

Legal Aspects on ICAO SARPs Regarding Alternative Fire Extinguishing Agent to Halon Fire Extinguishers

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I. Introduction

According to the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), Halon gas production has been banned in developed countries since 1994 or in developing countries since 2010. Halon produced before those dates are allowed for usage in many different fire suppression fields, including aviation. The ICAO has specified an application period for Halon alternatives in Annex 6 and 8 of the Standards and Recommended Practices. It requests that Member States notify the ICAO of the amount of Halon they possess and whether they manage it appropriately. In the case of aircraft portable fire extinguishers, it had been planned to develop and apply alternative agents by 31 December, 2016; however, a promising alternative agent known as 2-bromotrifluoropropane (2BTP) had not been developed before that date, and certification was delayed. The 109th ICAO Council has decided to postpone the starting date of application for two years, until 31 December, 2018. Readjustment of the ICAO SARPs application date, made urgently before the deadline, may cause confusion in the establishment and implementation of domestic laws; therefore, it is necessary first to consider how much time is sufficient necessary for technological development and certification and then to set up the deadline. Also in order to minimize the unnecessary discharge of Halon owned by Member States, it is necessary to consider efficient management methodologies.

II. SARPs related Halon replacements

Article 37 of the Convention on International Civil Aviation (Chicago Convention)¹⁾, describes that each contracting State undertakes to collaborate in securing the highest practical degree of uniformity in regulations, standards,

procedures and organizations in relation to airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation²). In addition to this, article 38 emphasize that if any state finds some difficulty to comply with any such international standards or procedures, shall give notice the fact to the ICAO Council within sixty days. In 2007, ICAO Assembly resolution A36-7 was concluded to agree the international aviation community to develop and implement Halon replacement strategies. Also the assembly encourage ICAO to continue collaboration with the International Aircraft Systems Fire Protection Working Group and UNEP³)'s Ozone Secretariat through its Technology and Economic Assessment Panel's Halon Technical Options Committee. In year 2010, ICAO 37th Assembly also conclude resolution A37-9 and direct Council to report to the next Assembly on progress made with development of Halon alternatives for cargo compartment, engine nacelles and APUs, and handheld fire extinguishers. In year 2013, ICAO 38th Assembly adopt resolution A38-9 As follows.

Resolution A38-9 (Halon replacement) adopted by the 38th session of the ICAO General Assembly

Recognizing the importance of aircraft fire extinguishing systems to the safety of flight;

Recognizing that halogenated hydrocarbons (Halon) have been the main fire extinguishing agent used in civil aircraft fire extinguishing systems for over fifty years;

Whereas Halons are no longer being produced by international agreement because their release contributes to ozone-depletion and climate change;

Recognizing that more needs to be done because the available Halon supplies are decreasing and unsure and that the environmental community continues to be concerned that Halon alternatives have not been developed for all fire extinguishing systems in civil aircraft;

1) The Convention on International Civil Aviation ICAO Doc 7300, Ninth Edition, 2006

2) Noh Kun-Soo, Jie Min-Seok, Kim Woong-Yi, A Study on the reflection ratio on ICAO Annex 6 (Operations of Aircraft) incorporated into our domestic air laws, The Korean Journal of Air & Space Law and Policy Vol. 28, No 2, 2013 page 103

3) UNEP : United Nations Environment Programme

Recognizing that the Minimum Performance Standard for each application of Halon has been developed already by the International Aircraft Systems Fire Protection Working Group with participation by industry and regulatory authorities;

Recognizing that there are stringent aircraft-specific requirements for each application of Halon that must be met before a replacement can be implemented;

Recognizing that the aircraft manufacturing industry has established mechanisms for stakeholder engagement in the development of common solutions for Halon replacement in engine/auxiliary power unit (APU) fire suppression applications and a realistic timeframe for such replacement in cargo compartment applications;

Recognizing that the production is prohibited by international agreement, Halon is now exclusively obtained from recovery, reclaiming and recycling. Therefore, recycling of Halon gas needs to be rigorously controlled to prevent the possibility of contaminated Halon being supplied to the civil aviation industry; and

Recognizing that any strategy must depend on alternatives that do not pose an unacceptable environmental or health risk as compared to the Halon they are replacing;

The Assembly:

1. *Urges* States and their aviation industries to intensify development and implementation of acceptable Halon alternatives for fire extinguishing and suppression systems in cargo compartments and engine/auxiliary power units, and to continue work towards improving Halon alternatives for hand-held fire extinguishers
2. *Urges* States to determine and monitor their Halon reserve and quality of Halon
3. *Encourages* ICAO to continue collaboration with the International Aircraft Systems Fire Protection Working Group and the United Nations Environment Programme's Ozone Secretariat through its Technology and Economic Assessment Panel's Halons Technical Options Committee on the topic of Halon alternatives for civil aviation
4. *Encourages* States to collaborate with the Industry Consortium for engine/APU

applications and the Cargo Compartment Halon Replacement Working Group established by the International Coordinating Council of Aerospace Industries Associations

5. *Urges* States to inform ICAO regularly of their Halon reserves and directs the Secretary General to report the results to the Council;

On October 2016, 203rd session of Air Navigation Commission was held at ANC Chamber of the ICAO⁴⁾ to discuss about “Amendment to the applicability date of the Halon Replacement in Portable fire extinguisher Standards in Annex 6. Part I, II and III”. AN-WP/9124⁵⁾ was presented to ANC members regarding Halon agent replacement in portable fire extinguishers.

〈Table 1〉 Considerations of the Commission of AN-WP/9124

Item	Contents
1	agreed that due to the urgency of the proposal, there be on consultation process in order to allow a fast-track amendment process for Annex 6
2	agreed to the amendment of Annex 6 more than once within the 2016 timeframe
3	agreed with the amendment proposal for the replacement of the Halon agent in portable fire extinguishers for aircraft for which the individual certificate of airworthiness is first issued on or after 31 December 2018
4	agreed that appropriate guidance be provided to support a harmonized approach to mitigate any challenges faced by States where affected aircraft would operate during the period from when the current provisions in Annex 6 become applicable until the date when the amended Standards would become effective
5	approved the draft reports to Council attached to AN-WP/9124 Revised concerning Amendment 41 to Annex 6, Part I, Amendment 35 to Annex 6, Part II, and Amendment 21 to Annex 6, Part III, as amended by the discussion
6	agreed that a preview of the readiness of industry and States in relation to Halon replacement in portable fire extinguishers be undertaken in October 2017 and,
7	agreed, based on lessons learned from Halon replacement in portable fire extinguishers, to anticipate and plan for the replacement of Halon in cargo compartment fire suppression systems used in aircraft for type certification submitted after a specified date in the 2024 timeframe.

4) Air Navigation Commission Minutes 203-2

5) AN-WP/9124 : Amendment to the applicability date of the Halon replacement in portable fire extinguisher standards in Annex 6, Parts I, II, and III, 2016

Considering technical urgency of the amendment, amendment 41 to Annex 6, Part I, amendment 35 to Annex 6, Part II, Amendment 21 to Annex 6, Part III were also presented to the Council. Confirmation of the Legal Bureau was requested and the response from the Legal Bureau was acceptable although a secretariat of the ICAO confirmed the timing between the adoption and effective dates was in accordance with Article 90 of the Convention. Any Annex or any amendment of an Annex shall become effective within three months after its submission to the Contracting States or at the end of such longer period of time as the Council may prescribe, unless in the meantime a majority of the contracting States register their disapproval with the Council. Also the Council should immediately notify all contracting States of the coming into force of any Annex or amendment. President of the ICAO Council made a query on industry readiness about Halon replacement by the end of 2018, the response of the technical advisor was that the replacement agent for portable fire extinguisher like 2-bromotrifluoropropene would be acceptable in good shape. An observer from IATA⁶⁾ made a comment that attention should be taken in future when deciding compliance date to meet evolving technology or external pressure. The importance of States meeting the applicability date was emphasized and an industry progress report on Halon replacement be presented to the Air Navigation Commission.

The work towards improving Halon alternatives was urged to the member States with ICAO Assembly resolution A38-9. States were requested to inform ICAO regularly of their Halon reserves. The Secretary General should report the results to the Council for preparing a time frame for the replacement. Based on the adoption of the resolutions, Standards and Recommended Practices related on Halon replacement are contained in Annex 6⁷⁾ Operation of Aircraft, Part II, 2.4.2.3. as follows. Any agent used in a built-in fire extinguisher for each

6) IATA : International Air Transport Association

7) Annex 6 to the Convention on International Civil Aviation, Operation of Aircraft, Part II - International General Aviation - Aeroplanes, Ninth Edition, 2016

lavatory disposal receptacle for towels, paper or waste in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2018 and any extinguisher in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2018 shall meet

a) meet the applicable minimum performance requirements of the State of Registry and

b) not be of a type listed in the 1987 Montreal Protocol on Substance that Deplete the Ozone Layer as it appears in the Eighth Edition of the Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer, Annex A, Group II.

Information regarding extinguishing agents is contained in Annex 8⁸⁾, Standard 1.2.5 defines like this. The approved design of an aircraft under Parts III B, IV B and V of this Annex shall use extinguishing agents that are not listed in the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer as it appears in the Eighth Edition of the Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer, Annex A, Group II, in the aircraft fire suppression or extinguishing systems in the lavatories, engines and auxiliary power unit. IATA⁹⁾ requested ICAO to postpone the implementation time until 31 December 2018 due to the difficulties of the technical and economical poor readiness. In case of EASA¹⁰⁾, they compared time gap between the end dates in Regulation (EU) No. 744/2010 which is 2020 for lavatories and 2025 for handheld fire extinguisher for new aircraft with ICAO Annex 6 in relation to Halon matters. EU Member States has been limited since 1985 and banned since 1994 with the Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer. In 2010, the European Commission adopted Regulation (EU 744/2010) which establishes for cut-off dates and end dates. For cut-off

8) Annex 8 to the Convention on International Civil Aviation, Airworthiness of Aircraft, Eleventh Edition, 2010

9) IATA : International Air Transport Association

10) EASA : European Aviation Safety Agency

dates, use of Halon for new equipment or facilities that is related to new application for type certification) would not be permitted. For end dates, use of Halon would no longer be permitted that means all aircraft Halon fire extinguishers and fire protection systems must be retrofitted. According to the UNEP¹¹⁾ study, the Halon reserves in European territory have decreased and are expected to decrease further. Also the cost of Halon procurement is expected to dramatically increase as Halon supply availability declines. European study also shows that there are a number of additional desirable characteristics to Halon alternatives in relation to environmental matters, like low Ozone Depleting Potential as well as low Global Warming Potential and short atmospheric lifetime.

〈Table 2〉 EU applicable dates for Halon replacement in civil aviation

Regulation (EU) No 744/2010				
Purpose	Location of fire extinguishers or fire-extinguishing systems	Type of extinguisher	Type of Halon	Dates
End date (Mandatory Retrofit)	Normally unoccupied cargo compartments	Fixed	1301 1211 2402	2040
	Handheld in cabins and crew compartments	Portable (handheld)	1211 2402	2025
	Engine nacelles and APU	Fixed	1301 1211 2492	2040
	Lavatory waste receptacles	Fixed	1301 1211 2492	2020
Forward fit New applications for individual Certificate of Airworthiness (CofA)	Normally unoccupied cargo compartments	Fixed	1301 1211 2492	Not mentioned
	Handheld in cabins and crew compartments	Portable (handheld)	1211 2402	

11) UNEP 2010 Assessment Report of the Halons Technical Options Committee, 2011

Regulation (EU) No 744/2010				
Purpose	Location of fire extinguishers or fire-extinguishing systems	Type of extinguisher	Type of Halon	Dates
	Engine nacelles and APU	Fixed	1301 1211 2492	
	Lavatory waste receptacles	Fixed	1301 1211 2492	
Cut-off New applications for Type Certificates (new design)	Normally unoccupied cargo compartments	Fixed	1301 1211 2492	2018
	Handheld in cabins and crew compartments	Portable (handheld)	1211 2402	2014
	Engine nacelles and APU	Fixed	1301 1211 2492	
	Lavatory waste receptacles	Fixed	1301 1211 2492	

<Table 3> Airbus data - Halon replacement for handheld fire extinguishers

Agent	Agent weight [kg]	ODP	GWP	Status
Halon 1211	1.1	7.9	1890	Phase-down
FM-200	2.6	0	3580	Approved
FE-36	2.15	0	9820	Approved
Haltron1	2.5	0.0098	77	Approved
2-BTP	1.7	0.0018	0.26	Under approval

III. Legal aspects about ICAO Standards vs. National Standards

The Chicago Convention and its Annexes are mostly dealing with safety and security issues. Korean Aviation Safety Act¹²⁾ also contains that spirit in Article 1 (Purpose) as follows¹³⁾. The purpose of this Act is to contribute to the development of aviation technology and the promotion of public welfare by determining methods to ensure safe operation of aircraft, lightweight aircraft and ultralight vehicle, pursuant to the provisions of the Convention on International Civil Aviation and the standards and methods adopted by the Annexes to the said Convention. This means that the Republic of Korea has solid legal foundation about ICAO Standards and Recommended Practices. Korean Aviation Safety Act is supported by presidential decree and ministerial regulations for detail technical implementation and those articles are easy for amendment compared to Aviation Act. So it is crystal clear that ICAO SARPs are the legal foundation for member States practical implementation and need to be suitable not only for safety but also for economical and technical properness. By Article 38 of the Convention, Contracting States are required to notify the ICAO of any differences between the national regulations and practices and the SARPs contained in appropriate Annex and any amendments. Contracting States are requested to submit such notification to any differences from the Recommended Practices contained in appropriate Annex. The reason of requesting that notification is safety of air navigation. So far, the Republic of Korea has not notify any differences about Halon replacement. This means that the Republic of Korea will follow ICAO SARPs without any differences. For the successful implementation of the SARPs,

12) Korean Aviation Safety Act (Act No. 14939, 2017)

13) Lee, Koo-Hee, A Study on Foreign Air Operator Certificate in light of the Convention on International Civil Aviation, The Korean Journal of Air & Space Law and Policy Vol. 30, No 1, 2015 page 34

ICAO developed an implementation task list as follows.

Related with Halon Replacement, Korean Aviation Regulation is the Flight Safety Regulations For Aeroplanes¹⁴⁾. 7.1.21 Miscellaneous Systems and Equipment. Similar Regulation is defined in Korean Air Worthiness Standards¹⁵⁾.

〈Table 4〉 Implementation Task List in relation to amendment to Annex

Item	Contents
1	identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations
2	notification of differences, if any, to ICAO, if applicable
3	establishment of a national implementation plan that takes into account the modified ICAO provisions
4	drafting of the modification to the national regulations and means of compliance where applicable, taking into account the amended ICAO Standard
5	official adoption of the national regulations and means of compliance
6	revision of guidance material(s) and checklist(s) taking into account the guidance provided in the State letter for inspectors that support air operator and other applicable organization certification, surveillance and the resolution of any issues identified
7	training of the airworthiness and flight operations inspectors based on the revised inspecting guidance material
8	implementation of the new regulations
9	modification of oversight framework according to the new national regulations
10	oversight by the State of the implementation of regulations and
11	publication of differences, if any, in the State's AIP ¹⁶⁾

14) Flight Safety Regulations, Pubic Notice, Ministry of Land, Infrastructure and Transportation 2017-397 (12 June 2017)

15) Airworthiness Standards, Pubic Notice, Ministry of Land, Infrastructure and Transportation 2017-360 (2 June 2017)

16) AIP : Aeronautical Information Publication

IV. Impact assessment in relation to amendment to Annex

To avoid significantly impacting the regulatory and efficiency of the aviation system, ICAO introduced the impact assessment methodologies. The first and the most important assessment area is Safety. Based on ICAO study, the amendment to address the applicability date for Halon agent replacement in portable fire extinguishers has no safety impact. The financial impact to States will be limited to the incorporation of the SARPs into national regulations, training of regulatory staff and inspectors exposed to the change and the conduct of required audits to ensure implementation. For aircraft makers, minimal financial impact is expected for Halon agent replacement because the SARPs will be affect only to newly manufactured aircraft because the individual Certificate of airworthiness is first issued on or after the end of 2018. The fire extinguishing system will be implemented into the design of a newly manufactured aircraft, tested as a component of the new type aircraft include TC¹⁷⁾ process and therefore the cost will be included in the cost of the aircraft. In case of security, there will be no security impact with the incorporation of this amendment. The implementation of the SARPs will have a positive impact because of the environmentally friendly nature of the Halon agent replacement. For efficiency impact, no efficiency impact with the incorporation of this amendment.

V. Recent decisions and considerations

Protection of the environment is a matter of priority concern for the global community. Recognizing the importance of global environmental protection for

17) TC : Type Certificate

sustainable development of air transport in long term view, the ICAO has been making utmost efforts in this direction, including it as one of its five strategic goals. Major issues related to environmental protection in aviation raised to date include regulations on aircraft effluent gas and MBM¹⁸⁾. In addition, there has been a request to stop the usage of Halon in the fire extinguishing systems of engine nacelles/APU and cargo compartments and to instead develop and apply alternative materials in order to protect the ozone layer. The Halon Technical Option Committee states that there are currently 43,000 metric tones of Halon 1301 and 33,000 metric tones of Halon 1211.¹⁹⁾ Most of it exists in North America and Europe, where most of the aircraft manufacturers are located. The remaining Halon is owned by Member States that operate aircraft and use very small amounts. The Republic of Korea, for example, has 1.76 metric tones of Halon 1301. In order to stop the unnecessary discharging of Halon into the atmosphere, it is necessary to minimize any accidental release that may occur during testing and handling. To do so, Contracting States are responsible for distributing information related to airliners and maintenance companies. They must also monitor the status of their Halon holdings. The development of alternative materials to Halon is not a simple issue. Alternatives must have equivalent fire extinguishing effects to Halon at the same volume and weight. Also, they must contribute to minimizing global warming effects. In the case of handheld extinguishers, 2BTP, which was under review as a potential alternative agent to Halon, did not meet the conditions of having fire extinguishing effects equivalent to that of Halon, and consequently certification was postponed. Certification by the relevant authorities was concluded on 26 September, 2016, and so, in fact, it has become impossible to replace Halon within a given period. Accordingly, the ICAO Council has made the difficult decision to postpone the application date²⁰⁾. In order to meet the postponed deadline, the ICAO Air

18) MBM : Market Based Measurement

19) FAA Halon ARC Final Report, 2014 page 7

20) ICAO Council Working Paper C-WP/14537, Adoption of Amendment 41 to Annex 6, Part I (3

Navigation Commission in charge of technical review of international standards must consult with the Council and undertake a thorough review. Having examined the urgent technical circumstances associated with the implementation of amendments, the Air Navigation Commission considered that an effective date of February 2017 and a proposed applicability date of 27 April 2017 would be suitable and that the said amended Standards would have an applicability date of 31 December 2018²¹⁾. The implementation of ICAO SARPs is the basic responsibility of all contracting States; therefore, changes in the application standard of SARPs may affect each Member State regarding rule making and implementation. It is necessary to operate a mechanism in which review and confirmation can be made as early as possible. Even though the amount of Halon owned by Member States in aviation field is small, best practices must be shared to prevent any unnecessary discharge into air. The Member States, in the case of the unnecessary discharge of Halon used in aircraft due to fire alarms, etc., should send all fire extinguishers to manufacturers for recharge, and in this way, any environmental destruction caused by the discharge of Halon is minimized. The Halon technical Options Committee, a group of fire protection experts advise on issues related to the phaseout of halons and the transition to Halon alternatives. The Committee model estimates are that there are 95 million pounds (43,000 metric tons) of Halon 1301 and about 73 million pounds (33,000 metric tons) of Halon 1211.

〈Table 5〉 Estimation of Halon stock

Geographic Regions	Halon 1301	Halon 1211
North America	14,000 MT	11,000 MT
Europe	8,000 MT	13,000 MT
Japan	17,000 MT	1,000 MT
Rest	4,000 MT	9,000 MT

November 2016)

21) ICAO Council Minutes (209th Session) C-209/4, Summary Minutes of Fourth meeting (25 November 2016)

Based on estimation by aircraft manufacture and maintenance agency, they estimate that total worldwide aviation demand for Halon per year is about 450,000 pounds and will increase over the upcoming several decades.

〈Table 6〉 Examples of potential Halon alternatives for use in Handheld Extinguishing Systems application

Handheld (Halon 1211)	
chemicals	Concern / Comments
Halon 1211	<ul style="list-style-type: none"> - According to United Nation Environmental Programme (UNEP), no shortage of Halon 1211 has been reported and thus, shortage will not be an issue for a short term.
Haltron 1 HCFC Blend B	<ul style="list-style-type: none"> - Meet the MPS for UL 5BC rating²²⁾ - Already available on the market, there are already larger fire extinguishers for ratings higher than 5BC²³⁾. - Subject to future Ozone Depleting Substance (ODS) restrictions.²⁴⁾ - Has increased space and weight characteristics that present installation and operational considerations. - Has environmental and toxicity concerns.
HFC-236fa	<ul style="list-style-type: none"> - Meet the MPS for UL 5BC rating. - Already available on the market, there are already larger fire extinguishers for ratings higher than 5BC. - One aircraft manufacturer having applied for approval of a HCF-236fa (= DuPont FE-36) fire extinguisher. - Considerable GWP. - Subject to future production phase-down of HFCs. - Has increased space and weight characteristics that present installation and operational considerations. - Has environmental and toxicity concerns.
HFC-227ea	<ul style="list-style-type: none"> - Meet the MPS for UL 5BC rating - Already available on the market, there are already larger fire extinguishers for ratings higher than 5BC. - Considerable GWP. - Subject to a production phase-down of HFCs. - Has increased space and weight characteristics that present installation and operational considerations. - Has environmental and toxicity concerns.

Handheld (Halon 1211)	
chemicals	Concern / Comments
2-BTP	<ul style="list-style-type: none"> - Not currently listed as a greenhouse gas or an ozone depleting substance. - Potential to be a near “drop-in” replacement with minimal space and weight impact for some aircraft. - Limited supply chain (Status 2014). - Uncertainties in agent and equipment availability. - It is European Union (EU) Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) registered and proving to be a promising agent without GWP impact and minor weight and volume penalty. - U.S EPA review of the applications under the Toxic Substances Control Act and the Significant New Alternatives Policy (SNAP) is not yet completed. - The industry is already working on supply chain coordination and aircraft manufacturer implementation.

VI. Conclusions

The international standards related to Halon replacement has been prepared and amended several times due to lack of enough preparedness and readiness for implementations and brought much confusion and negative impact. Member States should follow ICAO SARPs within proper timeframe otherwise notify the difference to ICAO. ICAO Council and Air Navigation Commission should consider between setting the implementation timeframe earlier or giving enough time for future readiness and preparedness. In addition to this, Member States

22) Underwriters Laboratory (UL) All Fire Extinguishers are tested by the Underwriters Laboratory for safety and performance and rated. The rating itself have a reference to the type of fire in which they can be used and a numerical evaluation on the effectiveness against that type of fire. The combination of the letters and numbers associated with those letters are the indicator of the size/intensity of the fire it can be effective against.

23) STATUS OF RESEARCH & TESTING TO REPLACE Halon EXTINGUISHING AGENTS IN CIVIL AVIATION.

24) FAA Halon ARC FINAL REPORT FINDINGS & RECOMMENDATIONS DECEMBER 2014

of all regions should notify the ICAO of Halon usage and discuss best practices. For example, requesting fire extinguisher manufacturers to recharge in order to prevent any unnecessary discharge into air. This issue was discussed during the 54th Conference of Directors General of civil aviation, Asia and Pacific Regions which was held in Ulaanbaatar, Mongolia 07-11 August 2017. In this regards, ICAO Council and Air Navigation Commission should consult with Legal Bureau regarding SARPs preparing process to eliminate difficulties and confusions for implementation within effective date.

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초 록

항공운송의 지속 가능한 발전을 위하여 환경보호 분야와 관련된 국제표준의 수립과 적용은 매우 중요하다. 항공기 엔진과 보조동력장치 및 화물실의 화재를 진압하기 위하여 할론을 대체하는 소화물질의 개발과 사용은 오존층 보호를 위하여 요구되어 왔다. 국제민간항공기구는 관련 국제표준의 준비에 적극적으로 있었지만 화재를 진압할 수 있는 대체물질의 인증은 기술적 준비 관계로 지연되어 왔다. 따라서 관련된 국제표준 및 권고의 이행 시기는 당초 2016년 말에서 2년 후인 2018년 말로 연장 되었다.

이러한 지연은 국제민간항공기구 회원국들의 국제표준 및 권고의 이행에 있어 혼선을 가져왔으며 이러한 이슈에 대한 추가적인 관심과 토론이 필요하게 되었다. 국제민간항공기구 이사회 및 항행위원회는 기술력의 진전 상황을 확인하여 이행 시기를 조기에 선정할지 또는 충분한 기술이 개발된 이후로 할지를 결정할 필요가 있다. 또한 회원국들이 할론을 불필요하게 대기중에 방출하지 않도록 하기 위하여 항공기용 소화기를 재충전 할 때는 소화기 제작사로 보내어 전문적인 방법으로 배출을 최소화 하는 방법을 고려할 필요가 있다.

국제민간항공기구의 국제표준과 권고의 성공적인 이행을 위한 이행과제 항목이 개발되었는데, 차이점의 통보, 국가 이행계획의 수립, 자국 규정의 개정 또는 이행안 초안 마련, 법령 및 이행방안의 채택 등이 그것들이다. 회원국들은 이러한 이행과제 항목을 참고하여 자국의 법안마련 절차를 수립하는데 참고할 수 있다.

본 내용은 2017년 몽골 울란바타르에서 개최된 제54차 아태지역 항공국장회의에서 제출되고 발표되어 논의된 바 있으며 여러 회원국들의 관심이 있었다.

국제민간항공기구 이사회 및 항행위원회는 국제표준 및 권고의 이행과 관련 회원국들의 어려움과 혼선을 배제하고 유효일자 이내에 적절하게 이행되게 하기 위하여 국제표준 및 권고의 마련 과정에 법률국 소속 법률가들과 반드시 협의할 필요가 있다.

주제어 : 시카고조약, 국제표준 및 권고, 화재진압대체물질, 소화기, 할론, 오존층

Abstract

Legal Aspects on ICAO SARPs Regarding Alternative Fire Extinguishing Agent to Halon Fire Extinguishers

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For sustainable development of air transport, the establishment and application of international standards of environmental protection area is significant. The development and use of alternative fire extinguishing agent to Halon, which is used for the fire extinguishing systems of engine nacelles/APU and cargo compartments, has been requested in order to protect the ozone layer.

The ICAO has been active in preparing international standards and recommended practices (SARPs); however, certification of alternative fire extinguishing agents has been postponed due to technical readiness problem.. Consequently, the implementation of SARPs has also been postponed by two years from the end of 2016. to the end of 2018.

As such consequences have caused confusion among Member States regarding its implementation, it is necessary to discuss and pay more attention to this issue. ICAO Council and Air Navigation Commission should consider between setting the implementation time frame earlier or giving enough time for mature readiness and preparedness.

Also in order to minimize the unnecessary discharge of Halon owned by Member States, it is necessary to consider efficient management methodologies; for example, requesting fire extinguisher manufacturers to recharge in professional ways.

For the successful implementation of the SARPs, ICAO developed an implementation task list as including notification of differences, establishment of

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a national implementation plan, drafting of the modification to the national regulations and means of compliance, adoption of the national regulations and means of compliance.

Member States can develop their own rule making process in reference with the ICAO implementation task list.

This issue was presented and discussed during the 54th Conference of Directors General of civil aviation, Asia and Pacific Regions which was held in Ulaanbaatar, Mongolia in 2017 with significant attention among participated Contacting States.

In this regards, ICAO Council and Air Navigation Commission should consult with Legal Bureau lawyers regarding SARPs preparing process to eliminate difficulties and confusions for proper implementation within effective date.

Key words : Chicago Convention, International Standards and Recommended Practices, Alternative Fire Extinguishing Agent, Fire Extinguishers, Halon, Ozone Layer.