economic, and safety-related issues affecting this replacement, and demands a comprehensive, integrated, and globally focused set of solutions, so as not to adversely affect parallel interests.

1.2 Halon use is an issue that crosses several areas of interest; its critical safety function traverses competing environmental mandates in order to phase out its continued usage. From a pure safety perspective, halon that is handled correctly is safe and effective, and in several capacities is the only agent currently able to meet the minimum performance standards as well as certification and installation requirements for the capacities in which it is utilized. Assuming reserves of halon were sufficient for its continued use as well as correctly maintained and recycled, there would be little regulatory basis in some countries to prohibit its continued usage for safety reasons alone.

1.3 However, from an environmental perspective, the release of halon into the atmosphere is deleterious due to its significant Ozone Depleting Potential (ODP), and the international adoption of the Montreal Protocol necessitates aggressive action to ultimately phase out its usage. As a result of the Montreal Protocol, the United States phased out production and consumption of halons in 1994, and global halon production capacity has now been dismantled. This leaves global airlines relying on stockpile reserves. In that regard, questions have been raised about the long term sufficiency of the halon reserve, and this, combined with dangerous incidents of cross contamination and mislabelling suggest the need to incentivise the development and use of effective alternatives. Any approach to regulate halon replacement at a national level must thus incorporate all attempts to reconcile these factors, and identify a near term solution which satisfy both environmental and safety objectives.

2. BACKGROUND

2.1 At present, halons are utilized in four major extinguishing applications: lavatory bottles (averaging 5-7 lbs of halon 1301), hand-held extinguishers (averaging 12-15 lbs of halon 1211), engine/APU nacelles (averaging 55 lbs of halon 1301), and cargo compartments (averaging 380 lbs of halon 1301).

2.2 The ICAO Standards and Recommended Practices (SARPs) that have been introduced into Annex 6 — *Operation of Aircraft* and Annex 8 — *Airworthiness of* Aircraft banning the use of substances listed in the Montreal Protocol appear to have proven difficult to implement. In the case of the United States, certification regulations require that extinguishing agents meet certain performance specifications, as opposed to requiring specific agents or systems. As the use of halon has not been banned completely by a national environmental mandate, it can still be approved in accordance with U.S. aircraft certification procedures.

2.3 The U.S. Federal Aviation Administration (FAA) has been very active in research and development efforts towards identifying potential fire extinguishers as replacement for the halon in each of the applications in which it is currently utilized. The William J. Hughes Technical Centre has been able

to provide substantial support to the international aviation industry by conducting testing on certain proposed replacement agents. Significant progress has also been made through the International Aircraft Systems Fire Protection Working Group (IASFWG), in developing and amending as necessary the minimum performance specifications for potential halon replacements. This close collaboration between the aviation industry, the IASFPWG and the FAA Technical Centre has resulted in significant progress towards identifying viable replacements.

3. DISCUSSION

3.1 While progress has been made in identifying viable replacements, the transition process from halon to other agents or fire protection systems is more complex. To address these issues, most notably, assuring adequate oversight of recycled halon currently in use in civil aviation, as well as treatment and implementation of halon replacements, the United States government has formed an Aviation Rulemaking Committee (ARC) focused on halon replacement.

3.2 The Halon Replacement ARC ("the HARC") will allow the necessary government and industry stakeholders to discuss the issues affecting halon replacement, and will ultimately provide information, advice and recommendations to the FAA on how best to approach this issue through a regulatory or non-regulatory means.

3.3 The FAA Office of Aviation Safety and FAA Office of Policy, International Affairs, and Environment will jointly sponsor the HARC, with participation from the U.S. Environmental Protection Agency, the U.S. Department of Transportation, industry associations, and subject matter experts.

3.4 The HARC is anticipated to meet with the other participants several times over the course of the next year, with the inaugural meeting anticipated to take place in October 2013. The HARC will be managed by an industry co-chair and supported by a co-chair from the U.S. FAA.

3.5 The HARC aims to achieve a series of feasible recommendations on a framework for the continued cooperation of both the U.S. aviation industry and the U.S. government on the safety, environmental, and economic issues that affect the transition from halon to alternative agents or systems. The HARC will take into account the timelines that have already been incorporated into the ICAO Annexes, the proposed updates to Assembly Resolution A37-9 (Doc 9958) regarding halon replacement, as well as consider any actions identified as already taken and those anticipated to be taken by other civil aviation authorities.

3.6 The HARC charter is publically available on the U.S. FAA website at http://www.faa.gov/regulations_policies/rulemaking/committees/documents/index.cfm/committee/browse/committeeID/397 .

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