

Chapter 7 International efforts for accident prevention

1 Objectives and significance of international cooperation

Aircraft and marine accidents, which are part of Japan Transport Safety Board's investigation scope, includes international in nature. Creating and operating systems for these kinds of investigations therefore involve international organizations. Also, it may be necessary to cooperate and coordinate with the accident investigation authorities of the states concerned during the investigation process.

In addition to the nation where an aircraft accident occurred, the state of registry, the state of the operator, and the state where the aircraft was designed and manufactured are the states concerned. An annex to the Convention on International Civil Aviation (the Chicago Convention) states that the state of occurrence is responsible for starting and accomplishing an accident investigation while the other states also have the right and responsibility to appoint a representative to participate in the investigation. Proper cooperation with the accident investigation authorities of those states concerned is necessary for the accomplishment of the investigation.

Similarly, in marine accidents involving vessels above a certain level, the International Convention for the Safety of Life at Sea (SOLAS) places the obligation of investigation on the flag state of the vessel. Additionally, other states concerned, such as coastal states in whose territory the marine accident occurs and the state(s) of victims are entitled to investigate the accident. The convention defines the standard framework of marine accident investigations. The flag state and states concerned must cooperate with each other in multiple ways, such as through information sharing, when conducting accident investigations.

Based on this background, a variety of international meetings are held for each mode, which JTSB actively participates in. The meetings are for the purpose of facilitating collaboration in the case of accidents or incidents, sharing information on accidents and investigation methods on a regular basis, and achieving results of prevention for repeated accidents all over the world. Additionally, for the investigation of railway accidents, for which there is no international organization, various international seminars to exchange information on accident and incident investigations are held in major countries. Because in regards to this area, the fundamental investigation system of each state is generally standardized. Furthermore, some universities overseas have specialized training courses for accident and incident investigations, to which JTSB is also actively dispatching investigators.

As shown above, JTSB aims to improve transport safety in Japan and all over the world. It hopes to do so through sharing of our findings worldwide, which have been acquired in individual accident and incident investigations. Relating to this, the following sections introduce each of our international activities in 2022.

2 International conferences under the COVID-19 pandemic

Until last year, due to the COVID-19 pandemic, most international conferences were held virtually (on the Web). However, many of the conferences planned for 2022 were both held on-site and online to allow each country to participate according to its respective situation.

In the conferences, not only information on the traditional accident investigation methods were shared and exchanged, but also information on the effect and restrictions of investigation activities under the COVID-19 pandemic as well as the situation of responses of each country was shared and exchanged by new participating countries.

The Web conference have the advantage of allowing the persons in charge to participate in conferences with many staff even if it is difficult for them to go abroad due to their work schedule. However, since these conferences were held sometimes at the European time, persons in participating countries were obliged to

participate late at night or early in the morning due to time difference and participants of the JTSB also sometimes participated in these conferences at night or early in the morning at the time in Japan.

3 Efforts of international organizations and JTSB's contributions

(1) Efforts of the International Civil Aviation Organization and JTSB's involvement

The International Civil Aviation Organization (ICAO, Headquarters: Montreal, Canada) is a United Nations specialized agency established in 1947. Japan acceded to it in 1953. ICAO comprises the Assembly, Council, and Secretariat, and as of October 2022, 193 states are members of ICAO. The Council has subordinate bodies, such as Air Navigation Commission, Legal Committee, Air Transportation Committee, Joint Operation Committee, and Finance Committee. In addition, it has regional offices in seven locations, including Bangkok, Cairo, and Paris. Besides, there are expert meetings such as Air navigation conference, a variety of working groups, and panel meetings which are called in for certain projects.

The objectives of ICAO are provided in Article 44 of the Chicago Convention as being “to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport.” ICAO is engaging in a wide variety of activities, including the drafting of conventions regarding international air transport services and aviation security such as countermeasures against hijacking. It also engages in audits of contracting states’ safety monitoring systems, and responses to environmental problems.

ICAO establishes the Annexes of the Chicago Convention for items that must be covered by globally unified rules. The Annexes determines the rules for 19 fields, including personnel licensing, rules of the air, registration of aircraft, airworthiness, aeronautical telecommunications, search and rescue, security, and the safe transport of dangerous goods and safety management. Among them, Annex 13 establishes the standards and recommendations for aircraft accident and incident investigations. In addition, the Act for the Establishment of the Japan Transport Safety Board states that: "The Board shall conduct investigations prescribed in items (i) to (ii) of Article 5 in conformity with the provisions of the Convention on International Civil Aviation and with the Standards, Practices and Procedures adopted as Annexes thereto." (Article 18).

The Accident Investigation Panel (AIGP), which is a subordinate organization of the Air Navigation Commission, is mainly a forum for discussion on the revision to Annex 13 and the preparation of guidance materials. The JTSB has participated as a member since the 4th meeting held in May 2018. The 7th Accident Investigation Panel Meeting (AIGP/7) was held in Paris, France in May 2022, in which aircraft accident investigators of the JTSB participated. Regarding the working groups (WGs) established under the panel, JTSB is participating in the “Safety Recommendation of Global Concerns WG” and the “Unmanned Aircraft System Accident Investigation WG” as well as in the “Family Information WG.”

In addition, the Asia Pacific Accident Investigation Group (APAC-AIG) operates as a framework for safety in Asia and Pacific Regions, and considers the building of a cooperative system for accident investigation in these regions. The 10th Asia-Pacific Regional Accident Investigation Group conference (APAC-AIG/10) was held in a hybrid format of on-site and on the Web. From the JTSB, aircraft accident investigators participated in the meeting and discussed a variety of issues, including the issues related to victim support and media response, issues related to the expansion of the scope of investigations of unmanned aircraft, improvement of investigative capabilities in the region based on the regional characteristics of the Asia-Pacific region, and promoting cooperation in the region.

(2) Efforts of the International Maritime Organization and JTSB's involvement

The International Maritime Organization (IMO, Headquarters: London, United Kingdom) was established in 1958 as a specialized agency of the United Nations. It was originally called as the Inter-Governmental Maritime Consultative Organization (IMCO). The IMO comprises the Assembly, the Council and five committees. These are the Maritime Safety Committee (MSC), Legal Committee (LEG), Marine

Environmental Protection Committee (MEPC), Technical Cooperation Committee (TC) and Facilitation Committee (FAL). In addition, there is a Secretariat, and the MSC (and MEPC) has seven subcommittees. As of October 2022, IMO has 175 member states/territories and three regions as associate members.

IMO engages in various activities, such as the facilitation of intergovernmental cooperation, effective safety measures and drafting of conventions that relate to technical and legal problems with maritime life safety and safe marine navigations.

The Sub-Committee on Implementation of IMO Instruments (III) is a subordinate group of MSC and MEPC. It discusses how to ensure the responsibility of the flag state, including the investigation of marine accidents and incidents. III analyzes the accident or incident investigation reports submitted from states based on SOLAS and the International Convention for the Prevention of Pollution from Ships (MARPOL) to draw lessons from, which III subsequently makes public on the IMO website. By doing so, III promotes activities for the prevention of the repeated occurrence of marine accidents.

The Correspondence Group (which undertakes analysis during periods outside of the sessions) and the Working Group (which verifies the analysis results during the session period) comprises volunteer investigators from some member states. They discuss these analysis results, which the III plenary subsequently approves. Depending on the matter in question, if III determines that further discussion is required for a convention revision, it will submit recommendations or information to MSC, MEPC and other IMO subcommittees. The 8th session of the Sub-Committee on Implementation of IMO Instruments (III 8) was held virtually in July 2022. A JTSB marine accident investigator became the group member, and conducted analyses of accident and incident investigation reports submitted by each country. The provisional translation of the past analysis results is shown in the JTSB website:

(URL: https://www.mlit.go.jp/jtsb/casualty_analysis/casualty_analysis_top.html)

4 Cooperation and information exchange with foreign accident investigation authorities and investigators

(1) Participation in international meetings

① Chairperson meeting of the International Transportation Safety Association

The International Transportation Safety Association (ITSA) was established by accident investigation boards from the Netherlands, the United States, Canada, and Sweden in 1993. As of October 2022, the international organization has members from the transport accident investigation authorities of 18 countries and territories. Organizations that are permitted to join must be permanent accident investigation authorities that are independent from any regulatory authority.

Based on the idea that any findings from an accident and incident investigation in one field can be used as a lesson for another field, ITSA holds annual chairperson meetings where the participating accident investigation authorities present their experiences in accident investigation. These presentations are for all the modes of aviation, railway, and marine accidents and incidents. The chairpersons learn about the causes of accidents and the methodologies of accident investigations, thus aiming to improve transport safety in general. As for Japan, the Aircraft and Railway Accidents Investigation Commission was approved for accession in June 2006. The board has participated in all the meetings held after 2007.

In the conference held in Helsinki, Finland in June 2022, Chairperson Takeda and other members from the JTSB participated on the Web. In the meeting, Chairperson Takeda participated as a panelist in the safety research by theme, in which we did not only present our efforts of analysis work, but also presented the publication of “JTSB Digest” as well as the provision of the “Japan-Marine Accident Risk and Safety Information System (J -MARISIS)” and posting of “Prevention of Railway Level Crossing Accident” as the outcome thereof.

② International Society of Air Safety Investigators and Asian Society of Air Safety Investigators

The International Society of Air Safety Investigators (ISASI) has been organized by national aircraft accident investigation authorities. The purpose of this society is to support accident investigations aimed at preventing repeating occurrences of aircraft accidents and incidents. This aim is to be achieved by improving further a cooperative system of investigation authorities, through the facilitation of communications between member countries about their experience and knowledge, as well as information about the technical aspects of aircraft accident investigations.

ISASI holds annual seminar each year, and Japan has participated in each one of them since the establishment of Japan Aircraft Accident Investigation Commission in 1974. In this seminar, working groups including the Flight Recorder Working Group, the Investigator Training and Education Working Group, the Cabin Safety Working Group, and the Government Air Safety Investigators Group are held in parallel with the general meeting. Japan also participates in these working groups to endeavor to improve investigation technologies for aircraft accidents and incidents.

The 2022 Annual Seminar was held in a hybrid format of on-site and on the Web. This seminar provided 6 keynote speeches and 23 presentations.

ISASI has regional associations in Australia (ASASI), Canada (CSASI), Europe (ESASI), France (ESASI French), Korea (KSARAI), Middle East and North Africa (MENASASI), Latin America (LARSASI), New Zealand (NZSASI), Pakistan (PakistanSASI), Russia (RSASI), the United States (USSASI) and Asia (AsiaSASI). Each of these associations also holds their own seminars.

In AsiaSASI, The National Transportation Safety Committee of Indonesia currently serves as Chairperson, with Hong Kong Civil Aviation Department as Vice Chairperson, and Transport Safety Investigation Bureau of Singapore as Secretariat, and the JTSB serves as an executive committee.

③ Accident Investigator Recorder (AIR) Meeting and Asia Accident Investigation and Analysis Technology Exchange Conference

The Accident Investigator Recorder (AIR) Meeting is an international conference for aircraft accident investigators who analyze digital flight data recorders (DFDR) and cockpit voice recorders (CVR). At this meeting, aircraft accident investigation analysts from all over the world share know-how by exchanging their experience, knowledge, information relating to the analysis of DFDR, and discuss the relevant technologies on DFDR. The conference aims to further develop the technical capacity of accident investigation authorities around the world and to further improvement the cooperative system amongst the authorities.

This meeting was established in 2004, and the accident investigation authorities of each country hold a meeting every year. JTSB has participated in nearly all the conferences since 2006.

The conferences in 2020 to 2022 were postponed due to the COVID-19 pandemic.

The Asia Accident Investigation and Analysis Technology Exchange Conference has been held every year since 2020 with the participation of accident investigators who are in charge of digital data analysis of flight recorders to share research cases related to analysis work and study to solve the issues of each country. In 2019 and 2020, Japan hosted the plenary sessions (held on the Web), and the conference in 2022 was held in Singapore.

This Conference aims not only to grasp the international technological trends related to flight recorders and analyzers, but also to promote technical exchanges by analysts in the Asian region to build a cooperation system when an accident requiring investigations occurs.

④ Marine Accident Investigators' International Forum

The Marine Accident Investigators' International Forum (MAIIF) is an international conference held

annually since 1992. It was originally based on a proposal from the Transportation Safety Board of Canada. Its purpose is to maintain and develop international cooperation among marine accident investigators and to foster and improve international cooperation in marine accident investigations and thus, advancing maritime safety and prevent marine pollution. In 2008, MAIIF was granted the status of an Inter-Governmental Organization (IGO) in IMO.

Under this forum, marine accident investigators around the world take the opportunities to exchange frankly opinions and share information on marine accident investigations. Recently, there has been more demand to make use of the findings obtained from the marine accident and incident investigations in the discussions in IMO. In 2009, MAIIF made a proposal based on the investigation results from the state investigation authorities to IMO for the first time. Japan has joined the forum every year since the third conference.

The 29th conference, which was scheduled to be held in Lima, Peru in November 2021, was postponed due to the COVID-19 pandemic. marine accidents investigators from the JTSA participated in a hybrid format of on-site and on the Web in September, 2022.

⑤ Marine Accident Investigators Forum in Asia

The Marine Accident Investigators Forum in Asia (MAIFA) was established by a proposal from Japan to build a mutual cooperation system for marine accident and incident investigations in the Asia region and to assist developing countries in enhancing their investigation systems. Since 1998, meetings have been held annually, and Japan has been playing a leading role in this forum, including the sponsorship of the 13th meeting in Tokyo in 2010. The network of investigators that has been established through the forum is now effective in its promotion of rapid and smooth international cooperation in accident and incident investigations. Encouraged by the success of MAIFA, E-MAIIF was established in Europe in 2005. A-MAIF was then established in North, Central and South Americas in 2009. These trends contribute more than ever in furthering the exchange and cooperation between marine accident investigators in each region. In the Asia region, there are not only a lot of straits with sea traffic congestion, but also severe weather and hydrographic phenomena that often give rise to tragic marine accidents. Nonetheless, some countries have insufficient capacities or systems for accident investigations. This situation makes these regional fora very important.

The 23rd conference was scheduled to be held in Shanghai, China in 2021, but was postponed due to the COVID-19 pandemic, and an interim conference was held in November 2022 on the Web

(2) Examples of international cooperation among accident investigation agencies in individual cases

For the aircraft accident and incident investigations, based on the provisions in Annex 13 of ICAO, the state where an aircraft accident occurred must notify the state of registry, the state of design/manufacturing, and the state of operation. If necessary, these states concerned may appoint their own Accredited Representative (AR) to join the investigation.

When an Agusta AW139 (rotor aircraft) belonging to the Iwate Prefectural Disaster Prevention Air Corps was engaged in firefighting activities in a forest fire that had broken out in Iwaizumi Town, Shimohei County, Iwate Prefecture on April, 2022, the water sprayed from the sky hit a fire brigade member on the ground causing a serious injury. The JTSA is conducting investigations on the matter with Italy as the country for designing the aircraft, Unites States as the country for manufacturing the aircraft body and Canada as the country for designing and manufacturing the engine.

In marine accident and incident investigations, the IMO Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) states that the interested states, including the flag state of the ship and the coastal state of the accident, must cooperate in the marine accident investigation. Also in Japan, if a marine accident or incident occurs that concerns more than one state, Japan's accident investigators are to collaborate with the accident investigation authorities of the other interested states in order to obtain information about the

accident.

Regarding the case occurred in the high seas in October 2021 wherein crew members of the LPG ship PGC Patreas were injured, the JTSB was requested to cooperate in the investigation by the accident investigation organization of the Republic of Malta as the flag state of the LPG ship. In response to this request, we have provided information necessary for the investigation to the organization of the Republic of Malta and we have been received inquiry about the draft investigation report before its publication.

Among the marine accident and incident investigation reports that were published in 2022, JTSB sent three draft reports to the flag states and other interested states upon request in order to invite their comments.

5 Technical cooperation

In response to requests from overseas railway accident investigation organizations, the JTSB implements human resource development support including the training of railway accident investigators.

So far, we have not only participated in the field of railway accident investigation in the “Indian Railway Safety Capability Enhancement Project” implemented as a technical assistance project of the Japan International Cooperation Agency (JICA), but also have been contributing to the improvement of overseas railway safety by recently establishing a department to investigate railway accidents to provide Japanese railway accident investigation technologies according to their categories, including the provision of training to overseas railway accident investigation organizations which have started railway accident investigations as a technical aid to them.

These efforts contribute to the initiative “to support efforts related to technology transfer and human resource development to allow overseas countries to properly operate and maintain their own railway” in the “Infrastructure Systems Overseas Expansion Action Plan 2022 of the Ministry of Land, Infrastructure, Transport and Tourism” which summarizes its projects to promote the expansion of the infrastructure systems to overseas, and we will continue to work for improving the transportation safety in the future through technical cooperation with overseas accident investigation organizations.

6 Participation in overseas training

The JTSB is making efforts to advance the capacity of accident investigators through measures such as training and international information exchanges to investigate accidents accurately, and also actively participates in overseas training for accident investigations.

In 2022, JTSB’s aircraft accident investigators participated in the training on unmanned aircraft system and training to read and analyze data from damaged FDR and CVR organized by the Southern California Safety Society (SCSI) in the United States.

In addition, every year the JTSB dispatches aircraft accident investigators and marine accident investigators to Cranfield University (UK), which has a proven track record in accident investigation training. Due to the COVID-19 pandemic, the dispatch of 2022 was cancelled.



Resumption of the Holding On-Site of International Conferences

International Affairs Office

The travel restrictions due to the COVID-19 pandemic have greatly affected the international exchange of people and they were a big blow to airline companies, travel agencies, and the tourism industry in particular. The international work of the JTSB was not an exception, either. The JTSB participates in international conferences to establish standards for preventing the recurrence of the accidents in cooperation with accident investigation organizations around the world, and to improve investigation skills and gain an understanding of overseas trends by exchanging information, etc. These conferences include the annual meeting of the International Transport Safety Association (ITSA), the ICAO Accident Investigation Panel (AIGP), the annual seminar of the International Association of Aircraft Accident Investigators (ISASI), the executive meeting of the Asian Society of Air Safety Investigators (AsiaSASI), the Accident Investigator Recorder (AIR) Meeting, the Marine Accident Investigators' International Forum (MAIIF), and the Marine Accident Investigators Forum in Asia (MAIFA).

Due to the COVID-19 pandemic, some of the international conferences in which the JTSB participates were canceled or postponed in 2021, but many conferences were held on the Web.

In FY2022, the progress in vaccination allowed the resumption of international conferences including travels abroad. ITSA, AIGP, and ISASI held meetings in a hybrid format in which the conferences were held on site and on the Web. Staff of the JTSB participated in the 7th meeting of AIGP held in May in Paris, France, the annual seminar of ISASI held in Brisbane, Australia, and the Asia Accident Investigation and Analysis Technology Exchange Conference which is the Asian version of the AIR Meeting held in Singapore in November. In addition, in the same month, we held a face-to-face meeting with the Transportation Safety Investigation Bureau (TSIB) of Singapore to conduct a field survey for the training next year of TSIB railway accident investigators.

As a countermeasure against COVID-19, remote work, remote classes, web conferences, etc. are being carried out at government offices, private companies, or schools, etc., which allow work and classes to be performed without going to work or school.

The advantage of web conferencing lies in the fact that we can participate in a conference while seeing the faces of the participants on the monitor without taking the trouble to travel to the site. We neither suffer a jet lag nor get tired of a long trip. In addition, no traveling costs are incurred. Then, why conferences held on site have been brought back? This is because there are benefits to them being held on site.

In particular, we conduct accident investigations within the frame of the Convention on International Civil Aviation (Chicago Convention) in the field of aviation and the International Convention for the Safety of Life at Sea (SOLAS) in the field of navigation, and we also conduct accident investigations together with foreign accident investigators from time to time. At that time,

what is important is the presence or absence of interaction between investigators. If we know each other or if we know their colleagues, we can work together smoothly. In addition, ICAO holds the annual meeting in Montreal and IMO in London for revising annex of the Conventions, and if staff participates there, it is possible for the staff to build a network of contacts by directly exchanging information with the members of each country who have held heated discussions. Furthermore, it is also possible to arrange a side meeting between meetings to make face-to-face adjustments to conclude a memorandum of cooperation in the field of accident investigations with the investigation agencies of certain countries.

Practical training for analyzing a flight recorder, etc., is provided at the AIR Meeting, in which aircraft accident investigators participate. This is a field which cannot be conducted in a web conference. In addition, although we held discussions while seeing their railway system directly in the field survey for the training of railway accident investigators of Singapore, we believe that such activities was beyond comprehension in a web conference.

On the other hand, we are also aware of the advantage of web conferencing. For example, when discussing issues of concern within the working group before an international conference such as ICAO referred to above, we can discuss amongst ourselves using meeting apps such as Teams and Zoom to wrap up a conclusion of the working group for attending the annual meetings.

Recently, international conferences are often held in a hybrid format of on-site and on the Web. If we are unable to travel due to work or other reasons, we participate in conferences on the Web, and otherwise, we are sending actively our staff. As such, there are more options in these days.

In this manner, the resumption of the holding on site of international conferences is welcomed not only by the JTSB but also by accident investigation agencies of other countries. In the future, we will enhance our cooperation with accident investigation organizations of other countries through international conferences, etc., by participating on site and on the Web.



Annual seminar of the International Society of Air Safety Investigators (ISASI2022)