

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 2023.

2 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 Convention on International Civil Aviation 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 determine 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 international 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 8th Accident Investigation Panel Meeting (AIGP/8) was held in Montreal, Canada in May 2023, in which panel members and aircraft accident investigators of the JTSB participated. Regarding the working groups (WGs) established under the panel, the JTSB participated in the “Safety Recommendation of Global Concerns WG” and the “Family Information WG.”

Additionally, the Flight Recorder Specific Working Group (FLIRECSWG), established under the Flight Operations Panel (FLTOPSP), which discusses amendments to Annex 6 (International Standards and Recommended Practices for Aircraft Operations) and the creation of guidance materials, has been working on the examination and formulation of regulations related to flight recorders since 2014. The JTSB aircraft accident investigators have been participating as the members since the 13th meeting, which was held online in February 2021. The 14th FLIRECSWG meeting was held at the ICAO headquarters in September 2023, and a JTSB aircraft accident investigator participated.

(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 Intergovernmental 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 September 2023, 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 9th session of the Sub-Committee on Implementation of IMO Instruments (III 9) was held virtually from the end of July to early August 2023. 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 JTBSB website:

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

3 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 June 2023, 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. Due to the global spread of COVID-19, meetings have been held in a web conference format since 2020. However, the meeting held in Taipei from June 5 to 7, 2023, saw the Chairperson of the JTBSB and relevant staff participating in person for the first time in four years.

This meeting included introductions of investigation activities by various organizations and panel discussions on common high-interest topics. During the panel discussion on new technologies, the JTBSB Chairperson presented new technologies utilized by the JTBSB, such as X-ray CT scanners, 3D laser scanners, and drones.



Presentation by the Chairperson of the JTBSB at the 2023 ITSA

In the panel discussion on reports compiled by various organizations based on accidents handled in each country, the Chairperson of the JTSB served as the moderator, facilitating the exchange of information among organizations and contributing to utilizing the experiences of different countries in conducting accident investigations.

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.

In August 2023, the Annual Seminar was held in Nashville, United States. This seminar provided three keynote speeches and 25 presentations and Japan participated in two group meetings. 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 seminars.

Regarding the Asian Society of Air Safety Investigators (AsiaSASI), the current president is the Indonesian National Transportation Safety Committee, the vice president is the Taiwan Transportation Safety Board, and the secretariat is the Singapore Transport Safety Investigation Bureau. The JTSB serves as an executive committee member.

③ Accident Investigator Recorder (AIR) Meeting and Asia (and Oceania) Accident Investigator Recorder Meeting

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. Initially, aircraft accident investigators who analyze flight data recorders (FDR) and cockpit voice recorders (CVR) mainly participated. However, recently, the scope has broadened to include other fields due to the applicability of these technologies.

Established in 2004, the AIR Meeting is hosted annually by accident investigation agencies in different countries. The JTSB has participated in this meeting almost every year since 2006.

The meetings from 2020 to 2022 were postponed due to the global spread of COVID-19, but in 2023, the meeting was held in Farnborough, UK.

The Asia Accident Investigator Recorder Meeting 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, and Taiwan hosted it in September 2023.

Initially, only the three countries mentioned above/regions participated and hosted the meeting on a rotating basis. However, in response to requests from other countries, the scope was expanded, and Japan hosted the meeting in Tokyo in November 2023. With the participation of countries from the Oceania region, the meeting was renamed to the Asia-Oceania Accident Investigation Recorder Meeting, and eight countries/regions participated.



**Scene from the 2023 Asia-Oceania
Accident Investigation Recorder Meeting**



**Explanation of analysis devices
owned by the JTSB**

This meeting aims to understand international technical trends related to flight recorders and analysis devices and promote technical exchanges among analysts in the Asia and Oceania regions, establishing a cooperative system for when investigation cases occur.

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 30th conference was held in London, UK, in October 2023, attended by marine accident investigators from the JTSB.

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 forum very important. The 23rd meeting was held in Shanghai, China, in September 2023, attended by a marine accident investigator.



Scene from the 23rd MAIFA

(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.

In April 2023, a small Textron Aviation 172S aircraft from the Japan Coast Guard took off from Kitakyushu Airport. The engine output decreased during the flight, causing an emergency landing in a rice field in Usa City, Oita Prefecture, damaging the aircraft. The investigation is being conducted in cooperation with the United States, the country of design and manufacture of the aircraft, and Germany, the country of design and manufacture of 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 cargo ship WAKASHIO, which went aground on the shallow reef in the southeastern part of Mauritius in July 2020, inquiries about the accident investigation report have been made to Panama, the flag state, and Mauritius, the coastal state, before its publication. (For details on the accident investigation report of the cargo ship WAKASHIO, please refer to Chapter 5, page 107.)

Among the marine accident and incident investigation reports that were published in 2023, the JTSC sent two draft reports to the flag states and other interested states upon request in order to invite their comments.

4 Technical cooperation

In response to requests from overseas railway accident investigation organizations, the JTSCB 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.

On-site training for railway accident investigators was conducted in Singapore in 2023. Please refer to 8 of “Major Activities of the Year” (page 12) for details.

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 2023 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.

5 Participation in overseas training

The JTSCB 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 2023, JTSCB’s aircraft accident investigators participated in training on reading and analyzing data from damaged FDRs and CVRs held in Brno, Czech Republic.

Additionally, every year, aircraft and marine accident investigators are sent to Cranfield University in the UK, which has a track record of accident investigation training. This training was suspended from 2020 to 2022 due to the global spread of COVID-19 but resumed in 2023 after four years. The training covers a wide range of topics, from the basics to specialized knowledge of accident investigation. After the training, the participants disseminate the results to other accident investigators in each transportation mode, aiming to improve the overall capabilities of the accident investigators.

Column

Studying at the World Maritime University**International Affairs Office**

This article is written by a third-year Japan Transport Safety Board staff in a long-term study program at the World Maritime University. The Japan Transport Safety Board provides a wide range of opportunities for human resources development, including study abroad programs and domestic and international training.

I am studying at the World Maritime University (WMU) in Malmö, Sweden. The WMU was established in 1983 by the International Maritime Organization (IMO), a specialized agency of the United Nations, as a center for postgraduate education, research, and capacity building in maritime and ocean fields. The university's founding philosophy was to develop highly educated maritime professionals worldwide, particularly in developing countries. These professionals aim to ensure the effective implementation of international maritime conventions, thereby protecting maritime safety and the marine environment and contributing to sustainable economic growth in the maritime and ocean sectors. Additionally, the WMU promotes capacity building in line with the United Nations Sustainable Development Goals, with about 30% of its students being women.



WMU Campus



Presentation in class

The master's program at WMU, which I am currently enrolled in, is a 14-month program aimed at mid-career maritime administrators with specialized knowledge to develop individuals who can play an active role internationally in the future. The lecture content is constantly updated to respond directly to the needs of maritime administration and reflect the latest developments. The master's program is divided into two phases: the first approximately three and a half months cover fundamental maritime knowledge, and the remaining ten months are dedicated to specialized fields based on each student's career characteristics and interests. Additionally, before graduation, students must write a thesis on existing or anticipated issues related to their work in their home country. Furthermore, students attend lectures on campus and participate in unique field studies hosted by shipping companies, port authorities, and various government and non-governmental organizations worldwide, gaining practical experience.

The students at WMU are generally friendly and diligent, and I feel they actively engage in discussions, particularly regarding gender and environmental issues. Many students also enjoy nature and travel, so on weekends, we often explore the Baltic coast together or travel beyond Sweden by ship or train.



WMU's efforts towards SDGs (from the WMU website)

Before coming to Sweden, I was anxious about life here, but since most students live together in dormitories, it didn't take long to make friends with others. Studying at WMU is an excellent opportunity to gain specialized knowledge in maritime affairs and build an internationally diverse network. We frequently contact foreign authorities in the Japan Transport Safety Board's work. Therefore, this kind of international experience and network is extremely valuable. I am grateful for this opportunity and intend to learn as much as possible and apply it to my future work.