Chapter 3 Aircraft accident and serious incident investigations

1 Aircraft accidents and serious incidents to be investigated

<Aircraft accidents to be investigated>

◎**Article 2, paragraph (1) of the Act for Establishment of the Japan Transport Safety Board** (Definition of aircraft accident)

The term "Aircraft Accident" as used in this Act shall mean the accident listed in Article 76, paragraph (1), each items of the Civil Aeronautics Act.

◎**Article 76, paragraph (1), of the Civil Aeronautics Act** (Obligation to report)

1 Crash, collision or fire of aircraft;

2 Injury or death of any person, or destruction of any object caused by aircraft;

3 Death (except those specified in Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism) or disappearance of any person on board the aircraft;

4 Contact with other aircraft; and

5 Other accidents relating to aircraft specified in Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism (Ordinance for Enforcement of the Civil Aeronautics Act).

◎**Article 165-3 of the Ordinance for Enforcement of the Civil Aeronautics Act**

(Accidents related to aircraft prescribed in the Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism under Article 76, paragraph (1), item (v) of the Act)

The cases (excluding cases where the repair of a subject aircraft does not correspond to the major repair work) where navigating aircraft is damaged (except the sole damage of engine, cowling, engine accessory, propeller, wing tip, antenna, tire, brake or fairing).

< Aircraft serious incidents to be investigated>

◎**Article 2, paragraph (2), item (ii), of the Act for Establishment of the Japan Transport Safety Board** (Definition of aircraft serious incident)

Aircraft serious incidents to be investigated refers to situations that may escalate into aircraft accidents as specified by the Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism (Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board).

◎Article 1 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board

(Situations specified in Article 2, paragraph (2), item (ii) of the Act for Establishment of the Japan Transport Safety Board)

* The contents of Article 166-4 of the Ordinance for Enforcement of the Civil Aeronautics Act, cited in Article 1 are also provided here.

1 The following situations (Situations (8), (11) and (12) relate only to an in-flight aircraft.)

(1) Case recognized by the captain that it may have resulted in contact between the in-flight aircraft and another object

(2) Takeoff from a closed runway, from a runway being used by other aircraft, from a runway different from the designated one or from a taxiway, or aborted takeoff

(3) Landing or the landing attempt on a closed runway, on a runway being used by other aircraft, on a runway different from the one designated, or on a location where aircraft are not normally supposed to land such as a taxiway or road

(4) Contact of engine cowling, wingtip or component other than landing gear with ground surface during landing

(5) Overrun, undershoot and deviation from a runway (limited to when an aircraft is disabled to perform taxiing)

(6) Case where emergency evacuation was conducted with the use for emergency evacuation slide

(7) Case where aircraft crew executed an emergency operation during navigation in order to avoid crash into water or contact on the ground

(8) Damage of engine (limited to such a case where fragments penetrated the casing of subject engine)

(9) Continued halt or loss of power or thrust (except when the engine(s) are stopped with an attempt of assuming the engine(s) of a motor glider) of engines (in the case of multiple engines, 2 or more engines) in flight

(10) Case where any of aircraft propeller, rotary wing, landing gear, rudder, elevator, aileron or flap is damaged and thus flight of the subject aircraft could not be continued

(11) Multiple malfunctions in one or more systems equipped on aircraft impeding the safe flight of aircraft

(12) Occurrence of fire or smoke inside an aircraft and occurrence of fire within an engine fire prevention area

(13) Abnormal decompression inside an aircraft

(14) Shortage of fuel requiring urgent measures

(15) Case where aircraft operation is impeded by an encounter with air disturbance or other abnormal weather conditions, failure in aircraft equipment, or a flight at a speed exceeding the airspeed limit, limited payload factor limit operating altitude limit

(16) Case where aircraft crew became unable to perform services normally due to injury or disease

(17) Case where a slung load, any other load carried external to an aircraft or an object being towed by an aircraft was released unintentionally or intentionally as an emergency measure

(18) Case where parts dropped from aircraft collided with one or more persons

(19) Case equivalent to any of (2) to (18) above.

2 The following situations are considered extraordinary:

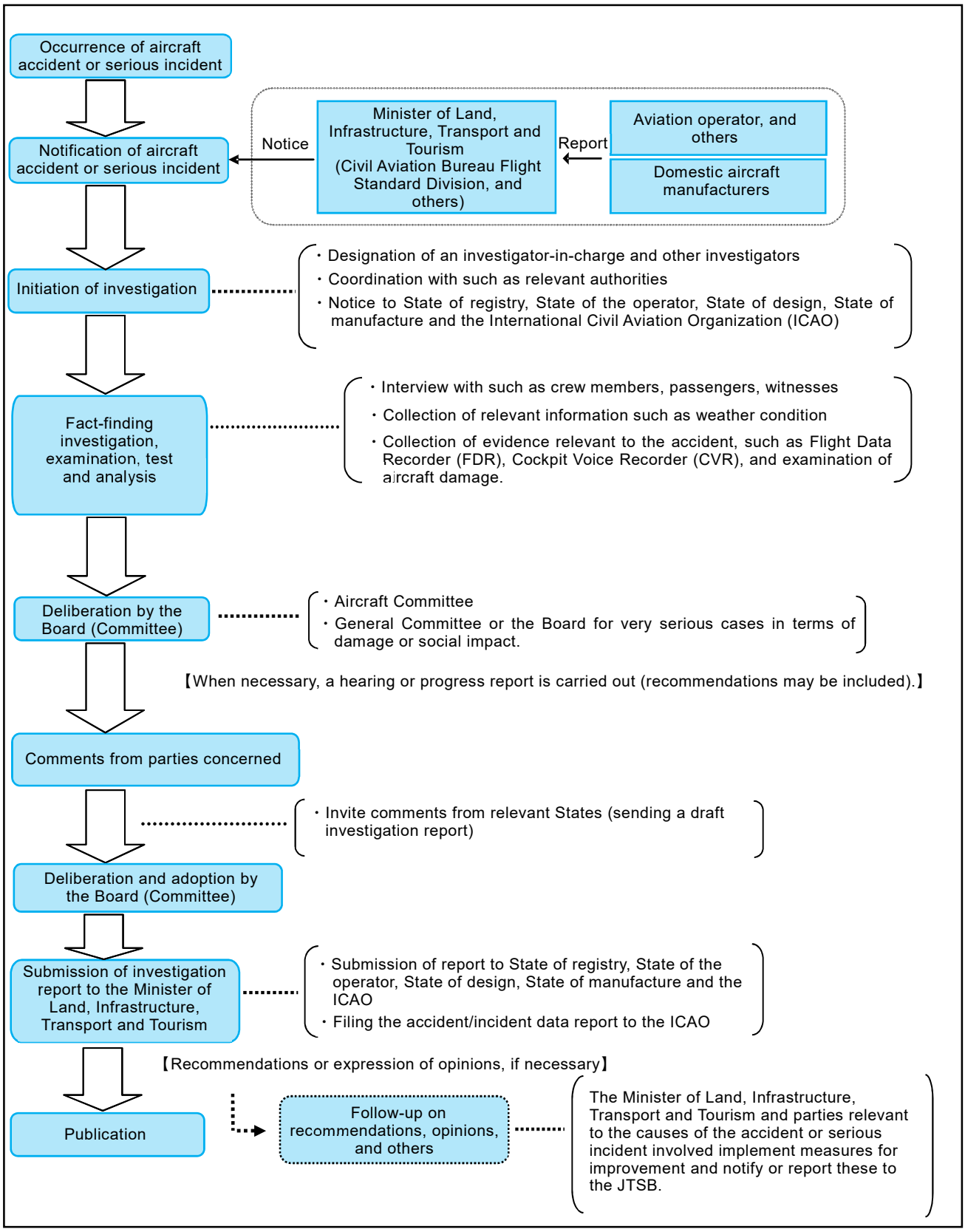
(1) Situations described in (8), (11) and (12) of 1 above occurring with aircraft not in flight

(2) Damage to an aircraft not in flight (except the sole damage of engine, engine cowling, engine accessory, propeller, wingtip, antenna, tire, brake or fairing) (excluding cases where the repair of the aircraft does not correspond to major repair work)

(3) Case where the propeller, rotary wing, landing gear, rudder, elevator, aileron, or flap is damaged, hindering the start of its flight

(4) Case equivalent to those described in (1) to (3)

2 Procedure of aircraft accident/serious incident investigation



* Opinions may be expressed in a flow chart (as above) or whenever and however necessary to prevent accidents or incidents or mitigate damage thereof.

3 Statistics of investigations of aircraft accidents and serious incidents

The JTSB carried out investigations of aircraft accidents and serious incidents as follows:

In 2021, 18 accident investigations were carried over from 2020 and 11 accident investigations were newly launched. Besides, 12 investigation reports were published, and thereby 17 accident investigations were carried over to 2022.

Moreover, 22 serious incident investigations were carried over from 2020, and 10 serious incident investigations were newly launched in 2021. Furthermore, 11 investigation reports were published in 2021, and thereby 21 serious incident investigations were carried over to 2022.

Among the 23 investigation reports published in 2021, none was issued with recommendations and none was issued with opinions.

Investigations of aircraft accidents and serious incidents in 2021

(Cases)

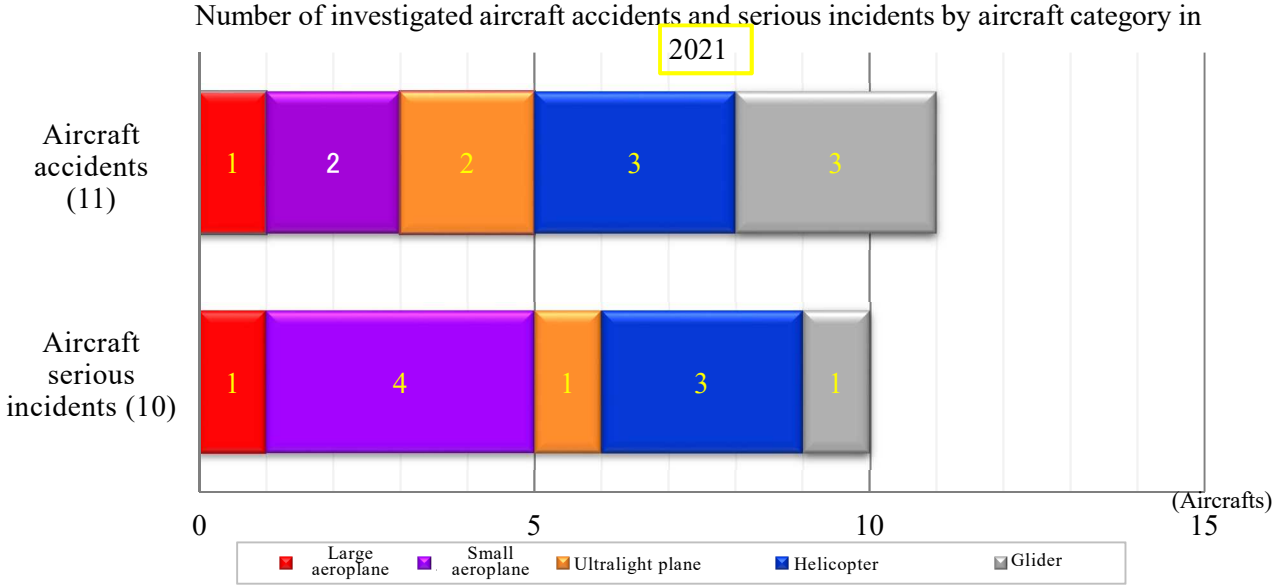
Category	Carried over from 2020	Launched in 2021	Total	Published investigation reports	(Recommendations)	(Safety recommendations)	(Opinions)	Carried over to 2022	(Interim report)
Aircraft accident	18	11	29	12	(0)	(0)	(0)	17	(7)
Aircraft serious incident	22	10	32	11	(0)	(0)	(0)	21	(7)

4 Statistics of investigated aircraft accidents and serious incidents in 2021

The aircraft accidents and serious incidents that were newly investigated in 2021 consisted of 11 aircraft accidents, which decreased by two from 13 for the previous year, and 10 aircraft serious incidents, which increased by one from nine for the previous year.

By aircraft category, the aircraft accidents included one case involving large aeroplane, two cases involving small aeroplanes, two cases involving ultralight planes, three cases involving helicopters, and three cases involving gliders. The aircraft serious incidents included one case involving large aeroplane, four cases involving small aeroplanes, one case involving ultralight plane, three cases involving helicopters, and one case involving glider.

Number of investigated aircraft accidents and serious incidents by aircraft category in 2021



* Large aeroplane refers to an aircraft of a maximum take-off mass of over 5,700 kg.
* Small aeroplane refers to an aircraft of a maximum take-off mass of under 5,700 kg except for ultralight plane and self-made aircraft.
* Ultralight planes include self-made aircraft in the form of ultralight planes.

The number of deaths, missing and injured were 13 in 11 cases, including three deaths and 10 injuries.

The number of casualties (aircraft accident)

(Persons)

2021							
Aircraft category	Fatal Injuries		Missing		Serious/Minor Injuries		Total
	Crew	Passengers and others	Crew	Passengers and others	Crew	Passengers and others	
Large aeroplane	0	0	0	0	0	0	0
Small aeroplane	0	0	0	0	0	0	0
Helicopter	1	0	0	0	2	5	8
Ultralight plane	0	0	0	0	1	0	1
Glider	1	1	0	0	1	1	4
Total	2	1	0	0	4	6	13
	3		0		10		

* The above statistics include incidents under investigation so may change depending on the status of the investigation and deliberation. In addition, for the number listed as "passengers" on the website in the number of injuries of an aircraft accident currently under investigation, the minimum number of pilots required to fly the aircraft are counted as "crew."

5 Summaries of aircraft accidents and serious incidents which occurred in 2021

The aircraft accidents and serious incidents which occurred in 2021 are summarized as follows: The summaries are based on information available at the start of the investigations and therefore are subject to change depending on the course of investigations and deliberations.

(Aircraft accidents)

1	Date and location	Operator	Aircraft registration number and aircraft type
	February 1, 2021 On runway A of Narita International Airport	Nippon Cargo Airlines Co., Ltd.	JA13KZ Boeing 747-8F (Large aeroplane)
	Summary	The aircraft took off from Hong Kong. While approaching runway A of Narita International Airport, it tried landing again due to turbulence, and landed on the runway. The post-flight inspection revealed scratch marks on the lower part of the aft fuselage.	
2	Date and location	Operator	Aircraft registration number and aircraft type
	February 20, 2021 In the vicinity of the grassland in Moriya City, Ibaraki Prefecture	Privately owned	JR1734 Rans S-7 Courier R503L (ultralight plane)
	Summary	See "6 Publication of investigation reports" (page 43 No.12)	
3	Date and location	Operator	Aircraft registration number and aircraft type
	March 23, 2021 In the vicinity of a rice field in Aoki Village, Chiisagata District, Nagano Prefecture	Privately owned	JA6050 Aerospatiale AS350B (rotorcraft)
	Summary	The rotorcraft took off from the Tokyo Heliport. When a forced landing was made in the vicinity of the rice field in Aoki Village, Chiisagata District, Nagano Prefecture, the airframe was damaged.	
4	Date and location	Operator	Aircraft registration number and aircraft type
	April 14, 2021 At Yao Airport	Privately owned	JA001T Cessna 525A (Small aeroplane)
	Summary	The aircraft took off from Yao Airport, but immediately collided with a bird, and then returned to the airport for landing.	
5	Date and location	Operator	Aircraft registration number and aircraft type
	August 1, 2021 On runway A of Sendai Airport	Privately owned	JA4077 Piper PA-46-350P (Small aeroplane)
	Summary	When the aircraft landed on runway A of Sendai Airport, the nose landing gear moved toward the housing direction, which thereby the front lower part of the fuselage made contact on the runway, and consequently stopped on the runway.	
6	Date and location	Operator	Aircraft registration number and aircraft type
	September 20, 2021 In the vicinity of Tono, Okuwa Village, Kiso District, Nagano Prefecture	Akagi Helicopter Co., Ltd.	JA6200 Kaman K-1200 (Rotorcraft)
	Summary	The rotorcraft took off from a temporary airfield in Okuwa Village, Kiso District, Nagano Prefecture. While transporting wood, it crashed in the mountain in the vicinity of the above location.	

7	Date and location	Operator	Aircraft registration number and aircraft type
	October 7, 2021 At the grassland in Hadano City, Kanagawa Prefecture	Privately owned	JA7975 Robinson R22 Beta (Rotorcraft)
	Summary	The rotorcraft took off from a temporary airfield in Oi Town, Ashigarakami District, Kanagawa Prefecture. While flying, it crashed in the vicinity of the above location.	
8	Date and location	Operator	Aircraft registration number and aircraft type
	October 10, 2021 At the temporary airfield in Aso City, Kumamoto Prefecture	Kita Kyushu Glider Club	JA2189 Alexander Schleicher ASK 13 (Glider)
	Summary	When the glider took off from a temporary airfield in Aso City, Kumamoto Prefecture, it deviated from the takeoff and landing zone, which it then came into contact with a shrub which caused damage to the airframe.	
9	Date and location	Operator	Aircraft registration number and aircraft type
	October 12, 2021 At 500 m northwest of the Biei Glider Field	Privately owned	JA11AM Schempp-Hirth Arcus M (Motor glider)
	Summary	After taking off the Biei Glider Field, the motor glider's engine stopped, and it then crashed in the vicinity of the above location.	
10	Date and location	Operator	Aircraft registration number and aircraft type
	November 3, 2021 At Shinshinotsu Glider field in Shinshinotsu Village, Ishikari District, Hokkaido	Privately owned	JA100K Alexander Schleicher ASK 13 (Glider)
	Summary	At the Shinshinotsu Glider field in Shinshinotsu Village, Ishikari District, Hokkaido, the glider fell to the ground while being towed for taking off.	
11	Date and location	Operator	Aircraft registration number and aircraft type
	November 7, 2021 At the temporary airfield in Yamaguchi City, Yamaguchi Prefecture	Privately owned	JR1347 Quicksilver MXII Sprint Top-R582L (Ultralightplane)
	Summary	The plane fell immediately after taking off from the temporary airfield in Yamaguchi City, Yamaguchi Prefecture.	

(Aircraft serious incidents)

1	Date and location	Operator	Aircraft registration number and aircraft type
	February 3, 2021 On the runway of Kitakyushu Airport	Japan Coast Guard	JA393A Textron Aviation 172S (Small aeroplane)
	Summary	The aircraft took off from Kitakyushu Airport. While approaching to the airport, it tried landing again due to being unstable, and then the lower part of the aft fuselage contacted on the runway. It subsequently landed at the airport.	

2	Date and location	Operator	Aircraft registration number and aircraft type
	March 13, 2021 In the vicinity of the runway of Kounan Airport	Okayama Air Service Co., Ltd.	JA01HJ Honda Aircraft HA-420 (Small aeroplane)
	Summary	After departing and landing at Kounan Airport, the aircraft deviated leftward and stopped in the green belt south from the runway.	
3	Date and location	Operator	Aircraft registration number and aircraft type
	July 5, 2021 At the Nagano City Gliding Field in Nagano City, Nagano Prefecture	Privately owned	JX0167 Zenith Aircraft CH701 (Self-made aircraft)
	Summary	In the Nagano City Gliding Field in Nagano City, Nagano Prefecture, the aircraft deviated from the runway and stopped on the grassland while conducting a jump flight (slightly suspending in the air to fly).	
4	Date and location	Operator	Aircraft registration number and aircraft type
	July 18, 2021 In the vicinity of the runway of Niigata Airport	Privately owned	JA201M Piper PA-28RT-201T (Small aeroplane)
	Summary	When landing at Niigata Airport, the aircraft deviated from the runway and stopped on the grassland.	
5	Date and location	Operator	Aircraft registration number and aircraft type
	August 26, 2021 On the runway of Kumamoto Airport	Kumamoto Prefecture Disaster Relief Aviation Unit (Aircraft A)	JA90MT Airbus Helicopters AS365N3 (Rotorcraft)
		An incorporated educational institution Kimigafuchi Gakuen (Aircraft B)	JA31UK Cessna 172S (Small aeroplane)
	Summary	Aircraft A took off after landing on the runway during a test flight at Kumamoto Airport. Therefore, an air traffic controller permitted aircraft B, which was the following aircraft, to conduct a touch-and-go. After that, because aircraft A touched the runway again, the controller instructed aircraft B to conduct a go-around, however, aircraft B ascended after touching the runway.	
6	Date and location	Operator	Aircraft registration number and aircraft type
	September 7, 2021 On the runway of JASDF Gifu Air Base	Kawasaki Heavy Industries, Ltd.	JQ5533 P-1 (Large aeroplane)
	Summary	When landing at ASDF Gifu Air Base, the aircraft deviated from the runway.	

7	Date and location	Operator	Aircraft registration number and aircraft type
	September 8,2021 At an altitude of around 330 m above the traffic pattern on the west side of Menuma Gliding Field	Japan Students Aviation League (Aircraft A)	JA2379 Alexander Schleicher ASK 21 (Glider)
		Suisan Aviation Co., Ltd. (Aircraft B)	JA3904 Cessna U206G (Small aeroplane)
	Summary	While flying after taking off from Menuma Gliding Field, aircraft A visually recognized aircraft B passing the upper right side of aircraft A and sensed danger at the above location.	
8	Date and location	Operator	Aircraft registration number and aircraft type
	September 23, 2021 On the taxiway of Nagasaki Airport	Ogawa Air Co., Ltd.	JA76EL Robinson R44 II (Rotorcraft)
	Summary	The rotorcraft was instructed from an air traffic controller to take off from the runway, however, it started taking off from the taxiway.	
9	Date and location	Operator	Aircraft registration number and aircraft type
	November 27, 2021 On the runway of Menuma Gliding Field	Privately owned	JA4083 Christen Industries A-1 (Small aeroplane)
	Summary	When the aircraft landed at Menuma Gliding Field, its left wing tip contacted with the ground	
10	Date and location	Operator	Aircraft registration number and aircraft type
	December 22, 2021 At an altitude of approximately 50 m over the vicinity of Kiryu City, Gunma Prefecture	Aero Asahi Corporation	JA9584 Bell 412 (Rotorcraft)
	Summary	While the rotorcraft was flying while suspending materials. After taking off the temporary airfield in Kiryu City, Gunma Prefecture, a part of the materials (a weight of about 800 to 900 kg of ready-mixed concrete) fell in the mountains of the city.	

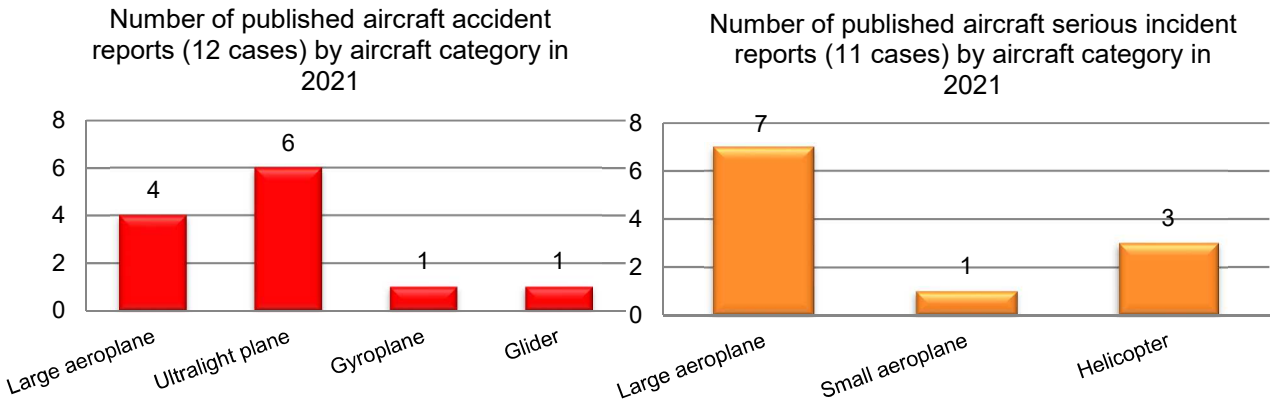
6 Publication of investigation reports

The number of investigation reports of aircraft accidents and serious incidents published in 2021 was 23, consisting of 12 aircraft accidents and 11 aircraft serious incidents.

Breaking them down by aircraft category, the aircraft accidents involved four large aeroplanes, six ultralight planes, one gyroplane, and one glider. The aircraft serious incidents involved seven large aeroplanes, one small aeroplane, and three helicopters.

Note: In aircraft accidents and serious incidents, two or more aircrafts are sometimes involved in a single case. See page 38 to 52 for details.

In the 12 accidents, the number of casualties was 14, consisting of two deaths and 12 injuries.



The aircraft accidents and serious incidents which occurred in 2021 are summarized as follows.

Aircraft accident investigation reports published in 2021

1	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	January 21, 2021	May 6, 2020 In Aso City, Kumamoto Prefecture	Privately owned	JR0213 Quicksilver MX II J-R503L (Two-seat ultralight plane)
	Summary	During a flight above Yamada, Aso City, Kumamoto Prefecture, the engine output dropped and could not be recovered, resulting in a forced landing, damage to the airframe and injuries of both persons of a pilot and a passenger on board. 		
	Probable causes	It is probable that this accident occurred because during the flight, the connector for the engine ignition system was removed, which caused the aircraft to not be able to achieve a thrust required for flight, consequently a forced landing was performed and damages to the airframe were caused.		
	Safety Actions	**Measures taken by the flying club where the aircraft's pilot belongs to** (1) Checking on the connection condition of the connector of the engine ignition system was added in the pre-flight and periodic checks. (2) The base leg of the traffic pattern in case of taking off in an easterly direction was changed to be closer to the airfield by about 100 m in order to allow forced landings in the airfield in case of engine failure in the base leg.		
	Report	https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-1-1-JR0213.pdf (In Japanese only)		

<table>
<tr><td rowspan="4">2</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>February 18, 2021</td><td>April 29, 2019
At Iwami Airport</td><td>Privately owned</td><td>JA2500
Glaser-Dirks DG-500M
(Motor glider, two-seater)</td></tr>
<tr><td>Summary</td><td colspan="3">The aircraft attempted to land with its main landing gear remained retracting in gliding condition because the engine was not restarted in flight with a total of two people on board including a pilot and a passenger. Then it hit the ground surface and suffered damage to the airframe.
  </td></tr>
<tr><td>Probable causes</td><td colspan="3">It is probable that this accident occurred because the right wing tip contacted with the ground surface when the aircraft was making a right turn for a landing, it hit the ground surface while losing its balance and suffered damage to the airframe.
Regarding the fact that the right wing tip contacted with the ground surface, it is probable that because the engine and the propeller which were unable to stow produced a large drag and the wind condition was a headwind, the Aircraft entered the Airport at a low altitude while losing much altitude.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA2500.pdf</td></tr>
<tr><td rowspan="4">3</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>February 18, 2021</td><td>August 15, 2019
At an altitude of about 5,500 m over Chengde City, Hebei Province, China</td><td>All Nippon Airways Co., Ltd.</td><td>JA808A
Boeing 787-8
(Large aeroplane)</td></tr>
<tr><td>Summary</td><td colspan="3">The aircraft operated by All Nippon Airways Co., Ltd., took off from Tokyo International Airport for Beijing Capital International Airport as a scheduled flight 963. The aircraft shook while flying, and two passengers were seriously injured and two cabin crew members sustained minor injuries.</td></tr>
<tr><td>Probable causes</td><td colspan="3">It is probable that this accident occurred because the aircraft shook violently when flying near the cumulus cloud top, causing two passengers who were not in their seats sustained serious injuries.</td></tr>
<tr><td></td><td>Safety Actions</td><td colspan="3">Measures taken by the Company in order to prevent the recurrence of similar accidents after this accident
(1) Flight operations department
The Company provided the flight crew with the newly issued flight safety information and others in order to ensure that each crewmember knows the outline of the accident and understands how to respond to turbulence.
(2) Inflight services department
1. Through internal communication, the Company provided the cabin crew members with the information on the measures to be taken when the fasten seat belt sign is turned on, which are stipulated in Cabin Attendant Manual in order to ensure that they thoroughly understand them.
2. The Company revised Announcement Manual so that cabin crew members make a PA announcement to urge the passengers to go to the lavatory earlier in order not to have the passengers leave their seats during 30 minutes before landing of international flight.
3. By focusing on the injury prevention of the passengers and cabin crew members as the theme for safety promotion, the Company ensured that cabin crew members raise their awareness about securing the safety of the passengers or themselves who are not in their seats at the time of encountering turbulence.
(3) Creation of inflight safety video
In order to call additional attention to the passengers, the Company decided to create an inflight safety video to visualize specific examples of conduct at the time of encountering a sudden shaking of the aircraft.</td></tr>
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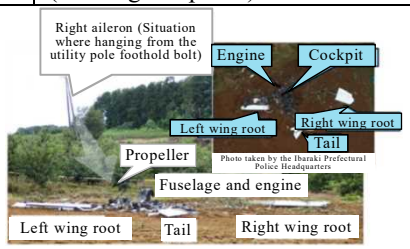
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA808A.pdf</td></tr>
<tr><td rowspan="4">4</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>February 18, 2021</td><td>October 20, 2019
In Kasumigaura City, Ibaraki Prefecture</td><td>Privately owned</td><td>None
TL-2000 STING Carbon
(Ultralight plane)</td></tr>
<tr><td>Summary</td><td colspan="3">The aircraft crashed in the field of Niihari, Kasumigaura City, Ibaraki Prefecture after taking off from a temporary airfield of Chiyoda Flying Club.
The aircraft with a total of two people on board including a pilot and a passenger crashed and was heavily damaged, catching fire and caused the people on board to die from the fire.
 

Damage situation of the aircraft</td></tr>
<tr><td>Probable causes</td><td colspan="3">Because the aircraft continued to fly at a low altitude with an unstable flying situation after taking off, it is highly probable that a part of the airframe hit some utility poles and trees, consequently crashing.
It is considered that the flight instability was caused by the exceeding the wind speed when taking of, and by the insufficient capability of the pilot's skills to control flying the aircraft (including a jump flight), or from engine trouble, etc. However, because the pilot died in the accident and the airframe was heavily damaged, it was impossible to know the real reason.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-2-3-none.pdf (In Japanese only)</td></tr>
<tr><td rowspan="5">5</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>April 22, 2021</td><td>January 12, 2020
At FL250 about 30 km northwest of Fukuoka Airport</td><td>Jin Air Co., Ltd.</td><td>HL8243
Boeing 737-800
(Large aeroplane)</td></tr>
<tr><td>Summary</td><td colspan="3">The aircraft operated by Jin Air Co., Ltd., took off from Kitakyushu Airport, and during the climb to the cruising altitude bound for Incheon International Airport in the Republic of Korea, the aircraft experienced shaking, which caused a cabin crew member to fall down resulting in her injury.</td></tr>
<tr><td>Probable causes</td><td colspan="3">In this accident, it is highly probable that the aircraft was strongly shaken by encountering clear air turbulence during the climb, which caused the cabin crew member who was standing in the center of the aft galley to fall down and fracture her right ankle.</td></tr>
<tr><td>Safety Actions</td><td colspan="3">Safety actions the Company took upon the occurrence of the accident for the flight crew members to prevent recurrence
(1) notified of the summary of the Accident,
(2) to thoroughly confirm the turbulence procedures against expected turbulence at a pre-flight briefing, and to manage turbulence hazards through thoroughly analyzing weather charts,
(3) to conduct detailed briefings on weather information and to reconfirm the seat belt operation procedures specified in the FOM*1, at the pre-flight briefing with the flight crew members and the cabin crew members,
(4) to carefully operate seat belt sign against expected turbulence.
*1 "FOM"…Flight Operating Manual</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/HL8243.pdf</td></tr>
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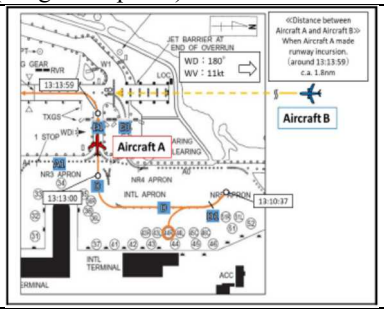
6	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 22, 2021	April 30, 2020 At Isesaki temporary airfield in Isesaki City, Gunma Prefecture	Privately owned	JE0205 Air Command R532 (Gyroplane)
	Summary	During a jump flight at the temporary airfield in Isesaki City, Gunma Prefecture, after it ascended by about 10 meters, it lost altitude suddenly upon turning left, resulting in a hard landing on the nose landing gear. The airframe got intermediate damage and the pilot was seriously injured. 		
	Probable causes	It is probable that this accident occurred because the aircraft taking off and landing during the jump flight made a steep turn to the leeward side, subsequently the airspeed dropped, the rotor speed decreased and altitude was lost, resulting in making contact with the ground from the nose landing gear which caused damage to the airframe.		
	Report	https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-3-2-JE0205.pdf (In Japanese only)		
7	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 22, 2021	June 9, 2020 In Shiroishi Town, Kishima District, Saga Prefecture	Privately owned	JR0862 Sanyo Tekko EX-03C PUFFIN-LT447 (Single-seat ultralight plane))
	Summary	The aircraft crashed at Kita-Ariake temporary airfield during the jump flight. Only a pilot was on board and died. The aircraft got heavily damaged with no fire. 		
	Probable causes	It is probable that this accident occurred because the propeller blade got damaged after starting the takeoff run, subsequently some scattered fragments collided with the rear strut of the left wing, then the strut buckled and also the left-wing front joint was separated, which caused the aircraft to crash. Regarding the damaged propeller blade, there may be a possibility of external damage due to a collision with foreign matter or potential internal damage, and influence in association with the processing to change the propeller diameter, however, none of them were identified. Regarding the separation of the left-wing front joint, it is probable that an inappropriate assembly and maintenance of the aircraft as well as the buckled strut were involved.		
	Report	https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-3-3-JR0862.pdf (In Japanese only)		
8	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	June 24, 2021	August 1, 2020 At Tatsuta temporary airfield in Aisai City, Aichi Prefecture	Privately owned	JR7151 New Wings MAX-R447·MAW (Two-seat ultralight plane)
	Summary	When the aircraft conducted a jump flight at Tatsuta temporary airfield in Aisai City, Aichi Prefecture with one pilot on board for flight control training, it unintentionally ascended and immediately after that, it crashed from its nose. The aircraft got heavily damaged and the pilot got injured.		
	Probable causes	It is probable that this accident occurred because the control stick was not properly handled and the throttle caused the pilot to ascend up to the unintentional altitude after floating, and the continued ascension caused a decrease in the speed, resulting in a crash from the nose. It is probable that the inappropriate control of the control stick and throttle occurred because the pilot had insufficient flight training both on the ground before conducting a jump flight and flying with a flight instructor, causing the pilot to have insufficient learning of basic flight		

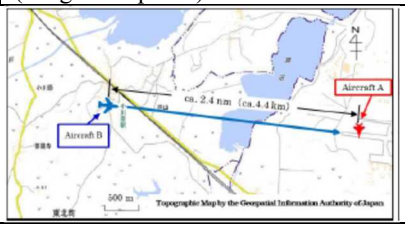
		control.		
	Report	https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-4-1-JR7151.pdf (In Japanese only)		
9	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 29, 2021	October 12, 2019 At an altitude of approximately 10,800 ft. (approx. 3,300 m) over above 57 km north-northwest of Tanegashima Airport	Japan Air Commuter Co., Ltd.	JA01JC ATR 42-500 (Large aeroplane)
	Summary	The aircraft shook in the flight from Kagoshima Airport to Tanegashima Airport, and a cabin attendant was injured.		
	Probable causes	The JTSB concludes that the probable cause of this accident was that the aircraft was suddenly shaken, therefore, the cabin attendant who was walking along the aisle fell off balance and injured. It is probable that regarding the aircraft was suddenly shaken was because the aircraft attitude changed due to the nose-up pitch control by the flight crew members to avoid exceeding the VMO and the nose-up effects resulting from an increase in the aircraft speed, following the encounter of localized changes in the wind direction and velocity.		
	Safety Actions	**Measures the Company took to prevent the recurrence of similar accidents** (1) The Company issued Operating Information*2 regarding procedures in the case of approaching or exceeding the VMO*1. (Excerpt) i) It is specified that if approaching the VMO limit due to abrupt changes in wind conditions or outside air temperature could be anticipated, the speed with a sufficient safety margin against the VMO limit shall be selected early. And the speed recommended to select when passing territories was set forth. ii) In the case of approaching or exceeding the VMO, the speed shall be corrected using autopilot system. a. During cruise · Reduce engine thrust up to the flight idle as needed. b. During descent · Reduce engine thrust up to the flight idle as needed. · Set the autopilot system in ALT HOLD mode to maintain an altitude, or set in VS mode and adjust vertical speed to zero. iii) Deceleration by manual flying should be applied only when the autopilot system cannot correct the airspeed definitely because it might result in an abrupt pitch change. Nose up maneuver should be done at the same nose up rate (2-3˚/sec) recommended at takeoff to avoid changing an aircraft attitude abruptly even if manual flying (including using TCS*3) would be required to avoid an emergency avoidance. iv) Dual inputs by the PF and the PM*4 shall be strictly forbidden. v) The transfer control procedures were specified (To ensure Take Over procedures with callouts such as "I have" and "You have") vi) Early taking over shall be carried out. (2) Classroom lectures and simulator training covering the contents of Operating Information were provided to the flight crew members involved in this accident. *1 "VMO" stands for Maximum Operating Speed *2 "Operating Information" provides a supplementary explanation about the contents of aircraft operations manual, and commentary and information on other materials. *3 "TCS" stands for Touch Control Steering, which enables a temporary manual flying without disabling the autopilot system *4 "PF" and "PM" are the terms used to identify pilots by their different roles in aircraft operated by two persons. PF is an abbreviation of Pilot Flying and is		

<table>
<tr><td></td><td></td><td colspan="3">mainly responsible for maneuvering the aircraft. PM is an abbreviation of Pilot Monitoring mainly responsible for monitoring flight status of the aircraft and cross-checking of PF's maneuvering and undertakes other nonoperational tasks.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA01JC.pdf</td></tr>
<tr><td rowspan="4">10</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>July 29, 2021</td><td>January 3, 2020
In Miyako Island, Okinawa Prefecture</td><td>Privately owned</td><td>JR0251
Maxair Drifter XP-R503L
(Two-seat ultralight plane)</td></tr>
<tr><td>Summary</td><td colspan="3">When the aircraft conducted a forced landing on the road in the vicinity of Gusukubenagama, Miyako Island, Okinawa Prefecture, its left wing collided with trees at the side of the road, and then fell to the ground. The airframe got heavily damaged and the passenger got severely injured.
  </td></tr>
<tr><td>Probable causes</td><td colspan="3">During the flight, the engine speed did not increase, and the thrust required for continuous flying was not achieved. For that reason, it is probable that the aircraft started to descend, consequently colliding with trees before reaching the destination for the forced landing, fell to the ground and the airframe got damaged, and thereby the passenger got severely injured.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-5-2-JR0251.pdf (In Japanese only)</td></tr>
<tr><td rowspan="5">11</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>October 28, 2021</td><td>April 12, 2020
At an altitude of approximately 8,200 m (FL270) over Ozu City, Ehime Prefecture</td><td>ANA Wings Co., Ltd.</td><td>JA64AN
Boeing 737-800
(Large aeroplane)</td></tr>
<tr><td>Summary</td><td colspan="3">While the aircraft was flying from Fukuoka Airport to Osaka International Airport, the Aircraft shook causing a cabin crew member to fall and sustain an injury.</td></tr>
<tr><td>Probable causes</td><td colspan="3">It is probable that this accident occurred when the aircraft shook during the flight in the clouds accompanied by the disturbance, and thereby one of the cabin crew members, who was not seated and floated in the air, was struck on the floor losing his or her balance, and sustained the injury.</td></tr>
<tr><td>Safety Actions</td><td colspan="3">Measures taken by the Company in order to prevent the recurrence of similar accidents after this accident
(1) To flight crew members
A message from Senior Manager for Flight Operations has been sent and flight safety information, etc. has been issued to secure that the outline of the event has fully been understood and utilization of meteorological information and management of seat belt sign have thoroughly been in place.
(2) To cabin crew members
(i) Flight safety information, etc. has been issued to secure that the outline of the event has fully been understood, and internal documents describing response for the case of encountering turbulence have been updated for thorough understanding.
(ii) Documents have been issued to ensure that in-flight monitoring, while seated depending on the situations, is conducted even if seat belt sign is turned off unless providing in-flight services or taking care of passengers.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA64AN.pdf</td></tr>
</table>

12	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 28, 2021	February 20, 2021 In Moriya City, Ibaraki Prefecture	Privately owned	JR1734 Rans S-7 Courier R503L (Two-seat ultralight plane)
	Summary	The aircraft crashed into trees while flying the traffic pattern of the airfield of Ogashiwa, Moriya City, Ibaraki Prefecture. The aircraft got heavily damaged but the pilot was not injured. 		
	Probable causes	It is probable that this accident occurred because of the change in the aircraft's angle of flight in response to the flap control and the inappropriate control in response to the speed reduction causing the aircraft to stall and decrease in altitude, which caused it to crash into the trees.		
	Report	https://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2021-6-2-JR1734.pdf (In Japanese only)		

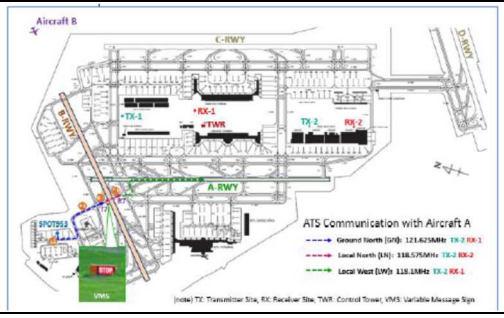
Aircraft serious incident investigation reports published in 2021

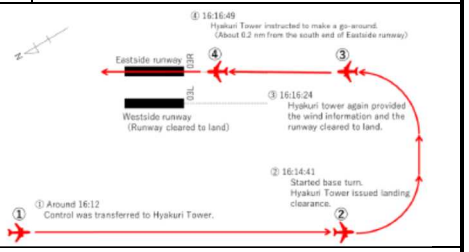
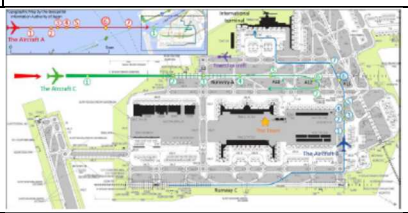
1	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	January 21, 2021	July 21, 2019 On runway 18 at Naha Airport	Asiana Airlines, Inc. (Aircraft A)	HL8256 Airbus A321-231 (Large aeroplane)
			Japan Transocean Air Co., Ltd. (Aircraft B)	JA01RK Boeing 737-800 (Large aeroplane)
	Summary	Aircraft A made incursion into runway 18 at Naha Airport without obtaining ATC clearance when aircraft B was on the final approach to the runway after obtaining landing clearance. 		
	Probable causes	It is highly probable that this serious incident occurred because aircraft A entered the runway despite of being instructed to hold short of runway 18, when aircraft B, which were cleared to land by the tower, attempted to land at the same runway. Regarding the fact that aircraft A entered the runway, it is probable that when the PIC A received the ATC instruction, he mistook the tower's instruction to hold short of runway as the instruction to line up and wait, and his misunderstanding was not corrected. It is probable that the reason why the PIC A's misunderstanding was not corrected is because the PIC A and the FO A did not cross-check the ATC clearance, as specified in the company A's manual.		
	Safety Actions	**Measures Asiana Airlines, Inc. took to prevent the recurrence of similar accidents** · Updating the Airport Information and notifying all the flight crew for flight safety. · Changed in Standard Callouts[*1] during taxi. · Company campaign for the prevention of runway/taxiway incursion.		

<table>
<tr><td></td><td></td><td colspan="3">· Strengthening evaluation standards and line audit procedures for all the flight crew.
· Remedial education and training to the flight crew involved in this serious incident.
*1 "Standard Callouts" means callouts excluding orders for specific operations like "FLAP UP" from the various callouts for normal operations.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/HL8256_JA01RK.pdf</td></tr>
<tr><td>2</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td></td><td>January 21, 2021</td><td>October 3, 2019
On runway 10 of Misawa Airbase</td><td>Japan Air Self-Defense Force
(Aircraft A)</td><td>93-8550
F-2A
(Large aeroplane)</td></tr>
<tr><td></td><td></td><td></td><td>J-AIR Corporation
(Aircraft B)</td><td>JA216J
Embraer ERJ 170-100 STD
(Large aeroplane)</td></tr>
<tr><td></td><td>Summary</td><td colspan="3">Aircraft A made incursion into runway 10 at Naha Airport without obtaining ATC clearance when aircraft B was on the final approach to the runway after obtaining landing clearance.
  </td></tr>
<tr><td></td><td>Probable causes</td><td colspan="3">In this serious incident, it is probable that aircraft A made an incursion on the runway which aircraft B with landing clearance was approaching on the final course, because the PIC of aircraft A who was waiting on the taxiway in front of the runway misunderstood the departure delay information provided by the air traffic controller as the take-off clearance, failed to listen to the controller's corrective response by reporting the completion of pre-flight procedures immediately after making incorrect read-back, and failed to visually confirm the final approach course.</td></tr>
<tr><td></td><td>Safety Actions</td><td colspan="3">(1) Major safety actions the 3rd Wing of JASDF took upon occurrence of the serious incident
1. Ensured to listen to ATC instructions and clearance, etc.
2. Ensured to perform basic procedures and actions.
3. Revised the reporting procedures in the case of solo flight.
4. Ensured to establish the mutual supplementary system.
5. Reconfirmed the status in which deviations from ATC communications are likely to occur.
(2) JASDF notified all the Flight Squadrons of safety information concerning the serious incident, and each Flight Squadron provided safety training according to this information.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/93-8550_JA216J.pdf</td></tr>
<tr><td>3</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td></td><td>February 18, 2021</td><td>March 24, 2018
At Fukuoka Airport</td><td>Peach Aviation Limited</td><td>JA805P
Airbus A320-214
(Large aeroplane)</td></tr>
<tr><td></td><td>Summary</td><td colspan="3">The aircraft was forced to stop on the runway with its nose wheel turned sideways after landing at Fukuoka Airport as a scheduled flight 151 of Peach Aviation Ltd. Consequently, the aircraft was unable to continue taxiing.
  </td></tr>
<tr><td></td><td>Probable causes</td><td colspan="3">In this serious incident, it is highly probable that the aircraft was unable to continue taxiing with its nose wheel turned sideways about 90° because during</td></tr>
</table>

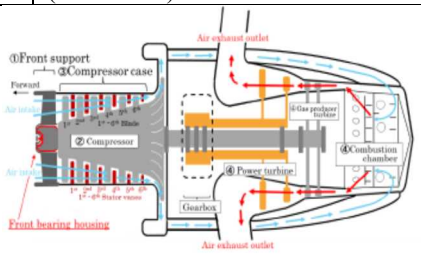
		landing roll, the pin that connected the upper and lower torque links was disconnected, and it had lost control of the nosewheel steering. It is probable that the pin disconnection occurred because the mechanical strength of the threads was deteriorated by corrosion developed on the pin threads, the pin assembly could not withstand the loading transmitting from the torque links to the nut during steering operations, and the nut was torn. Regarding the corrosion development on the pin threads, it is probable that the cadmium plating was damaged and the corrosion resistance was reduced because installations and removals of the pin and nut were repeatedly conducted after the aircraft production, and the torque links were misassembled. In addition, it is somewhat likely that during reinstallation at the heavy maintenance check on the aircraft, the lubrication of the pin threads was not sufficient and the torque links were misassembled, which contributed to the acceleration of the corrosion development on the pin threads.
	Safety Actions	**(1) Design manufacturer of the aircraft** 1. Following this serious incident, the Aircraft Maintenance Manual was reviewed. As a result of this review, the Aircraft Maintenance Manual was updated by making the cleaning procedures in the detailed inspection on the pin much clearer, and adding the inspection method regarding corrosion. Besides, the pin installation procedures were updated to ensure that the grease application method and region were clarified. In the revised manual, it is required to clean carefully and dry all the pin threads and splines, and to completely fill the threads and splines with reapplied grease. 2. To the A320 family operators, the "Technical Follow-Up" was issued to provide the information on this serious incident in detail and the revised Aircraft Maintenance Manual. In addition, the Service Bulletin was issued to recommend the operators to perform an initial inspection of the pin threads and recurrent A320 fleet inspections subsequently. 3. As a terminating action, the pin and nut with improved corrosion resistance will be developed on future. **(2) The Company** After the serious incident, the Company performed inspections on the pin condition of their A320 fleet, and replaced the pin suspected corrosion. Although inspections on the pin threads and reapplication of grease used to be performed every six to ten months to monitor the status of the applied grease, after receiving the Service Bulletin mentioned as above, the inspection procedures were established in accordance with this Service Bulletin. It was decided that the pin inspection was established as an item for witness inspection by the Company's inspector in case of outsourcing the heavy maintenance check to other company.
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/JA805P.pdf
	Reference	Major activities in the past year (page 3)

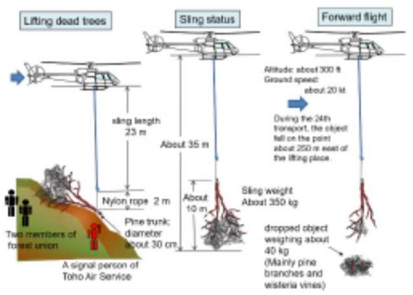
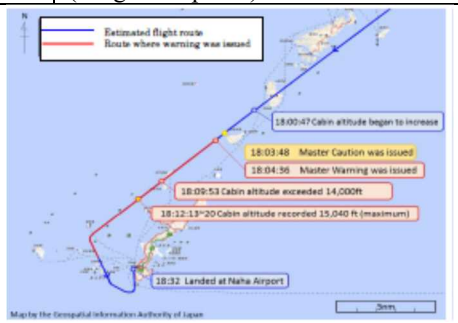
4	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	February 18, 2021	February 16. 2020 In Ishikari City, Hokkaido	Sapporo City Fire Department Air Corps	JA17AR Agusta AW139 (Rotorcraft)
	Summary	The Rotorcraft took off from Ishikari Temporary Airfield and while approaching from the west side of the Airfield for rescue training, dropped weights attached to the hoist over the national forest.		
	Probable causes	The JTSB concludes that the probable cause of this serious incident was the weight hook was almost certainly not properly closed when attached on the hoist hook, and at the timing weights with the hoist hook were released outside of the rotorcraft, the hook opened and weights dropped.		

<table>
<tr><td></td><td>Safety Actions</td><td colspan="3">Safety actions that Sapporo City Fire Department Air Corps took after this serious incident
· They suspended to use this weight.
· Revised the confirmation procedures when positioning the weight on the hoist hook as follows.
1) The weight installation work shall be done inside the aircraft by the jumpmaster.
2) After the weight installation, it shall be confirmed by applying tension.
3) The connection state of weights shall be double-checked by the jumpmaster and the hoist operator, and fall prevention rope shall be removed after this check and weight to be released outside of the rotorcraft.</td></tr>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA17AR.pdf</td></tr>
<tr><td>5</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td></td><td>March 25, 2021</td><td>October 27, 2018
At Tokyo International Airport</td><td>Okayama Air Service Co., Ltd.
(Aircraft A)</td><td>JA123F
Cessna 510
(Small aeroplane)</td></tr>
<tr><td></td><td></td><td></td><td>Shanghai Deer Jet Co., Ltd.
(Aircraft B)</td><td>B-3276
Gulfstream Aerospace G-VI
(Large aeroplane)</td></tr>
<tr><td></td><td>Summary</td><td colspan="3">When aircraft A was on final approach to runway 22 with a landing clearance, aircraft B, which was instructed to hold short of the runway, entered and crossed the runway without clearance at Tokyo International Airport. Aircraft A executed a go-around as instructed by the air traffic controller.
 
</td></tr>
<tr><td></td><td>Probable causes</td><td colspan="3">In this serious incident, it is probable that because of the situation where the radio voice transmission of aircraft B did not reach LN, communication between aircraft B and LN was not established, and furthermore, aircraft B misunderstood that crossing runway was approved by hearing part of voice messages intended for other aircraft, which resulted in aircraft B entering the runway which aircraft A was approaching with a landing clearance. Regarding that the voice of transmission of aircraft B did not reach LN could not be determined its reason.
Besides, it is probable that the following matters are contributed to the occurrence of this serious incident.
(1) When aircraft B changed frequency to LN, the communication with LN was not established surely, and a sequence of call and reply was not performed between them.
(2) Flight crew of aircraft B could not notice the illuminated VMS.</td></tr>
<tr><td></td><td>Safety Actions</td><td colspan="3">Measures taken by Shanghai Deer Jet Co., Ltd. after the serious incident in order to prevent occurrence of similar cases in the future.
(1) Issuance of Safety Circular
Safety circular in relation to Tokyo International Airport was issued for thorough dissemination to flight crew along with using this serious incident case as one of educational materials.
(2) Follow-up of radio equipment of aircraft A
The Company has set to continuously gather information from flight crew to follow up reliability of VHF-1 radio of aircraft B, and in the event that the radio does not function, the pertinent radio is set to be replaced without delay.
(3) Review and improvement of preventive measures against runway incursion
The Company carried out review and improvement of the preventive measures described in the SOP (Standard Operating Procedures) of Gulfstream Aerospace G-VI, and provided education to flight crew.</td></tr>
</table>

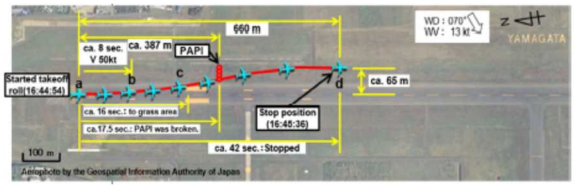
		(4) Measures to address potential risks of radio communication With TEM (Threat and Error Management), the Company conducted an analysis on potential risks of radio communication and devised a method to control them so that flight crew would be able to address those risks.		
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/JA123F_B-3276.pdf		
6	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	March 25, 2021	August 22, 2019 About 0.2 nm southwest from the south end of runway 03R of Hyakuri Airfield	Easter Jet Co., Ltd	HL8052 Boeing 737-800 (Large aeroplane)
	Summary	The aircraft attempted to land on the runway different from the one cleared to land by a controller, on which an inspection vehicle was running, before landing at Hyakuri Airfield. 		
	Probable causes	In this serious incident, it is highly probable that because the captain of the aircraft misidentified the runway cleared to land, he made an approach for the different runway where an inspection vehicle was running on. It is somewhat likely that the captain as the PF[*1] did not thoroughly perform the visual recognition of runway, and in addition, the FO as the PM[*1] did not adequately monitor the flight status of the aircraft, which may be involved in the runway misidentification made by the captain of the aircraft. *1 "PF" and "PM" are the terms used to identify pilots by their different roles in aircraft operated by two persons. PF is an abbreviation of Pilot Flying and is mainly responsible for maneuvering the aircraft. PM is an abbreviation of Pilot Monitoring mainly responsible for monitoring flight status of the aircraft and cross-checking of PF's maneuvering and undertakes other nonoperational tasks.		
	Safety Actions	**Preventive actions that the Company took in the wake of this serious incident** (1) Made known the serious incident in details to flight crew. (2) Added the condition in which the PIC flying to Hyakuri Airfield is required to have flight experience with the flight time of 500 hours or more as the PIC[*1]. *1 "PIC" stands for Pilot in Command who is the pilot responsible for the operation and safety of an aircraft. In aircraft operated by several pilots qualified as PIC, from whom one PIC is appointed.		
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/HL8052.pdf		
7	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 22, 2021	June 15, 2019 At Tokyo International Airport	Skymark Airlines Inc. (Aircraft A)	JA73AB Boeing 737-800 (Large aeroplane)
			All Nippon Airways Co., Ltd. (Aircraft B)	JA885A Boeing 787-9 (Large aeroplane)
	Summary	Aircraft B crossed runway 34L at Tokyo International Airport after receiving an ATC clearance, when aircraft A was on the final approach to the runway after receiving a landing clearance. 		

	Probable causes	It is certain that this serious incident occurred because the aircraft B crossed the runway after being cleared from the tower west position, when the aircraft A was approaching runway A after receiving a landing clearance from the tower west position. It is highly probable that the tower west position issued a clearance of crossing runway A to the aircraft B, because the supervisor A, not recognizing the landing clearance issued to the aircraft A, urged the trainee to issue a clearance of crossing the runway to the aircraft B, and because the trainee, who forgot issuing a landing clearance to the aircraft A, issued a clearance of crossing the runway to the aircraft B according to the instruction of the supervisor A.
	Safety Actions	**(1) Safety actions that Tokyo Aerodrome Control Facility, the Tokyo Airport Office, the Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism took in the wake of this serious incident** · Established the guideline to manage training environment appropriately so that the OJT shall be interrupted and the supervisor shall carry out the operations of ATC services in case where the supervisor needs to coordinate with other positions. · Improved the initial training curriculum before starting the OJT in order to include trainings related to the coordination with other positions and raise the level of OJT qualifying. · Provided retraining for supervisors. **(2) Measures taken by the Air Navigation Services Department, Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism** · Conducted training for personnel in charge of training and the local TRM[*1] from July 8 to 9, 2019 and considered new efforts in order to properly conduct the OJT based on the safety of air traffic. Besides, it is instructed to come up with and implement initiatives in each facility based on the training content. *1 "TRM" stands for Team Resource Management, created by applying the concept of CRM (Crew Resource Management) of the aircraft operators to the team carrying out the operations of ATC services.
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/JA73AB_JA885A.pdf

8	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	May 27, 2021	June 19, 2019 Over an area near Aikawa Town, Aiko District, Kanagawa Prefecture	Toho Air Service Co., Ltd.	JA6697 Aerospatiale AS355F2 (Rotorcraft)
	Summary	The aircraft took off from Tokyo Heliport for press and news coverage. While flying over an area near Aikawa Town, Aiko District, Kanagawa Prefecture, the No.1 engine (left engine) was shut down. The helicopter made a preventive landing on a riverbed of the Nakatsu River in Aikawa Town. During an inspection after landing, it was confirmed that fragments of the No. 1 engine penetrated the engine case. 
	Probable causes	It is highly probable that fracture of the 2nd stage blades of the engine (left engine) compressor during the flight, which resulted in damage to the subsequent stages blades and stator vanes, etc., and those fragments penetrated the compressor case. It is probable that fracture of the 2nd stage blades of compressor was caused by damage due to corrosion, which reduced the robustness of the blades.
	Safety Actions	**Safety actions taken by the operator** On June 20, 2019, the operator decided to conduct occasional inspections for the same type of helicopters in operation as temporary safety actions for this serious incident, and confirmed there were no anomalies in the overall airframes and engines.

<table>
<tr><td></td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA6697.pdf</td></tr>
<tr><td rowspan="5">9</td><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>July 29, 2021</td><td>December 4, 2020
In Higashi-Matsushima City, Miyagi Prefecture</td><td>Toho Air Service Co., Ltd.</td><td>JA504D
Airbus Helicopters AS350B3
(Rotorcraft)</td></tr>
<tr><td>Summary</td><td colspan="3">The helicopter while transporting withered pine weevils trees by cargo sling dropped some of the dead trees on a fallow field in Miyato Island, Higashi-Matsushima City, Miyagi Prefecture. There was no damage to the helicopter, or injury to persons on board or on the ground.
 
</td></tr>
<tr><td>Probable causes</td><td colspan="3">In this serious incident, during the flight at low speed, it is highly probable that some of the dead trees dropped on the fallow field due to the wind pressure including downwash because the measures to prevent the slung dead trees from dropping were not sufficient.</td></tr>
<tr><td>Safety Actions</td><td colspan="3">On December 9, 2020, the company additionally stipulated in the Toho Standard Operating Procedure the methods for packaging and the procedures to suspend the slinging work to prevent dropping, made it public within the company and implemented the safety education.
 
</td></tr>
<tr><td rowspan="5">10</td><td>Report</td><td colspan="3">https://www.mlit.go.jp/jtsb/eng-air_report/JA504D.pdf</td></tr>
<tr><td>Date of publication</td><td>Date and location</td><td>Operator</td><td>Aircraft registration number and aircraft type</td></tr>
<tr><td>August 26, 2021</td><td>February 20, 2020
At FL250 about 92 km north-northeast of Naha Airport</td><td>Silver Air Corp.</td><td>N829RA
Bombardier BD-700-1A10
(Large aeroplane)</td></tr>
<tr><td>Summary</td><td colspan="3">The aircraft took off from Tokyo International Airport as a charter flight. While the aircraft was flying at FL400 to Tan Son Nhat International Airport (the Socialist Republic of Vietnam), the instrument indicated loss of cabin pressurization. The flight crew member of the aircraft declared an emergency and made an emergency descent until the aircraft reached an altitude of approximately 10,000 ft. The Pilot in Command changed its destination to Naha Airport and the Aircraft landed at Naha Airport.
 
</td></tr>
<tr><td>Probable causes</td><td colspan="3">The JTSB concludes that the probable cause of this serious incident was the shutdown of both PACKs of the Aircraft during the flight at FL400, which resulted in loss of cabin pressurization. Concerning the shutdown of both PACKs, it is highly</td></tr>
</table>

		probable that the flight crew member was going to operate the switches of fuel recirculation system but erroneously pushed both PACK switches to position "OFF" without noticing.
	Safety Actions	**Safety actions taken by the Company after the serious incident** The following safety actions were taken for all crew members who operate the same type of aircraft. (1) Strict adherence to checklists and procedures during all phases of flight, especially in climb out and cruise, as was identified in this incident. (2) It was informed that it is important for a PIC to emphasis on Crew Resource Management (CRM*1) and crew communication is vital and will be briefed and emphasized during all phases of flight. (3) Review of fuel recirculation procedures on aircraft with manual fuel recirculation action, such as N829RA, crew shall do a thorough review of the fuel recirculation system to include limitations of such actions. (4) Re-emphasis the challenge and response items to various phases of the checklist to ensure proper cockpit switchology. *1 "CRM" refers to the effective use of all available resources: human resources, hardware and information, in order to accomplish safe and efficient operations. (AIM-JAPAN)
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/N829RA.pdf

11	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 28, 2021	April 23, 2019 At Yamagata Airport	Fuji Dream Airlines Co., Ltd.	JA11FJ Embraer ERJ 170-200 STD (Large aeroplane)
	Summary	The aircraft started takeoff roll to fly from Yamagata Airport to Prefectural Nagoya Airfield with a total of 64 people, consisting of the pilot in command, three crew members, and 60 passengers, then ran off while veering to the left, and stopped in the grass field. 
	Probable causes	The JTSB concludes that the probable cause of this serious incident was that because the aircraft could not change its direction while trying to control the nosewheel steering with the pedal mode when it started takeoff roll, the aircraft was disabled to move on its own when it stopped in the grass field after running off the side of the runway while aborting the takeoff. Regarding the reason why the pedal mode could not control the nosewheel steering, it is highly probable that because there was an abnormality in the microswitch inside the handle, the steering mode stayed in the handle mode. The cause of the microswitch failure could not be determined even in the detailed investigation.
	Safety Actions	**(1) Measures taken by the Company** a. The Company issued an Operating Information*1 "Response when occurring an abnormality in the steering system," and has informed the flight crew members the outline of the steering system and the response at the time when an abnormality would occur in it. b. The Company provided the flight crew members with the training for a rejected takeoff at low speed in the periodic training of the 2019 fiscal year. **(2) Measures taken by the Manufacturer** The manufacturer has revised the normal procedure in the AOM*2 related to the operational check for the flight control system as below. (Revised on November 6, 2020) · Added the verification of the displayed status of the EICAS message "STEER

		OFF" after pushing the steering disengage switch to disengage the rudder pedal and the steering system when starting the operational check for the flight control system as the NOTE (Operating procedures, techniques and other related information, which are considered essential to emphasize the safety of flight.). *Verify the STEER OFF Status message is displayed on EICAS and check it remains displayed until the Nosewheel Steering Handle is pressed to engage the Steering.* · The procedure to enable the steering to use after completing the operational check for the flight control system. Before: *Press the NOSEWHEEL STEERING Handle to engage the STEERING* After: *Press the NOSEWHEEL STEERING Handle until STEER OFF Status message extinguishes to engage the STEERING* *1 "Operating Information" refers to reference information on aircraft operation which provides additional information related to the AOM and aircraft modification information and others related to the operation. *2 "AOM" stands for Airplane Operations Manual
	Report	https://www.mlit.go.jp/jtsb/eng-air_report/JA11FJ.pdf

7 Actions taken in response to recommendations in 2021 (aircraft accidents and serious incidents)

A summary of the actions taken in response to recommendations in 2021 is as follows.

① Aircraft accident related to privately-owned SOCATATBM 700

(Recommendations on July 25, 2019)

The Japan Transport Safety Board (JTSB) published an investigation report and made recommendations to the Minister of Land, Infrastructure, Transport and Tourism on July 25, 2019, regarding the aircraft accident involving the privately-owned SOCATA TBM 700, registered N702AV, occurred in Yamazoe Village, Yamabe District, Nara Prefecture occurred on August 14, 2017. On March 31, 2021, the JTSB received the following notification on actions taken in response to the recommendations.

(See the JTSB website at the following URL for the summary and probable causes of the accident:
https://jtsb.mlit.go.jp/jtsb/aircraft/detail.php?id=2192 (In Japanese only)

○Recommendations to the Minister of Land, Infrastructure, Transport and Tourism

It is probable that there is a possibility of inappropriate flight control operations due to a lack of the captain's knowledge and skills required to control the aircraft, causing the aircraft to lose its control while flying. The captain had Japan's valid competence certification, however, the certification allow its holders to be privileged to fly aircrafts within the scope of works according to the qualifications held regardless of the characteristics of individual aircrafts if the class restrictions are fulfilled for aircrafts that do not require type restrictions.

For this reason, the Japan Transport Safety Board recommends the Minister of Land, Infrastructure, Transport and Tourism to take the following measures pursuant to the provision of Article 26 of the Act for Establishment of the Japan Transport Safety Board in order to provide aviation safety based on the matters revealed during this aircraft accident investigation.

The Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (hereafter: MLIT) shall instruct pilots to fly an aircraft of a type, which they have never flown, after certainly acquiring knowledge and skills required to fly the aircraft concerned even if flying the aircraft concerned that does not require type restrictions in the pilot's competence certification.

○Measures taken in response to the recommendations

MLIT has been providing guidelines regarding education and training for flying aircrafts that pilots have never flown within the scope of class restrictions pursuant to the "Regarding Guidelines of Education and Training for Flying Rotorcrafts but the Types without Experiences of Flying Them within the Same Class Restrictions" (KU-JO No. 2090, September 29, 1995) and the "Regarding Guidelines of Education and Training for Flying Gliders within the Same Class in a Departing Manner that Pilots Have Never Experienced" (KOKU-KU-JO No. 86, June 23, 2006). In addition, the following actions were taken based on the recommendations.

1. MLIT issued KOKU-KU-KO No. 821 "Regarding Securing Safety when Flying Aircrafts that Pilots Never Flown" (Appendix 1) as of July 25, 2019 to relevant organization related to operations of aircrafts. If flying aircrafts of types that pilots have never flown even though the aircrafts are within the scope of class restrictions, pilots must learn
   · overview and structure of the airframe;
   · flight manual and performance;
   · various systems and handling;
   · taking off and landing; and
   · normal and emergency operations;
   and other items of knowledge and skills required to fly the aircraft concerned through education and training related to theories and practices provided by personnel experienced flying the aircraft concerned. MLIT also promoted awareness to ensure safety securely.

2. As the detailed guidelines related to 1., MLIT established the "Guidelines related to Education and Training for Flying Aircrafts, etc. of Types, which Pilots Have Never Experienced to Fly, with the Same Kinds and Class as Restrictions Granted in Competence Certification" (KOKU-KU-KO No. 1055, June 29, 2020) (Appendix 2) as of June 29, 2020, and provided concrete guidelines regarding:
   · details when education and training are required for each kind of aircrafts;
   · concrete items of theoretical education and practical education;
   · requirements for implementers of education and training; and
   · record method of implementing education and training, etc.

3. MLIT promoted actions to disseminate the details of the guidelines mentioned in 2 through the "Safe Aircraft Operation Seminar" of FY 2020 hosted by the Civil Aviation Bureau of MLIT, and required pilots to learn knowledge and skills required following the guidelines when flying aircrafts of types that the pilots have never flown or when flying aircrafts in a departing manner that pilots have never experienced, even if flying aircrafts within the class restrictions of competence certification.

* Notifications (original) from the Minister of Land, Infrastructure, Transport and Tourism are available on the JTSB website.
https://www.mlit.go.jp/jtsb/airkankoku/kankoku16re_030331.pdf (In Japanese only)

② Accident involving a Bell 412EP owned by Gunma Prefecture Disaster Prevention Air Corps (Recommendations on February 27, 2020)

The Japan Transport Safety Board (JTSB) published an investigation report and made recommendations to the Minister of Land, Infrastructure, Transport and Tourism on January 31, 2020, regarding the aircraft accident involving the BELL 412EP, registered JA200G, operated by Gunma Prefecture Disaster Prevention Air Corps occurred in the vicinity of about two km northeast of Mt. Yokote, Nakanojo Town, Agatsuma District, Gunma Prefecture on August 10, 2018. On March 31, 2021, the JTSB received the following notification on actions taken in response to the recommendations.

(See the JTSB website at the following URL for the summary and probable causes of the accident:
https://jtsb.mlit.go.jp/jtsb/aircraft/detail.php?id=2222 (In Japanese only)

○Recommendations to the Minister of Land, Infrastructure, Transport and Tourism

It is probable that the aircraft crashed into the mountain slope because the captain were disabled to perform appropriate aircraft control in order to maintain the aircraft attitude due to the captain's spatial disorientation, caused by discontinued visual recognition of the ground surface due to visibility deteriorated by approaching the airspace with many clouds while flying the mountain areas in order to investigate the mountain trail.

Regarding the ground surface was not be continuously visually recognized due to deteriorated visibility, it is probable that the captain continued to fly the aircraft with his/her delayed determination for turning back while getting difficult to maintain the visual meteorological condition.

Pilots of aircrafts for searching and rescuing activities by police, etc. frequently fly in the mountains areas where it is difficult to anticipate the local weather which is likely to change often, due to the nature of mission. Even if the weather suddenly deteriorates, it is important to take appropriate actions without suffering spatial disorientation in order to escape promptly from the airspace where the weather has deteriorated. For this purpose, it is considered to deepen the understanding on risk of spatial disorientation, immediately switch the control with the one using the

basic instruments when necessary, and also practice on a daily basis to acquire concrete preventive measures and countermeasures against spatial disorientation appropriately using automatic flying equipment, etc., if available.

From this, the Japan Transport Safety Board make recommendations to the Minister of Land, Infrastructure, Transport and Tourism (hereafter: MLIT) based on the results of this accident investigation to take the following measures pursuant to Article 26, paragraph (1) of the Act for Establishment of the Japan Transport Safety Board in order to prevent aircraft accidents and mitigate damage when aircraft accidents occur.

The Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism shall promote awareness on risk of spatial disorientation for pilots of aircrafts for searching and rescuing activities, and also disseminate concrete preventive measures in order to avoid suffering spatial disorientation and measures for escaping from a situation in spatial disorientation, if suffering it.

○Measures taken in response to the recommendations

MLIT has been promoting awareness on and disseminating risk of flying in clouds to small aeroplane operators through safety seminars, etc., and also cooperating with the Fire and Disaster Management Agency in studying for formulating "Standard for flight operations of fire and disaster prevention helicopters" (Fire and Disaster Management Agency notice No. 4 on September 24, 2019), and taking other actions in order to prevent recurrence of aircraft accidents, however took the following actions in response to the recommendations.

1. The MLIT issued "Regarding Securing Safety of Flight Operations Pursuant to Visual Flight Rules (Related to Spatial Disorientation)"(Appendix 1) (KOKU-KU-KO No. 3113 on February 27, 2020) to relevant ministries and agencies related to searching and rescuing activities in order to request:
   (1) Regular implementation of theoretical training on risk of and countermeasures for spatial disorientation and practical training for escaping from a situation in spatial disorientation using instruments by simulating a situation with deteriorated visibility using an actual aeroplane or a simulator; and
   (2) Dissemination of risk of flying with deteriorated visibility and with spatial disorientation, and full enforcement of countermeasures.

In addition, the MLIT also requested the content of the above item 2. to small aeroplane-related organizations. (Appendix 2)

2. The MLIT took the following actions in consultation with experts and related organizations, etc. in the 8th Safety Promotion Committee Meeting Related to Small Aeroplanes, etc. held on April 22, 2020.
   (1) Creation and distribution of leaflets with cooperation from related organizations in order to disseminate safety measures based on the details of the recommendations, and also issuance of documents to small aeroplane operators, related organizations, and pilot competency

assessors in order to disseminate the details of the leaflets and request promoting understanding of them (Appendix 3)

(2) Disclosure of the leaflets, etc. on its website, dissemination of and promotion of awareness on their details in the "Safe Aircraft Operation Seminar" of FY 2020 hosted by the Civil Aviation Bureau of the MLIT

(3) Creation of videos to promote safety for pilots of rotorcrafts including the introduction of risk of spatial disorientation in flight in clouds, coordinating with related organizations, etc., and also publication of the videos on the MLIT website on September 2, 2020 (Appendix 4)

* Notifications (original) from the Minister of Land, Infrastructure, Transport and Tourism are available on the JTSB website.
https://www.mlit.go.jp/jtsb/airkankoku/kankoku17re_030331.pdf

8 Provision of factual information in 2021 (aircraft accidents and serious incidents)

The JTSB provided no factual information in 2021.

Column

Overseas business trips in investigations of aircraft accidents and serious incidents

Aircraft Accident Investigator

I had a business trip to the U.S. while the state of emergency was being declared. Most meetings under the COVID-19 pandemic are held online. However, there have been more than a few meetings and investigations that are unable to achieve their mission due to being held online.

In field investigations, it is necessary not only to investigate details of damaged parts in dedicated facilities, but also to investigate the facilities involved in the damage. Especially in this investigation, it was necessary to investigate the on-site facilities directly because it has been considered that the facilities of designers and manufacturers might be involved in the causes.

The details of information obtained from photographs and videos depend on the people who take them, resulting in occasional misunderstandings. To create accurate investigation reports, it is necessary to conduct neutral investigations without bias, and investigators themselves need to directly obtain information based on the so-called 5W1H method, e.g., what kind of work with what kind of difficulties has been carried out by workers with what kind of skills, at what kind of facilities, under what kind of environment, and in what time zone. Then, proceeding with discussions with designers and manufacturers and implementing the PDCA cycle will lead to prompt discovery of measures to prevent recurrences. On-site communication helps building a relationship of trust with related countries. Sometimes more than 100 questions can be resolved in one or two days. Exchanging emails may not resolve them even in several months. Moreover, "off-the-record information" included in conversations during lunch time, which is unable to be conveyed by email, can be actually very useful to resolve questions.

Difficulties in overseas business trips under the COVID-19 pandemic

<Obstacle 1: Scheduling>

Scheduling of on-site investigations was difficult because the country which I intended to visit, was under lockdown. I repeatedly made phone calls to communicate about scheduling in order to gather all the persons concerned (professional engineers and accident investigators of related countries), and it took me four months from planning to implementation of the trip.

<Obstacle 2: Departure>

It was required to obtain a certificate that proved negative results for COVID-19 in the format approved by the country I intended to visit within 72 hours before departure. It took me time and effort to find a test institution that was capable to conduct tests on Saturdays and Sundays and issue a certificate on the same day as the testing day in the "language approved by the country I intended to visit."

<Obstacle 3: Transportation in the county I visited and returning to Japan>

It was a given to have two certificates from PCR tests that showed negative results for COVID-19, i.e. when transporting by airplane in the U.S. and when returning to Japan. I needed to make reservations by myself for testing by searching testing institutions and taking tests between the on-site investigations.

<Obstacle 4: Isolation>

After returning to Japan, my 14-days of isolation started. For the first three days, I moved to an accommodation from the airport for forced isolation at an accommodation specified by the quarantine station chief by a dedicated microbus after taking a PCR

test, installing a dedicated application on my smart phone, and being interviewed, etc. In the accommodation, three packed meals per day were distributed.

After the forced isolation ended, I transferred to the phase of self-isolation for the remaining 11 days. During that phase, my health was observed, and I received health confirmation via video chatting, and reported my health status and current location using a GPS terminal.

<Obstacle 5: Invisible obstacles>

CNN reports that costs of hospitalization and treatment of COVID-19 patients in the U.S. are $75,000 (or ¥8,550,000 at the exchange rate as of January 2022). Such suffering is waiting for a person who would be infected with COVID-19 even if they implemented all possible infection control practices.

<Implementation of international accident investigations>

International agreements related to aircraft accident investigations prescribe that an investigating country shall notify related countries including designing countries, manufacturing countries and so on of an occurrence of an accident, and that the related countries shall provide necessary information to the investigating country. Accident investigations are made pursuant to such rules, cooperating with the related countries.

In addition, there are many cases where facilities of designers and manufacturers of airframes are located outside Japan. For this reason, investigation authorities of countries carry out on-site investigations at such facilities if necessary in order to investigate probable causes of accidents.