Aviation Safety Regulation and ICAO's Response to Emerging Issues*

Dong-Chun Shin**

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Ⅰ. Introduction

Safety and security are two main pillars upholding international civil aviation, which also have remained on top of ICAO's strategic objectives and without which international air transport cannot be sustainably developed. When it comes to airline management nowadays, it is all about ensuring safety and security.

In the last decade until last year, international civil aviation community has been enjoying relatively calm and safer skies. However, since last year many accidents and incidents, which are quite new and different from past ones, have been happening, thus posing challenges and raising emerging issues.

In 2014, the aircraft of MH 370 just disappeared from the radar screen, and yet no wreckage of the aircraft has been found. MH 017 crashed to the ground near conflict zone in Ukraine. Moreover, QZ 9501 crashed to the sea presumably because of bad weather. There was even ebola outbreak in West Africa, threatening and endangering the safety of civil aviation. Furthermore, this year the aircraft of Germanwings 4U9525 crashed to the Alps, allegedly because of the co-pilot's uncontrolled mental problem.

This article is going to review the definition of aviation safety, various ways to enhance the safety level in conceptual and theoretical terms. Then we are going to review how the Convention on International Civil Aviation (Chicago Convention) and Annexes thereto deal with safety matters,[1] and how ICAO address ongoing issues of safety, in light of various organizations and their mechanism of decision making, such as MH 370, MH 017, ebola virus, extreme weather conditions, 4U 9525 and overall issue of the protection and sharing of data and information.

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1) Rregarding Safety Management System, refer to the articles, 1. Kim, Maeng-Sun, A Study on Changes of Aviation Safety Management System in domestic Aviation Laws, The Korean Journal of Air and Space Law, 2008 2. Lee, Koo-Hee and Park, Won-Hwa, A study on Aviation Safety Assessment System under the Chicago Convention, The Korean Journal of Air & Space Law and Policy, Vol.28 No.1, 2013 3. Chang, Man-Hee and Hwang, Ho-Won, An Analysis of Changes of International Aviation Safety Policy Paradigms and Review of Korea's New International Aviation Safety Policy, The Korean Journal of Air & Space Law and Policy, Vol.28 No.1, 2013

In response to recent accidents and incidents, how international aviation community (mainly the focal point should be ICAO) has been addressing emerging issues. We are going to assess the procedure of problem-solving including regulatory changes, and analyses the conceptual framework of significance thereof.

Ⅱ. Aviation Safety in general

According to ICAO's definition, safety is the stage in which the risk of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. In general terms, safety is defined as 'freedom from accidental injury', which can be achieved by 'avoiding injuries or harm to patients from care that is intended to help them.'

Adverse outcomes happen because something has gone wrong. (causes) Causes can be found and treated. All accidents are preventable (zero harm = safety). How can we become safe?:

a) "Zero Accident Mindset" All accidents, injuries, and occupational risks are preventable;

b) "No Repeats" All adverse outcomes are investigated to find out what happened and why;

c) Define and enforce a common "simple and non-negotiable set of standards."

Safety I is a state when nothing goes wrong. Safety is the condition where the number of adverse outcomes (accidents/incidents/near misses) is as low as possible. The focus is on what goes wrong. Look for failures and malfunctions. Try to eliminate causes and improve barriers. Because of resource limitations, performance adjustment will always be necessary.

Safety II is a state when everything goes right. Safety is a condition where the number of successful outcomes (meaning everyday work) is as high as

possible. It is the ability to succeed under varying conditions. The focus is on everyday situations where things go right – as they should. Everyday performance must be variable in order for things to work. We should think about safety in terms of how many things go well and how frequently we succeed.

Resilient Safety Management is important under ever-changing circumstances everyday. A system's performance is resilient[2] if it can sustain required operations under both expected and unexpected conditions.[3] How to manage resilience?:

a) learn: Improve everyday performance by being able to learn both when work succeeds and when it fails;

b) respond: Improve everyday performance by being able to respond to threats and opportunities alike;

c) Monitor: Improve everyday performance by being able to monitor what happens externally and internally;

d) Anticipate: Improve everyday performance by being able to anticipate long-term changes to resources.

Whereas in the past, the emphasis of safety management was on penalty to punish anyone responsible for the accident, nowadays it was shifted to the prevention of similar accidents and incidents in the future through thorough analysis of errors and mistakes. With respect to voluntary reporting of incidents and wrong doings, ICAO encourages States that no punitive measure should be taken, which may be called just culture in aviation safety. I would like to suggest that any aviation organization maintain learning or study groups, formal and informal, and top management lead and promote safety culture across the organization. All-out efforts to enhance and ensure safety cannot be overemphasized.

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2) Oxford Dictionary, "recoverable, elastic".
3) Erik Hollnagel, "From safety management to resilience engineering - A new approach to safety management", Flight Safety Seminar for CAAS and Operators, 1-2 Dec. 2014, MOLIT

Ⅲ. Chicago Convention and its Annexes

The Preamble of the Convention on International Civil Aviation (Chicago Convention) say that "The contracting States ···.. agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically."

There are so many provisions regarding safety found in the Chicago Convention: Part I Air Navigation (Article 1-42), Part II ICAO (Article 43-66), Part III International Air Transport (Article 67-79), Part IV Final Provisions (Article 80-96).

In particular, Article 37 - Adoption of International Standards and Recommended Practices (SARPs), stipulates definitions and differences between standards and recommended practices. Standards are necessary for safety and regularity of international air navigation, obligated to notify ICAO of differences. On the other hand, Recommended Practices are desirable in the interest of safety and regularity or efficiency of international air navigation.

Although Annexes are not integral and inseperable part of the Chicago Convention, they contain all international standards and recommended practices so as to be uniformly applicable to Contracting States and international aviation community as well. Recently Annex 19 was newly added to more effectively govern the safety management system. The following Annexes underlined to the Chicago Convention mainly deal with safety issues in a strict sense, and all Annexes are actually related to the safety.[4]

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4) Annex 1: Personnel Licensing
   Annex 2: Rules of the Air
   Annex 3: Meteorological Service for International Air Navigation
   Annex 4: Aeronautical Chart
   Annex 5: Unit of Measurement to be Used in Air and Ground Operation

Ⅳ. ICAO Safety Management System

The Convention on International Civil Aviation (Chicago Convention) and Annexes 1-19 thereto are basically dealing with safety issues of international civil aviation. In recent years, ICAO has developed many mechanisms to ensure safety which shall be implemented by Contracting States. Such mechanisms include the followings but not limited:

    a) USOAP (Universal Safety Oversight Audit Program);

    b) USAP (Universal Security Audit Program);

    c) SSP (State Safety Program);

    d) SMS (Safety Management System)

USOAP (Universal Safety Oversight Audit Program) which has been implemented since 1995 is aiming at strengthening and standardizing State's Safety Oversight system, and it changed to CMA (Continuous Monitoring

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Annex 6: Operation of Aircraft
Annex 7: Aircraft Nationality and Registration Marks
Annex 8: Airworthiness of Aircraft
Annex 9: Facilitation
Annex 10: Aeronautical Telecommunication
Annex 11: Air Traffic Services
Annex 12: Search and Rescue
Annex 13: Aircraft Accident and Incident Investigation
Annex 14: Aerodromes
Annex 15: Aeronautical Information Services
Annex 16: Environmental Protection
Annex 17: Security
Annex 18: The Safe Transport of Dangerous Goods by Air
Annex 19: Safety Management System
CHAPTER 1 – Definitions
CHAPTER 2 – Applicability
CHAPTER 3 – State safety management responsibilities
CHAPTER 4 – Safety management system (SMS)
CHAPTER 5 – Safety data collection, analysis and exchange
APPENDIX 1 – State safety oversight system
APPENDIX 2 – SMS Framework
ATTACHMENT A – State Safety Program (SSP) Framework
ATTACHMENT B – Legal guidance for the protection of information from safety data collection and processing systems

Approach) since 2013. ICAO introduced Comprehensive Systems Approach (CSA) from 2004. USOAP report and relevant information is made public to other member States. On the other hand, USAP (Universal   Security Audit Program) report and relevant information is made public only to Auditee State itself. In addition to ICAO audit programs, there are some other safety audit programs such as IASA by USA, SAFA by EU and IOSA by IATA.[5]

ICAO does have functions of rule making regarding safety:

    a) Assembly is the supreme decision-making body consisting of 191 Contracting States;

    b) Council, currently comprising 36 Members, is a main body to deliver safety issues referred by lower level of ICAO such as Committee, Commission, Task Force, Working Group, etc.;

    c) Air Navigation Commission, Air Transport Committee, Legal Committee and Committee on Unlawful Interference deliver safety issues and refer the decision to the Council;

    d) Panel, Working Group, Study Group, Ad-hoc Group, Experts Meeting, etc.;

    e) Secretariat: Air Navigation Bureau, Air Transport Bureau, Legal Affairs and External Relations Bureau, Technical Co-operation Bureau, 7 Regional Offices

Annex 19 (Safety Management System, SMS), effective from Nov. 14, 2013, was newly promulgated to strengthen the level of safety. This Annex incorporated[6] and revised existing State Safety Program (SSP), SMS and safety data collection and processing system found in various Annexes, and added some new elements. And SMS shall be applicable to regulators, service providers, and aircraft design and manufacturers.

In addition, the Global Air Navigation Plan (GASP 2014-16) is aiming:

    a) to set global safety objectives, including specific milestones and priorities;

5) Lee, Koo-Hee, Ph. D. Thesis, A Comparative Study on the National and International Aviation Safety Regulations, pp.69-88. Korea Aerospace University, 2015.2

6) Lee, Koo-Hee and Park Won-Hwa, A Study on Air Operator Certification and Safety Oversight Audit Program in light of the Convention on International Civil Aviation", p.121. The Korean Journal of Air & Space Law and Policy, Vol.28 No.1, 2013.6.

   b) to provide a familiar planing framework to make safety improvements
      through the use of the four Safety Performance Enablers (standardization,
      collaboration, resources and safety information exchange);

   c) to outline implementation strategies and best practices guidance material
      to tailor State and regional solutions for addressing global objectives and
      priorities.

Until GASP 2014-16 has been developed in 2013, there was Technical Work
Programme in 1997 and Global Aviation Safety Roadmap (GASR) in 2007.
According to GASP 2014-16, the differences from the previous version are
high-level policy, planning and implementation document, target dates over the
next 15 years, focus on effective safety oversight and State Safety Programme
(SSP) framework and setting global objectives and priorities, but allowing States
and region to adjust own specific approach.[7]

Ⅴ. Emerging Issues and Solutions

   The outcome of 2nd High Level Safety Conference (hereinafter referred to as
HLSC 2015) held during 2-5 Feb. 2015 highlighted ICAO's extensive efforts to
deal with emerging safety issues which arose mainly in 2014 and 2015.

   ICAO issued Press Release regarding the outcome of the conference:
MONTRÉAL, 6 FEBRUARY 2015 – "The International Civil Aviation
Organization (ICAO) concluded its second High Level Safety Conference
(HLSC) yesterday, with over 850 participants from its Member States and
industry showing strong and united support for the UN body's near- and
long-term strategic planning and priorities for global aviation safety. Besides
forging global consensus on two particularly challenging emerging safety

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7) Samuli Vuokila, "Global Aviation Safety Plan(GASP), Flight Safety Seminar for CAAS and
   Operators, 1-2 Dec. 2014, MOLIT

issues – flight tracking and conflict zone risk mitigation – the event also delivered clear affirmations for the objectives now being pursued in every world region under the ICAO Global Aviation Safety Plan. Other key items recognized as requiring ongoing ICAO focus included the safe integration of remotely piloted aircraft systems (RPAS) into civilian airspace, the continued adoption of proactive safety management approaches in States, provisions on the sharing and protection of safety information, full and expedited implementation of Performance-based Navigation (PBN) regulatory oversight, and the need for all ICAO States to be sufficiently assisted so as to reach global minimum levels of effective safety oversight."

1. Global Tracking System

   Following the disappearance of Malaysia Airlines flight MH 370 on 8 March 2014 as shown in the Map 1 below, a special Multidisciplinary Meeting regarding Global Flight Tracking was held at ICAO Headquarters on 12 and 13 May 2014. Participants at this meeting included the ICAO Council and Air Navigation Commission (ANC), States, as well as representatives from the industry and ICAO panels.

〈Map 1 MH 370 Flight Path, Wikipedia〉

The multidisciplinary meeting concluded that global tracking of airline flights should be pursued as a matter of priority to provide early notice of, and response to, abnormal flight behaviour. It also concluded that a draft concept of operations (CONOPS) on flight tracking be developed with a clear definition of the objectives of flight tracking, ensuring that information is provided in a timely fashion to the right people to support search and rescue, recovery and accident investigation activities, and it should also include the roles and responsibilities of all stakeholders.

The multidisciplinary meeting also concluded that an industry-led initiative under the ICAO framework would be the most expeditious means to promote flight tracking implementation in the short-term. In this regard, the Aircraft Tracking Task Force (ATTF), led by the International Air Transport Association (IATA), was established to identify potential solutions for routine flight tracking using existing technologies. Both the AHWG (Ad Hoc Working Group) and the ATTF recognized that the CONOPS and the industry recommendations would need to encompass a fully integrated concept and, consequently, the two groups worked in close coordination, each supported by ICAO. As a result, two standalone documents that complement each other have been developed, the Global Aeronautical Distress and Safety System (GADSS) CONOPS and the ATTF Report.[8]

Currently there are 8 existing ways for pilots to communicate with the ground:

    a) Five very high frequency and high frequency radios that could transmit and receive voice and data transmissions;

    b) Two transponders that could send identification and altitude data to air traffic control radar screens;

    c) One satellite trans-receiver that could transmit and receive text messages and phone calls.

Radar is reliable, but limited because aircraft flying more than about 200miles from land over oceans are not tracked, the radar covers only about 2-3% of the

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8) HLSC/15-WP/11

planet's surface, and If transponders are turned off, the radar cannot accept the signal from the aircraft.[9]

Considering this weakness and drawbacks of radar, new ways of tracking have been explored, including communication satellite network when flying over the ocean, GPS to air traffic controllers via radio, and ADS-B, which are close to US NextGen in terms of the concept. AFIRS (Automated Flight Information Reporting System) monitors FDR (Flight Data Recorder) and transmits key information automatically when troubles happen.

IATA is also developing and testing new way of tracking system. For example, Air services Aus. is implementing test partnership with Malaysia and Indonesia to track long-haul flights over remote ocean routes.

HLSC 2015 recommended that States, air navigation authorities and the industry should begin voluntary implementation of global tracking using available technologies as a matter of urgency (if possible, report the location of aircraft every 15 minutes).

The CONOPS[10] presents a high-level system with a description of users and usages of flight tracking information during all phases of flight, both normal and abnormal flight conditions including timely and accurate positioning of an aircraft in distress. The document includes all identified phases of such a sequence including the detection of an abnormal situation, alert phase, distress phase and search and rescue activities. Furthermore, it also considers the responsibilities of different actors and vulnerabilities to single-point failures. The CONOPS does not prescribe specific technical solutions for flight tracking but provides scenarios that can be used to verify whether a specific solution complies with the concept.

The CONOPS is divided into six sections that include: introduction; improvement areas in current operating environment; high-level requirements; target concept; concept steps; and concept scenarios.[11]

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9) CNN News, March 2014
10) DGCA51/DP/3.3A/4 CONCEPT OF OPERATIONS TO ENHANCE GLOBAL FLIGHT TRACKING
    Attachment Concept of Operations, Global Aeronautical Distress & Safety System (GADSS)

The CONOPS was circulated for comments amongst the groups represented in the AHWG as it was being developed. The implementation of this CONOPS will result in a financial impact on industry. However, this will be offset by the benefits of enhancing the effectiveness of the alerting and search and rescue services. Addressing the medium- and long-term tasks identified in the CONOPS[12] and integrating them into the work programme of ICAO will require future assessment of required resources.

The HLSC 2015 is invited to provide feedback and further enrich the document. ICAO will finalize the document, based on the HLSC 2015 feedback, by the third quarter of 2015. Using the CONOPS to guide the development of provisions maintains congruency and avoids inadvertently impacting other areas that may not have been taken into consideration. Any new proposal for amending ICAO Standards and Recommended Practices or Procedures for Air Navigation Services derived from this CONOPS will undergo the normal development, review, consultation and adoption process.[13]

2. Risks to Civil Aviation arising from conflict zones

On 17 July 2014, Malaysian Airlines Flight 17 (MH17), a scheduled flight was en route from Amsterdam to Kuala Lumpur. The aircraft was operating at FL330 in the Dnipropetrovsk flight information region (FIR), above temporarily restricted areas. The flight disappeared from radar to the west of the radio navigation point TOMAK as shown in Map 2 below and communication with the crew was lost. A signal from the aircraft's emergency locator transmitter (ELT) had been received and its approximate position determined.

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11) HLSC/15-WP/2
12) Section Five, Concept steps
13) Jiefang Huang, Legal aspects of the current issues relating to civil aviation, including risk management of conflict zones and development of global tracking systems, 2015 ICAO Legal Seminar, 26-27 May, Seoul, Korea

The preliminary accident report conducted by the Dutch Safety Board cites that to date, no indication of any technical or operational issues were found with the aircraft or crew prior to the ending of the cockpit voice recorder (CVR) and flight data recorder (FDR) recording. The damage observed in the forward section of the aircraft appears to indicate that the aircraft was penetrated by a large number of high-energy objects from outside the aircraft. It is likely that this damage resulted in a loss of structural integrity of the aircraft, leading to an inflight break up.

In response to this accident, ICAO hosted a special high-level meeting with the Directors General of the International Civil Air Navigation Services Organization (CANSO) on 29 July 2014. A joint statement resulting from this high-level meeting expressed both the strong condemnation of the use of weapons against civil aviation experts and support for the establishment of a senior-level task force to address issues related to the safety and security of civil aircraft operating in airspace affected by conflict. The Task Force on Risks to Civil Aviation arising from Conflict Zones (TF RCZ) was established by the Secretary General to advise the Secretariat, which in turn reported to the Council.[14]
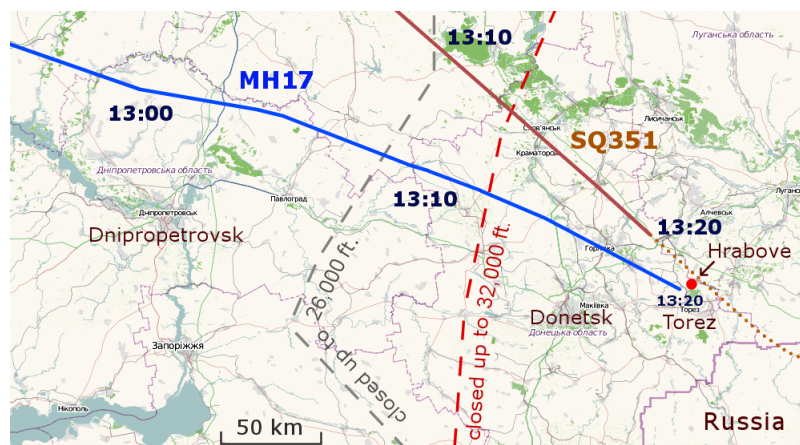
〈Map 2 MH 017 Flight Path, Wikipedia〉

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14) HLSC/15-WP/33

As a means to start this work as urgently as possible, the Secretary General decided that the   States have the responsibility to ensure the safety of civil aviation operations in their sovereign and delegated airspace[15]; and airspace users have the ultimate responsibility to decide where they are able to operate safely. This is consistent with Annex 19, Safety Management, which requires the mitigation of safety risks as an inherent activity of State safety programmes, as well as safety management systems implemented by aviation service providers. In addition, Annex 17 -Security requires that each State keep under constant review the level of threat to civil aviation within its territory and adjust relevant elements of its national civil aviation security programme accordingly, based upon risk assessment carried out by the relevant national authorities[16].

To fulfil these responsibilities, the TF RCZ identified the need to enhance the sharing of information including operational restrictions and prohibitions issued in response to risks associated with conflict zones. A State may issue a notification that restricts or prohibits all civil aviation operations within areas of its sovereign or delegated airspace. In addition, a State may restrict or prohibit its own operators from flying in areas outside of its sovereign or delegated airspace.

A working group consisting of several States and international organizations identified the feasibility of using the NOTAM system for sharing information on risks arising from conflict zones and, in particular, information related to airspace use restrictions as described above[17].

The TF RCZ identified the need to exchange reliable, timely and relevant information that States and service providers require to ensure the safety of aircraft operating over or near conflict zones. This is consistent with Annex 17 which requires each State to "… establish and implement procedures to share, with other Contracting States, threat information that applies to the aviation security interests of those States, to the extent practicable"[18].

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15) Article 1 of the Chicago Convention
16) Annex 17, paragraph 3.1.3 refers
17) HLSC/15-WP/3 refers

Input was provided by the Aviation Security Panel Working Group on Threat and Risk (WGTR) which has produced security risk advice from overflying conflict zones at cruising altitudes. This advice draws on the knowledge and access to information of members of the WGTR, and on the risk assessment methodology developed by the group for assessing global security risks to aviation as set out in the ICAO Aviation Security Global Risk Context Statement (RCS).

On the basis that listed information on the centralized information sharing prototype would consist of NOTAMs, including other types of supplementary risk information of both a safety and security nature, the centralized information capability should allow for unrestricted reading access to States, industry stakeholders and other parties concerned, including the media and the general public. However, the publishing rights shall be restricted to approved State officials having relevant functions within aviation authorities and other relevant aviation security agencies [19]. Consequently, operational guidelines will need to be developed to address issues including but not limited to: ensuring accurate, appropriate and up-to-date content; different scenarios for how States can publish information; disclaimers; and liability.

The TF RCZ recommended the development of an initial prototype for a centralized information capability that includes a web-based repository of applicable NOTAMs supplemented with relevant safety and security information.[20] The initial concept replicates information provided by Contracting States and relevant agencies. The responsibility for the initial data entry, and verification of accuracy and validity belongs exclusively to the States and relevant agencies, while ICAO is likely to act as host of the public website.[21] The host for the public information system shall be limited to making available

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18) Annex 17, paragraph 2.4.3 refers
19) HLSC/15-WP/13 Appendix A refers
20) HLSC/15-WP/13
21) HLSC/15-WP/13 Appendix B State Conflict Zone Information System Prototype

the original, State-provided information regarding risks to civil aircraft arising from conflict zones via a centralized and recognized host entity[22].

To ensure the credibility and utility of the centralized information exchange prototype, it will be important to determine whether, how, by whom and with what frequency this information is vetted for accuracy and reliability. With respect to ICAO's role as host of the information system, States and other providers and users of the information will have to agree to a Disclaimer as a condition of registering with the website in order to enter NOTAMs, aeronautical information circulars (AIC), aeronautical information publication (AIP) supplements and other types of information to their operator, herein called operator notices[23].

The hosting of a centralized information exchange prototype on ICAO infrastructure raises certain challenges that will have to be managed, related notably to the potential for States to publish information that may be inter alia unreliable, inaccurate, or contradictory. A second issue relates to the expectations for ICAO's capacity to serve as host of the public website, given the nature of ICAO's mandate as well as its scarce resources. Further clarification of these issues will increase the credibility, integrity and utility of the centralized information system.[24]

HLSC 2015 urged States to distribute risk information related to operation over/near conflict zones through operator notices mentioned above.[25] HLSC 2015 further recommended further work by ICAO on the development and testing of an information exchange prototype, taking into account the conference input.

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22) Appendix B refers
23) Appendix C refers
24) Jiefang Huang, Legal aspects of the current issues relating to civil aviation, including risk management of conflict zones and development of global tracking systems, 2015 ICAO Legal Seminar, 26-27 May, Seoul, Korea
25) Annex 15 Aeronautical Information Services

3. Recognizing the role of aviation in the ebola outbreak and other public health emergencies

(1) Role of Aviation in public health emergency

As the world continues to respond to the ongoing Ebola which did outbreak in Western Africa mostly in 2014, public health events with the potential to impact international civil aviation have been occurring at a rate of approximately one every two to three years over the last fourteen years. It is likely this rate will continue, or possibly increase, as passenger numbers grow and the world becomes more interconnected.

The ICAO conference (HLSC 2015) stressed its recognition of the role played by aviation in responding to public health emergencies and the importance of collaboration between the aviation and public health sectors in preparedness planning and response to public health events.

HLSC 2015[26]

a) noted the importance of aviation in helping to prevent or mitigate the spread of communicable disease;

b) recognized the importance of information gathering and sharing in effective public health event management in the aviation sector;

c) encouraged States to utilize expertise in the medical department of their regulatory authority to assist in the development of procedures that facilitate improved public health event management and response in the aviation sector; and

d) supported the continuation of the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) programme for providing assistance to States.

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26) HLSC/15-WP/15

（2）Collaboration between the aviation and public health sector

The importance of the aviation sector in preventing the spread of communicable disease by air is recognized by the relevant article of the Chicago Convention[27]. During and since the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 more attention has been given to the implications of Article 14 and several health events, including MERS (Middle East Respiratory Syndrome) which took place in Korea in May 2015, have highlighted and will further highlight the need for a greater understanding of the issues, and need for improved information collection and sharing, and collaboration between the public health and aviation sectors.

Although Article 14 of the Chicago Convention recognizes the involvement of aviation in helping to manage public health events "in close consultation with the agencies concerned with international regulations relating to sanitary measures applicable to aircraft", little attention has traditionally been given to the subject by national regulatory aviation medicine departments. Regulatory aviation medicine tends to be focused on implementation of medical Standards and Recommended Practices (SARPs) for licence applicants.

Medical officers in civil aviation authority aviation medicine departments are recruited from a variety of sources but all should have received training in public health medicine as part of their undergraduate degree programme. Together with their knowledge of the aviation sector, they are therefore well placed to liaise with public health specialists to facilitate the development of a multi-sector approach to public health preparedness planning and response in the aviation sector e.g. implementing the Annex 9 – Facilitation Standard that requires States to "establish a national aviation plan in preparation for an outbreak of a communicable disease posing a public health risk or public health emergency of international concern."

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27) Article 14 Prevention of spread of disease

The protection of the health of passengers and crews on international flights was recognized by the Thirty-fifth Session of the ICAO Assembly in 2004 as an "integral element of safe air travel."[28]   Additionally, the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) provides an opportunity for relevant stakeholders to consider how to plan for and manage public health events that impact the aviator sector. CAPSCA has been recognized as a useful programme by two ICAO Assemblies, in 2010 [29] and in 2013.

Whilst there have been a number of public health events that have impacted the aviation sector since the SARS outbreak in 2003, e. g. Pandemic Influenza A (H1N1) and the Fukushima nuclear powerplants accident, none has better demonstrated the need for the aviation and public health sectors to work together to manage such an event than the 2014 Ebola Virus Disease (EVD) outbreak.

The World Health Organization (WHO) Ebola Emergency Committee recommended that exit screening be undertaken at international airports of affected States to prevent symptomatic patients and their asymptomatic contacts from travelling. To do this, space needs to be allocated in the airport terminal building and/or outside it and a system for notifying the airlines of an individual who has been denied boarding. Procedures require discussion with the airport and aircraft operators.[30]

Should an infected traveller embark an aircraft despite exit screening, e. g. during the asymptomatic incubation period, cabin crew need to know how to identify and manage a case who develops symptoms of a communicable disease in flight. Aspects such as distancing the suspect case from other travellers on a potentially crowded aircraft, use of the lavatories by unwell travellers and disposal of contaminated equipment needs to be considered. ICAO and IATA have developed generic procedures for such cases.

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28) A35 Resolution A35-12
29) Resolution A37-13
30) HLSC/15-WP/15

Notification of a case of communicable disease on board an aircraft in flight to the destination and departure airports requires a specific procedure that utilizes air traffic services (ATS), as described in the Procedures for Air Navigation Services — Air Traffic Management[31]. However, the ATS should not be used for conveying detailed medical information.

The interface between the public health and aviation sectors is critical when an affected aircraft lands with a suspected case of communicable disease on board. Announcements to passengers should be standardized across different airlines as should the procedure for removing an ill passenger from the aircraft. The management of cases identified as potentially infected and potential delays to asymptomatic passengers on the same flight needs consideration.

In order to effectively manage the public health response to a public health event that impacts the aviation sector, a variety of up-to-date data are required. Such data include: airlines which have restricted or ceased operations from or to affected countries (and whether such decisions were based on commercial/ operational considerations or by direction of the airline's State authorities); and which NOTAMS have been issued for public health reasons and what restrictions they impose; which airports have implemented exit (departure) and/or entry (arrival) screening and what this involves; which States impose quarantine requirements for arriving travellers from affected States and what this entails; which air ambulance companies can provide an evacuation service to ill health care workers. At present an effective information exchange system does not exist for collecting and providing such information.

The EBV outbreak resulted in a number of airlines cancelling flights to and from affected States in West Africa. The result has been, according to WHO, delays in transport of health care workers and medical supplies to affected areas, with lives being jeopardized as a consequence.

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31) PANS-ATM, Doc 4444

A number of States issued general flight and passenger bans, contrary to WHO recommendations. This affected not only commercial passenger flights but also air ambulance and humanitarian flights. Some aircraft captains were reported to have refused to carry properly packaged biological samples being sent for specialized laboratory analysis. The economic effects of cancelled flights, for any reason, can have significant deleterious effects on the economy of a State, and on the aviation industry and supporting entities.

The WHO looks to ICAO and IATA for advice concerning flight cancellations and delays. At international and regional levels, ICAO can provide guidance and coordination but at national and operational levels, appropriate public health/aviation networks should be established prior to the commencement of a public health event. Such networks, in most States, have not been fully developed.

The role of the aviation medicine department in regulatory authorities of most States has traditionally focused on implementation of the medical SARPs related to the medical fitness of licence holders and applicants. However, all medical officers should have received basic training in public health medicine and have knowledge of the aviation environment. Such professionals could contribute to the development of public health preparedness plans for aerodromes, as required by Annex 14 — Aerodromes and for Air Navigation Services Providers, as required by Annex 11 — Air Traffic Services.

Public health event preparedness and management in the aviation sector has not been generally seen as a priority by the health and aviation sectors. Efficient management of a public health event that impacts the aviation sector demands that information be available on which to base management decisions. At present there is no system in place that provides for the collection of such data, or its sharing between different stakeholders.

4. Extreme Meteorological condition

The inappropriate management of degraded weather conditions constitutes one of the main contributory factors to serious incidents or accidents to commercial air transport. Indeed, accident and incident investigations have for example demonstrated that[32]:

a) on-board technologies do not always allow detection of rapidly developing isolated convective cells;

b) despite the latest pilot probes, the risk of icing is not totally removed;

c) encounters with vertical or horizontal high altitude windshear may infringe current certification envelopes;

d) during storm activity parked aircraft can be subjected to mean wind speeds that are higher than the certification requirements for the aircraft.

With respect to Indonesia Air Asia QZ 8501 case which occurred on 28 Dec. 2014 and is shown in the Map 3 below, QZ 8501 did not acquire the normal permission for the flight on the day of accident from the authorities[33]. When the aircraft passed through clouds under unstable weather condition (tropical storm) and pilots tried to get instruction from air traffic controllers, ATC did not respond to such request allegedly because they were busy handling other traffic.[34]

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32) HLSC/15-W36

33) Flight schedule was actually reduced during the winter season. Wall Street Journal 30 Dec. 2014

34) CNN News, 30 Dec. 2014

〈Map 3 QZ 8501 Flight Path, Wikipedia〉

In this case pilots should have received weather report from dispatcher. Therefore, self-briefing (pilot to pilot) is not allowed, as so was this case. Meteorological information includes that on departure and arrival airport, en-route, alternate airport. And communication between pilots on one side and dispatcher, other aircraft, and air traffic controllers on the other side should be maintained. FAA obligates to keep communication log between dispatcher and pilots.

More and more often, occurrences concerning extreme/unusual meteorological conditions are being observed either due to increasing traffic, or more severe meteorological events. Potentially, an increase in the number and severity of such dangerous is expected. Accident and incident investigations have identified the need to collect more data and information to understand events for the development of detection systems. Airframe manufacturers and operators through flight data monitoring and incidents analysis may provide useful information that

may complement data gathered during safety investigations following serious incidents or accidents. Equipment manufacturers should pursue their efforts to develop more effective means of detection of intense convective cells. ICAO and airworthiness authorities should review this data and information to assess the need to upgrade aircraft certification standards to reflect more severe meteorological threats.

HLSC 2015 is invited to support the implementation of the relevant Recommendations resulting from the 2014 Meteorology Divisional Meeting linked to extreme meteorological conditions; recommend ICAO, notably through its relevant panels, study data and information from accident and incident investigations as well as data and information provided by aircraft manufacturers, linked to unusual/extreme weather events, including relevant studies and programmes from the World Meteorological Organization concerning evolution of extreme weather; and recommend that ICAO, based on the study results, evaluates the need for improved ICAO airworthiness and operations related provisions in order to further mitigate changing meteorological risks and takes appropriate action.

5. Germanwings crash case

On 24 March 2015, the aircraft of Germanwings, a subsidiary airline of Lufthansa, crashed to the Alpes. The co-pilot with mental disorder was presumed to deliberately drive down the aircraft to the Alps, and some 150 passengers on board were all dead.

Out of this case, EASA hinted at the strengthening the existing regulation. Periodic physical and mental check up shall be mandatorily put in place, and minimum two crew in cockpit should operate the craft.[35] It is expected that there will be more meetings to address this issue at EASA and/or ICAO so as to produce solutions in coming months.

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35) EASA, Newsletter

6. Safety Information Exchange and Protection

(1) Safety Information Exchange

Article 54(i) of the Chicago Convention requires the Council to "request, collect, examine and publish information relating to the advancement of air navigation and the operation of international services", and Article 55 further permits the Council:

c) conduct research into all aspects of air transport and air navigation which are of international importance, communicate the results of its research to the contracting States, and facilitate the exchange of information between contracting States on air transport and air navigation matters;

e) Investigate, at the request of any contracting State, any situation which may appear to present avoidable obstacles to the development of international air navigation; and, after such investigation, issue such reports as may appear to it desirable."

Latest strategies to enhance aviation safety rely on constant flow of safety data and safety information to identify hazards and deficiencies in order to develop effective mitigation strategies. Such data and information must be protected so that the potential to collect and share such information for the purpose of identifying emerging safety issues is not jeopardized. This subject also applies to 1-5 above as well as virtually to all safety issues, as a common solution to ongoing concern about aviation safety in general.

Safety information refers to information contained in SDCPS (safety data collection and processing systems) established for the sole purpose of improving aviation safety, and qualified for protection under specified conditions[36]. SDCPS refers to processing and reporting systems, databases, schemes for exchange of information and include:

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36) Attachment B. Legal Guidance for the protection of information from safety data collection and processing systems, Annex 19, Safety Management, First Edition, July 2013.

    1) records pertaining to accident and incident investigations, as described in Annex 13, Chapter 5;

    2) mandatory incident reporting systems, as described in Chapter 5,5.1 of this Annex;

    3) voluntary incident reporting systems, as described in Chapter5,5.1 of this Annex; and

    4) self-disclosure reporting systems, including automatic data capture systems, as described in Annex 6, Part I, Chapter 3, as well as manual data capture systems.

Then what is the difference between safety data and safety information? Safety data is a defined set of facts or set of safety values collected from various aviation related sources, which when analyzed, can facilitate safety management. Such safety data could be collected from proactive or reactive safety related activities, including but not limited to:

    a) accident/incident investigation;

    b) safety reporting;

    c) continuing airworthiness reporting,

    d) operational performance monitoring;

    e) inspections, audits, surveys, findings or reports; or

    f) safety studies and reviews.

On the contrary, safety information is safety data processed, organized or presented in a given context so as to make it useful for the purpose of sharing, exchanging or retaining them for safety management.[37]

(2) Safety Information Protection

Current protection of safety data and information is found in Annex 13, 19 and 6. First, 5.12 (Non-Disclosure of Records) of Annex 13 stipulates "The State

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37) Siew Huay Tan, Safety data protection and exchange, 2015 ICAO Legal Seminar, 26-27, May, Seoul, Korea

conducting an accident/incident investigation shall not make certain records available for purposes other than accident or incident investigation unless its appropriate authority for the administration of justice determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations." Protected records contain the followings:

    a) all statements taken from persons involved in the aircraft operation;

    b) all communications between those persons;

    c) medical or private information;

    d) CVR and transcripts;

    e) ATC recordings and transcripts;

    f) cockpit airborne image recordings and transcripts;

    g) options expressed in the analysis of information, including flight recorder information.

5.3 (Safety data protection) of Annex 19 stipulates "A voluntary incident reporting system shall be non-punitive and afford protection to the sources of the information". 3.3 (Safety Management) of Annex 6 Part I stipulates "A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the sources of the data."

ICAO, through various meetings, has been making efforts to enhance the level of safety in recent years. The High-level Safety Conference (HLSC 2010) (Montréal, 29 March ‐ 1 April 2010) recommended that ICAO establish a multidisciplinary group to progress activities regarding the protection of safety data and safety information, including certain accident and incident records as well as data supporting State Safety Programmes (SSP) and safety management systems (SMS)[38].

The 37th Session of the Assembly (Montréal, 28 September ‐ 8 October 2010) instructed the Council to consider enhancing, in view of the results of the

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38) Recommendation 2/4 refers

work of the multidisciplinary group and taking into account the necessary interaction between safety and judicial authorities in the context of open reporting culture, the provisions on the protection of certain accident and incident records with the aim of facilitating the implementation of relevant provisions in Annex 13 ─ Aircraft Accident and Incident Investigation as well as provisions on information gathered through safety management processes with a view to ensure and sustain the availability of information required for the management of safety.

The Air Navigation Commission, at the seventh meeting of its 185th Session held on 7 December 2010, agreed to establish a multidisciplinary Safety Information Protection Task Force (SIPTF) to provide recommendations for new and/or enhanced provisions and guidance materials intended to assure an appropriate level of protection for certain accident and incident records and information gathered through safety management processes.

In response, the SIP TF developed recommendations for amendments to Annex 19 ─ Safety Management, addressing various issues associated with the legal protection of information gathered through safety management processes[39]. These recommendations were developed in coordination with the Safety Management Panel (SMP), which continues its work to evolve safety management provisions.

The SIP TF proposals include amendments to Annex 6 ─ Operation of Aircraft and Annex 13 ─ Aircraft Accident and Incident Investigation. The recommendations for Annex 6 amendments apply the enhanced legal protections to information collected through flight data analysis and fatigue risk management systems[40]. The recommendations for Annex 13 amendments address the cooperation of the accident investigation authority with judicial authorities and suggest the elevation of Recommended Practice 8.3 in Annex 13 to a Standar

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39) SIPTF/4, Recommendations 4/1 and 4/2 refer
40) SIPTF/4, Recommendation 4/2 refers

d[41]. With regard to the recommendations on provisions to Annex 13 related to the protection of flight recorder recordings used for the purposes of accident and incident investigations as well as the information generated through accident and incident investigations, the SIP TF further agreed that another appropriate study group, including selected SIP TF participants, under the ICAO Accident Investigation (AIG) Section, be informed of the work of the SIP TF and tasked to consider these recommendations [42]. This work has been initiated.

The 38th Session of the Assembly (Montréal, 24 September – 4 October 2013) instructed the Council to take appropriate steps to ensure meaningful progress toward the development of new and/or amended provisions in Annex 13, Annex 19, other Annexes as appropriate, and related guidance material[43].

The proposed amendments enhance legal safeguards intended to assure the appropriate use and protection of information gathered through safety management processes, thereby ensuring its continued availability to support proactive strategies to maintain and improve aviation safety. The proposals aim to:

    a) strike a balance between the need for the protection of safety management information and the need for the proper administration of justice;

    b) establish parameters to ensure that safety management information is available to be used for its intended purposes;

    c) determine the levels of protection to be afforded to safety management information appropriate to specific circumstances; and

    d) provide necessary flexibility for Contracting States in determining the competent authority to make decisions regarding the disclosure of safety management information for use in judicial, administrative and disciplinary proceedings, as well as to the public.

The proposed amendments to Annex 19 are anticipated to be put forward for adoption by the Council in June 2015 and are envisaged for applicability on 10

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41) SIPTF/4, Recommendations 3/3 and 3/4 refer
42) SIPTF/4, Recommendations 3/1, 3/2 and 4/3 refer
43) Resolutions A38-3 and A38-4 refer

November 2016 to allow States sufficient time to coordinate with all appropriate authorities.

The work conducted by the SIP TF and the Group of Experts on Protection of Accident and Incident Records (GEPAIR), which was established In April 2014, is expected to enhance ICAO provisions and guidance material related to the protection of certain accident and incident records as well as flight recorder recordings, with the aim of facilitating their implementation. The findings and recommendations took into account the importance of mitigating impediments to accident and incident investigations, the sole objective of which is the prevention of accidents and incidents and not the apportionment of blame or liability. The recommendations also considered striking a balance between the need for the protection of records generated through such investigations in the context of an open reporting culture and the need for the proper administration of justice.

In addition to the above-mentioned proposals, the SIP TF developed a number of recommendations to support the implementation of any new or enhanced provisions[44]. These recommendations include the establishment of communication and training initiatives to build trust and a common understanding among aviation safety practitioners, accident investigation authorities, regulators, law enforcement and judiciary officials. The SIP TF strongly believes that future interaction between aviation experts, regulatory, law enforcement, accident investigation and judiciary authorities will facilitate investigatory and judicial processes in a manner that facilitates accident and incident investigation objectives and that promotes proactive policies and practices for the maintenance and improvement of aviation safety.

The new and/or enhanced provisions will provide a means for States to balance the need for the protection of safety information and the need for the proper administration of justice, consistent with the Global Aviation Safety Plan.[45]

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44) SIPTF/4, Recommendations 2/1 refers
45) Additional information on the GASP update process can be found in HLSC/15-WP/6 under Topic 2.4 Evolution of the Global Aviation Safety Plan (GASP).

These benefits will be instrumental to the future enhancement of aviation safety.

In sum, the protected environment provided by ICAO will assure the availability and exchange of such information which will in turn assist States in performing State safety risk management and State safety assurance activities; both are important components of a State' SSP.[46]

7. Regional Cooperation

HLSC 2015 also recognized that the coordinating role now being performed by ICAO's Regional Aviation Safety Groups (RASGs) was instrumental, and that sector-wide safety performance is a critical prerequisite for the sustainable development of air transport and the social and economic development benefits it fosters in States and Regions.

Ⅵ. Conclusion

The Chicago Convention and its Annexes are mostly dealing with safety and security issues. Based on these constitutional provisions relating to safety, ICAO has been developing a lot of guidance materials in various forms including Document, Circular to implement above-mentioned provisions of the Convention and Annexes. And Moreover, ICAO has recently developed SMS (Safety Management System) to enhance the overall safety level, which was newly designated as Annex 19 in Nov. 2013. SMS together with SSP and USOAP is a main tool so as to ensure safety in aviation-related entities.

ICAO has various decision-making bodies such as Air Navigation Commission, Council Assembly, through meetings of which many issues can be

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46) HLSC/15-WP/5

dealt with. In 2014 and afterwards when new and significant accident took place, ICAO has been exerting efforts to address these emerging issues and come to solutions. International civil aviation is closely interlocked, interrelated and interconnected among stakeholders, safety elements, and Contracting States. Therefore, it requires concerted, coordinated and harmonized participation, collaboration and cooperation by States as necessary.

When we look at ICAO's ways of doing and getting things done, there should be a certain framework whereby international civil aviation community, the focal point of which is ICAO, tacking issues and coming up with solutions. They are usually approaching and addressing issues in four dimensions to come up with solutions, i.e., time, space, stakeholders and regulatory change as an outcome.

First, regarding time, they analyse past experience, improve existing mechanisms and try to introduce new system for the future. Second, regarding space, individuals, States, regions, and international community as a whole, are involved in this endeavor. Third, there are many stake holders concerned about problem solving, including governments, international organizations, consumers, airlines, manufacturers, airports, air traffic control centers, air navigation service providers[47], insurers, etc. Last, but not the least, regarding regulatory change, they normally come up with best practices, guidance materials, amending and/or making new SARPs (Standards and Recommended Practices) to be included in Annexes to the Chicago Convention, normally through ICAO's rule making procedures.

Even as we speak, international civil aviation community is meeting new challenges and at the same time tackling these issues to ensure safer skies for human kind.

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47) Kim Bong-Suk, "Air Navigation Safety Policy and Safety Management", 3rd ANS Safety Seminar, MOLIT, 28 April 2015

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Abstract

Aviation Safety Regulation and ICAO's Response to Emerging Issues

Dong-Chun Shin

Aviation safety is the stage in which the risk of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management.

Many accidents and incidents have been taking place since 2014, while there had been relatively safer skies before 2014. International civil aviation community has been exerting great efforts to deal with these emerging issues, thus enhancing and ensuring safety throughout the world over the years.

The Preamble of the Chicago Convention emphasizes safety and order of international air transport, and so many Articles in the Convention are related to the safety. Furthermore, most of the Annexes to the Convention are International Standards and Recommended Practices pertaining to the safety. In particular, Annex 19, which was promulgated in Nov. 2013, dealing with safety management system. ICAO, as law-making body, has Air Navigation Commission, Council, Assembly to deliberate and make decisions regarding safety issues. It is also implementing USOAP and USAP to supervise safety functions of member States.

After MH 370 disappeared in 2014, ICAO is developing Global Tracking System whereby there should be no loophole in tracking the location of aircraft anywhere in world with the information provided by many stakeholders concerned. MH 17 accident drove ICAO to install web-based repository where information relating to the operation in conflict zones is provided and shared. In addition, ICAO has been initiating various solutions to emerging issues such as ebola outbreak and operation under extreme meteorological conditions.

Considering the necessity of protection and sharing of safety data and information to enhance safety level, ICAO is now suggesting enhanced provisions to do so, and getting feedback from member States.

It has been observed that ICAO has been approaching issues towards problem-solving from four different dimensions. First regarding time, it analyses past experiences and best practices, and make solutions in short, mid and long terms. Second, from space perspective, ICAO covers States, region and the world as a whole. Third, regarding stakeholders it consults with and hear from as many entities as it could, including airlines, airports, community, consumers, manufacturers, air traffic control centers, air navigation service providers, industry and insurers. Last not but least, in terms of regulatory changes, it identifies best practices, guidance materials and provisions which could become standards and recommended practices.

초　록

항공안전규제와 새로운 이슈에 대한 ICAO의 대응

신 동 춘*

　항공안전은 계속적인 위험성의 확인과 관리를 통하여 개인에의 위해나 재산 손실의 위험이 수용 가능한 수준으로 감소되거나 그 이하로 유지되는 상태를 의미하며, 항공 안전을 증진하기 위한 다양한 방법이 모색되고 있다. 최근 10여 년 간 국제민간항공은 비교적 높은 수준의 안전을 유지하여 왔으나 2014년부터 여러 가지 사고가 발생하면서 국제민간항공계가 다시 긴장하고 있고 ICAO를 중심으로 다각적인 대응방안을 모색하고 있다.

　항공안전은 국제민간항공을 지탱하는 가장 중요한 요소이다. 국제민간항공협약(시카고협약)은 서문에서 안전과 질서가 중요함을 강조하였고, 협약의 다수 조문이 안전에 관계되어 있다. 부속서(1-19)는 몇 개를 빼고는 모두 안전에 관한 국제표준과 권고를 규정하고 있다. 특히 부속서 19는 안전관리체제에 대하여 기존의 부속서에 산재되어 있는 규정을 통합했고 도한 새로운 규정을 신설하였다. 또한 ICAO는 안전 문제를 증진하기 위한 의사결정과 입법 기능을 가지고 있으며 항행위원회, 법률위원회, 항공운송위원회 등과 이사회의 심의를 기초로 하여 총회가 최종 결정 권한을 가지고 있다. 보조 기구로서 전문가 그룹, 태스크포스 등을 수시로 설치, 운영하고 있고, 사무국은 이러한 제반 기구의 사무를 보조하고 있다. 또한 ICAO는 USAOP과 USAP 프로그램을 통하여 체약국의 안전 및 보안 수준을 점검하고 있고, 미국, EU, IATA 등이 별도의 안전점검제도를 운영하고 있다.

　2014년에 발생한 MH370기 실종 사건은 회원국, 관제기관, 항행시설, 항공기 등이 제공한 정보를 토대로 전세계추적시스템(Global Tracking System)의 구축을 통하여 항공기의 위치를 실시간 추적 가능토록 하여 문제를 해결하려고 하고 있다. 또한 우크라이나 상공에서 격추된 MH17 사건 이후 ICAO는 회원국이

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48) 건국대 초빙교수, 한국항공우주정책·법학회 부회장

제공한 정보 및 NOTAM, AIP 등 운항정보를 기반으로 정보를 공유하는 웹사이트를 운영함으로써 분쟁지역에서의 위험관리를 통하여 유사한 사고를 방지하려고 하고 있다. 에볼라가 서아프리카에서 발생한 이래 보건당국과 항공당국 간의 긴밀한 협조를 통하여 항공기에 의한 전염병의 확산을 막도록 다각적인 조치를 강구하고 있다. 또한 QZ8501 사건은 악기상하에서 제대로 대처하지 못한 운항의 결과로서 이 또한 ICAO를 중심으로 추가적인 보완 조치를 강구하고 있다. 이밖에도 2015년 3월에 발생한 저먼윙즈의 부기장에 의한 항공기 추락사고와 관련 후속 조치의 강구가 요구되고 있다.

　국제항공계는 이러한 사고를 예방하고 안전 수준을 더욱 제고하기 위해서는 안전 관련 데이터 및 정보의 보호와 공유가 필수적임을 인식하여 현재 있는 정보 보호 및 공유에 관한 조항 이외에 추가적인 규정을 제의하고 있으며 회원국에 의한 검토를 거쳐 부속서나 ICAO 안내 문서에 반영될 예정으로 있다.

　ICAO의 문제해결 방식은 네 가지 차원에서 접근되고 있다. 시간적으로 과거의 경험과 정보를 분석하는 토대위에서 단기, 중기, 장기의 대책을 마련하고, 공간적으로는 각 회원국, 지역, 전 세계에 적용될 수 있는 대책을 수립하고 있고, 항공사, 공항, 지역 사회, 소비자, 제조자, 항행서비스 공급자, 관제기관, 산업계, 보험업계 등을 망라하는 이해관계자를 고려하여야 하고, 규제적인 개선을 위하여 최선의 관행, ICAO 안내문서, 표준 및 권고 관행에 반영될 방안을 심의하고 결정하는 구조를 가지고 있다.

주제어 : 항공 안전, 시카고협약, 국제표준과 권고, 전세계추적시스템, 분쟁 지역 위험 관리, 항공기에 의한 전염병 확산 방지, 악기상에서의 운항, 정보의 보호와 공유