

## Chapter 2 Aircraft accident and serious incident investigations

### 1 Aircraft accidents and serious incidents to be investigated

#### <Aircraft accidents to be investigated>

##### ◎Paragraph 1, Article 2 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 each of the items in paragraph 1 of Article 76 of the Civil Aeronautics Act.

##### ◎Paragraph 1, Article 76 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.

##### ◎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 item 5 of the paragraph1 of the Article 76 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>

##### ◎Item 2, Paragraph 2, Article 2 of the Act for Establishment of the Japan Transport Safety

###### Board (Definition of aircraft serious incident)

A situation where a pilot in command of an aircraft during flight recognized a risk of collision or contact with any other aircraft, or any other situations prescribed by the Ordinances of Ministry of Land, Infrastructure, Transport and Tourism under Article 76-2 of the Civil Aeronautics Act.

##### ◎Article 76-2 of the Civil Aeronautics Act

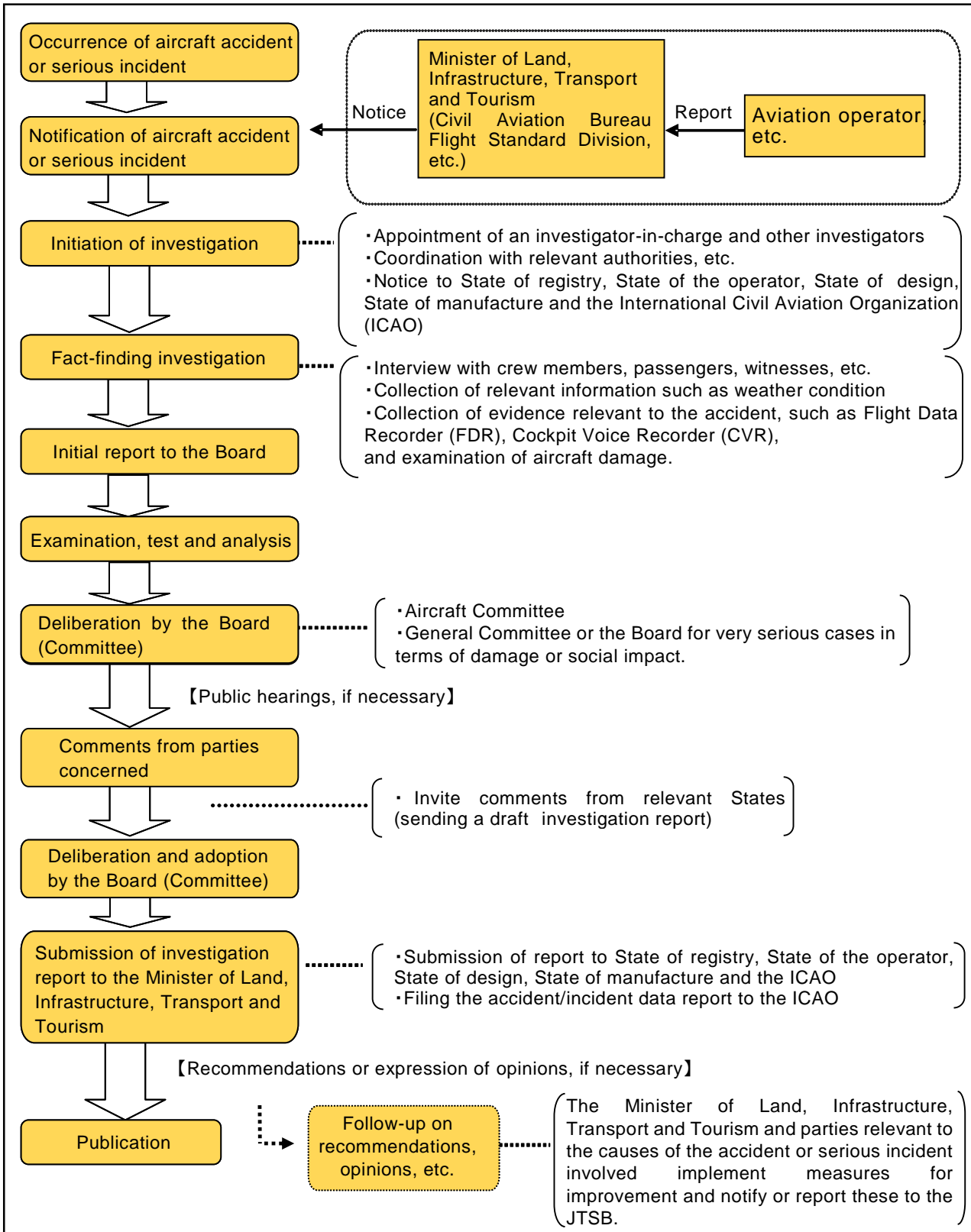
- When the pilot in command has recognized during flight that there was a danger of collision or contact with any other aircraft.

- When the pilot in command has recognized during flight that there is a danger of causing any of accidents listed in each item of paragraph 1, article 76 of the Civil Aeronautics Act, specified by Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism.

◎ **Article 166-4 of the Ordinance for Enforcement of the Civil Aeronautics Act** (The case prescribed in the Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism under Article 76-2 of the Civil Aeronautics Act)

- 1 Take-off from a closed runway or a runway being used by other aircraft or aborted take-off
- 2 Landing on a closed runway or a runway being used by other aircraft or attempt of landing
- 3 Overrun, undershoot and deviation from a runway (limited to when an aircraft is disabled to perform taxiing)
- 4 Case where emergency evacuation was conducted with the use for emergency evacuation slide
- 5 Case where aircraft crew executed an emergency operation during navigation in order to avoid crash into water or contact on the ground
- 6 Damage of engine (limited to such a case where fragments penetrated the casing of subject engine)
- 7 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
- 8 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 be continued
- 9 Multiple malfunctions in one or more systems equipped on aircraft impeding the safe flight of aircraft
- 10 Occurrence of fire or smoke inside an aircraft and occurrence of fire within an engine fire-prevention area
- 11 Abnormal decompression inside an aircraft
- 12 Shortage of fuel requiring urgent measures
- 13 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
- 14 Case where aircraft crew became unable to perform services normally due to injury or disease
- 15 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
- 16 Case where parts dropped from aircraft collided with one or more persons
- 17 Case equivalent to those listed in the preceding items

## 2 Procedure of aircraft accident/incident investigation



### 3 Statistics of investigations of aircraft accidents and serious incidents

The JTSB carried out investigations of aircraft accidents and serious incidents in 2014 as follows: 18 aircraft accident investigations had been carried over from 2013, and 17 accident investigations newly launched in 2014. 13 investigation reports were published in 2014, and thereby 22 accident investigations were carried over to 2015.

18 aircraft serious incident investigations had been carried over from 2013, and four serious incident investigations newly launched in 2014. Eight investigation reports were published in 2014, and thereby 14 serious incident investigations were carried over to 2015.

Among the 21 reports published in 2014, four were issued with recommendations and two with safety recommendations.

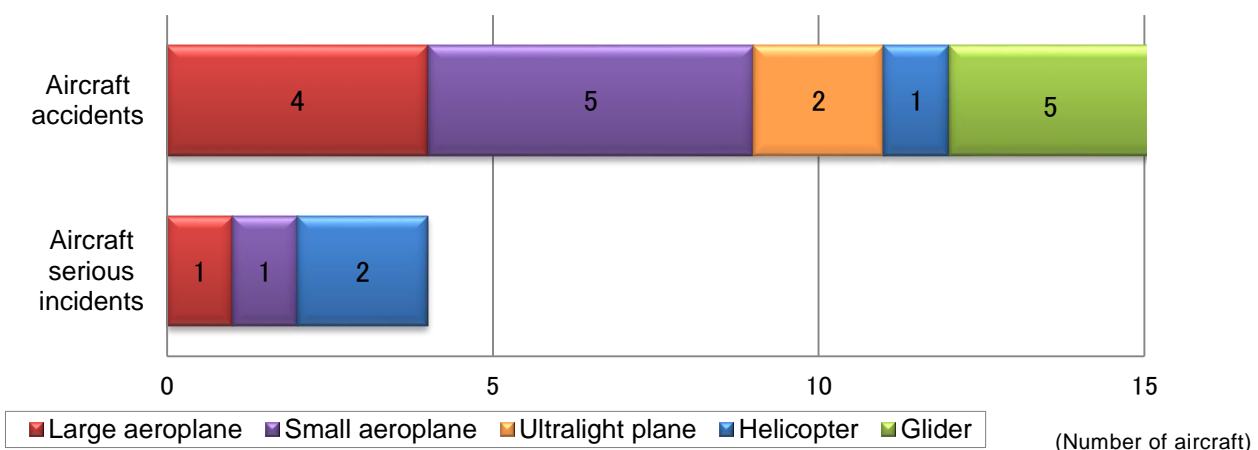
Category	Carried over from 2013	Launched in 2014	Total	Published investigation reports	(Recommendations)	(Safety recommendations)	(Opinions)	Carried over to 2015	(Interim report)
Aircraft accident	18	17	35	13	(0)	(0)	(0)	22	(0)
Aircraft serious incident	18	4	22	8	(4)	(2)	(0)	14	(0)

### 4 Statistics of aircraft accident and serious incident investigations launched in 2014

The number of aircraft accident and serious incident investigations launched in 2014 included 17 aircraft accidents, up six cases from 11 cases for the previous year, and four aircraft serious incidents, down four cases from eight cases for the previous year.

By aircraft category, four of the accidents involved large aeroplanes and five other cases concerned small aeroplanes, while two ultralight planes, one helicopter and five gliders were involved in the remaining cases. The aircraft serious incidents included one case involving large aeroplane, one case involving small aeroplane, and two cases involving helicopters.

Number of investigated aircraft accidents and serious incidents by aircraft category in 2014



In the 17 aircraft accidents, the number of casualties was 31, consisting of two deaths and 29 injured persons.

## Statistics of number of casualties (aircraft accident)

(Persons)

2014							
Aircraft category	Dead		Missing		Injured		Total
	Crew	Passengers and others	Crew	Passengers and others	Crew	Passengers and others	
Large aeroplane	0	0	0	0	12	9	21
Small aeroplane	1	1	0	0	4	1	7
Ultralight plane	0	0	0	0	2	0	2
Helicopter	0	0	0	0	0	0	0
Glider	0	0	0	0	1	0	1
Total	1	1	0	0	19	10	31
	2		0		29		

## 5 Summaries of aircraft accidents and serious incidents which occurred in 2014


The aircraft accidents and serious incidents which occurred in 2014 are summarized as follows: The summaries are based on information available at the start of the investigations and therefore, may change depending on the course of investigations and deliberations.

(Aircraft accidents)

1	Date and location		Operator	Aircraft registration number and aircraft type
	February 12, 2014 On the runway of Nagasaki Airport, Nagasaki Prefecture		Oriental Air Bridge Co., Ltd.	JA801B Bombardier DHC-8-201 (large aeroplane)
	Summary	The aircraft took off from Nagasaki Airport, conducted consecutive touch-and-go training 6 times, then landed at the airport. The touchdown was slightly strong in the 4th touch-and-go training. External skins in the front of the fuselage, etc. sustained substantial damage.		
2	Date and location		Operator	Aircraft registration number and aircraft type
	March 5, 2014 Near Sasabara Town, Toyota City, Aichi Prefecture		Private	JA3853 Cessna 172M Ram (small aeroplane)
	Summary	<p>During the flight over Toyota City, Aichi Prefecture, after taking off from Nagoya Airfield for flight training, the aircraft collided with a tower for high voltage power transmission lines, which is located in Oosawa, Sasabara Town, Toyota City.</p> <p>A captain and a passenger were on board the aircraft, and both of them suffered fatal injuries. The aircraft was destroyed and scattered.</p>		



Left wing

3	Date and location		Operator	Aircraft registration number and aircraft type
	April 29, 2014 At an altitude of approximately 3,300m near Tsukuba City, Ibaraki Prefecture		J-AIR Co.,Ltd.	JA211J Embraer ERJ170-100STD (large aeroplane)
	Summary	During the flight after taking off from Yamagata Airport, the aircraft was shaken near the location referred to above. Two cabin attendants sustained injuries.		
4	Date and location		Operator	Aircraft registration number and aircraft type
	May 6, 2014 On the runway of Shikabe Airfield, Shikabe Town, Hokkaido Prefecture		Private	JA2529 Scheibe SF25C (motor glider)
	Summary	The aircraft bounced upon landing at Shikabe Airfield and stopped on the runway after sustaining substantial damage to the propeller, nose landing gear, etc. The pilot sustained injuries.		
5	Date and location		Operator	Aircraft registration number and aircraft type
	May 12, 2014 In the forest near Iizaka-cho, Fukushima City, Fukushima Prefecture		Private	JA111L Extra EA300/L (small aeroplane)
	Summary	The aircraft took off from Fukushima Sky Park Temporary Air Field in Fukushima City, Fukushima Prefecture. The aircraft made a forced landing near the location referred to above during landing approach to the Temporary Air Field. Left main wing, etc. sustained substantial damage. Two persons on board sustained injuries.		
6	Date and location		Operator	Aircraft registration number and aircraft type
	June 14, 2014 Kinugawa Gliding Field, Utsunomiya City, Tochigi Prefecture		Private	JA25CH Scheibe SF25C (motor glider)
	Summary	The aircraft took off from the above gliding field with one pilot while towing a glider. When the aircraft was landing at the gliding field after towing completed, the aircraft hit a winch towing line, which was falling after being detached from another glider. The aircraft sustained substantial damage.		
7	Date and location		Operator	Aircraft registration number and aircraft type
	June 15, 2014 Near Kitami District Temporary Operation Site (for Agricultural Use), Kitami City, Hokkaido Prefecture		Non-profit Organization Aero Sports Kitami	JA2523 PZL-Bielsko SZD-50-3 "Puchacz" (glider)
	Summary	Refer to "6 Statistics of published aircraft accident and serious incident investigation reports" (No.9, P15)		
8	Date and location		Operator	Aircraft registration number and aircraft type
	July 26, 2014 Temporary helipad, Toba City, Mie Prefecture		Private	JA44AT Robinson R44 II (rotorcraft)
	Summary	When the aircraft changed the direction on the hovering in order to land at the above temporary helipad, the tail boom hit a tree. The tail boom, etc. broke off and fell.		
9	Date and location		Operator	Aircraft registration number and aircraft type
	July 27, 2014 Koya, Kounosu City, Saitama Prefecture		Private	JR1096 Beaver RX550-R503L (ultralight plane)

	Summary	Refer to “6 Statistics of published aircraft accident and serious incident investigation reports” (No.13, P17)		
10		Date and location	Operator	Aircraft registration number and aircraft type
		August 17, 2014 Near runway of Fujigawa Gliding field, Shizuoka Prefecture	Private	JA2549 PZL-Bielsko SZD-51-1 junior (glider)
	Summary	During landing approach to Fujigawa Gliding field after taking off from the gliding field, the aircraft undershot in a garden short of the runway. The aircraft sustained substantial damage.		
11		Date and location	Operator	Aircraft registration number and aircraft type
		August 24, 2014 Haramamuro, Kounosu City, Saitama Prefecture	Private	JR1603 Quicksilver MXL II Top-R582L (ultralight plane)
	Summary	Immediately after taking off from a temporary airfield in Kounosu City, Saitama Prefecture, the aircraft crashed in a fallow garden. The pilot sustained injuries.		
12		Date and location	Operator	Aircraft registration number and aircraft type
		September 12, 2014 At an altitude of approximately 4,900m, about 95km southeast of Gimpo International Airport (Korea)	Japan Airlines Co., Ltd.	JA654J Boeing 767-300 (large aeroplane)
	Summary	While descending toward Gimpo International Airport after taking off from Tokyo International Airport, the aircraft was shaken near the above location. Seven cabin attendants sustained injuries.		
13		Date and location	Operator	Aircraft registration number and aircraft type
		October 12, 2014 On the runway of Chofu Airfield, Tokyo Prefecture	Private	JA59FB Piper PA-28R-201T (small aeroplane)
	Summary	The aircraft made a belly landing when it landed at Chofu Airfield after taking off from Akita Airport. The aircraft sustained substantial damage.		
14		Date and location	Operator	Aircraft registration number and aircraft type
		October 12, 2014 Near Nishikata, Ibusuki City, Kagoshima Prefecture	TDL AERO	N176CD Cirrus SR20 (small aeroplane)
	Summary	During the flight after taking off from Saipan, the engine stopped. The aircraft crashed near the above location. The pilot sustained injuries.		
15		Date and location	Operator	Aircraft registration number and aircraft type
		November 8, 2014 Kirigamine Gliding Field, Suwa City, Nagano Prefecture	Suwa City Glider Association	JA2320 Alexander Schleicher ASK18 (glider)
	Summary	The aircraft launched from Kirigamine Gliding Field with winch towing, but the speed did not increase. The aircraft released the tow line at 3-4m AGL and made a touchdown on the rough ground in the middle of the gliding field. On the touchdown, the aircraft sustained substantial damage.		
16		Date and location	Operator	Aircraft registration number and aircraft type
		November 16, 2014 Kitakyushu Airport, Fukuoka Prefecture	Private	JA4017 Mooney M20K (small aeroplane)
	Summary	When the aircraft landed at Kitakyushu Airport after taking off from Yamaguchi Ube Airport, it deviated from the runway. Then the aircraft crashed into the revetment and sustained		



		substantial damage. The pilot and one passenger sustained injuries.	
17	Date and location	Operator	Aircraft registration number and aircraft type
	December 16, 2014 At an altitude of approximately 8,200m between Komatsu City, Ishikawa Prefecture, and Daigo-machi, Kuji-gun, Ibaraki Prefecture	American Airlines, Inc.	N751AN Boeing 777-200 (large aeroplane)
	Summary	During the flight toward Dallas/Fort Worth International Airport (U.S.) after taking off from Incheon International Airport (Korea), the aircraft was shaken near the above location. Three cabin attendants and nine passengers sustained injuries. The aircraft diverted to Narita International Airport, declared an emergency, and landed at Narita International Airport.	

## (Aircraft serious incidents)

1	Date and location	Operator	Aircraft registration number and aircraft type
	April 28, 2014 During Landing approach to Naha Airport, Okinawa Prefecture	Peach Aviation Limited	JA802P Airbus A320-214 (large aeroplane)
	Summary	During landing approach to Naha Airport after taking off from New Ishigaki Airport, the aircraft experienced abnormal descending. Therefore, the aircraft made a go-around as an emergency avoidance maneuver. Its enhanced ground proximity warning system issued a warning. After the go-around, the aircraft landed at Naha Airport.	
2	Date and location	Operator	Aircraft registration number and aircraft type
	August 12, 2014 On the runway of Iki Airport, Nagasaki Prefecture	Private	JA344T Robinson R44 II (rotorcraft)
	Summary	When the aircraft landed at Iki Airport after taking off from Saga Airport, the aircraft landed at the runway, which was closed due to vehicles on the runway for cleaning work.	
3	Date and location	Operator	Aircraft registration number and aircraft type
	September 20, 2014 Near Runway 03R of Hyakuri Airfield, Ibaraki Prefecture	New Central Airservice	JA4184 Cessna 172P (small aeroplane)
	Summary	While landing to Hyakuri Airfield after taking off from the airfield for sightseeing, the aircraft attempted to land on another runway which was closed for working near the runway, instead of the runway instructed by the air traffic controller. The aircraft conducted a go-around on instructions from the air traffic controller.	
4	Date and location	Operator	Aircraft registration number and aircraft type
	October 9, 2014 Komoro City, Nagano Prefecture	Shin Nihon Helicopter Co., Ltd.	JA6741 Aerospatiale AS332L1 (rotorcraft)
	Summary	During the flight with external cargo toward Asamayama Kazankan, where the cargo was scheduled to be unloaded, after taking off from a temporary helipad in Tsumagoi Village, Agatsuma-gun, Gunma Prefecture, a part (one door, aluminum material, approximately 180cm×80cm×3cm, approximately 5-6kg) of the cargo (bio-toilet) dropped near the above location.	

## 6 Statistics of published aircraft accident and serious incident investigation reports

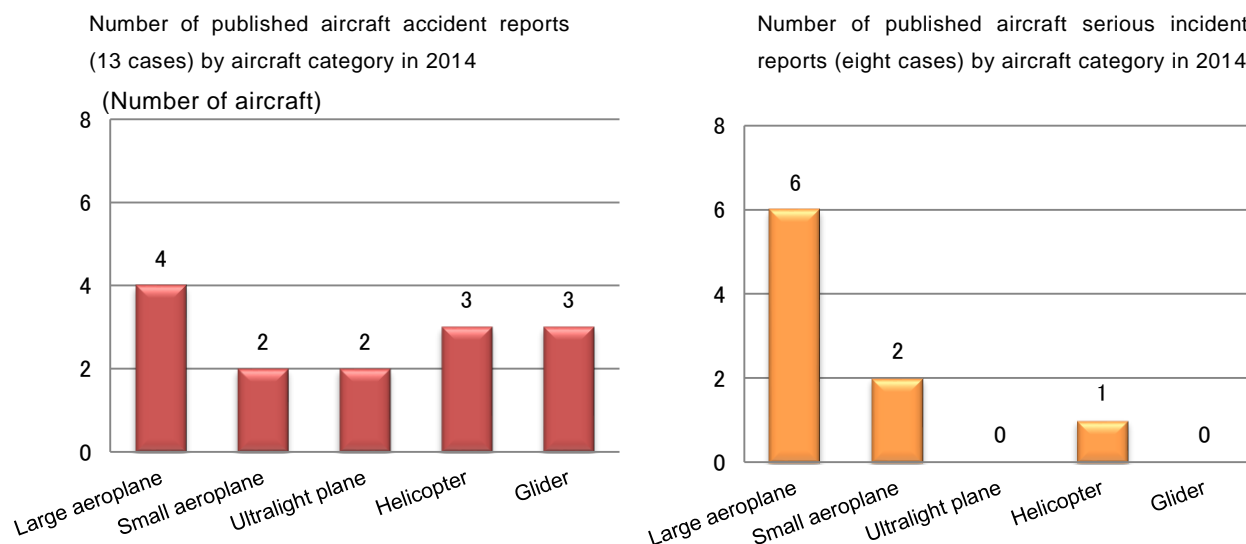
The number of investigation reports of aircraft accidents and serious incidents published in 2014 was 21, consisting of 13 aircraft accidents and eight aircraft serious incidents.



Looking at those accidents and serious incidents by aircraft category, the accidents involved four large aeroplanes, two small aeroplanes, two ultralight planes, three helicopters and three gliders. The aircraft serious incidents involved six large aeroplanes, two small aeroplane, and one helicopter.

Note: In aircraft accidents and serious incidents, two or more aircraft are sometimes involved in a single case. See details on Pages 11-23.

In the 13 accidents, the number of casualties was 15, consisting of one death, and 14 injured persons.



The investigation reports for aircraft accidents and serious incidents published in 2014 are summarized as follows:

List of published investigation reports on aircraft accidents (2014)

1	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	January 31, 2014	July 5, 2012 At an altitude of approx. 22,000ft (6,700m) about 160km north-northeast of Tokyo International Airport	Korean Airlines Co., Ltd.	HL7473 Boeing 747-400 (large aeroplane)
	Summary	While descending from the cruising altitude toward Tokyo International Airport from Gimpo International Airport (Korea), the aircraft was shaken at the altitude of approximately 22,000ft (6,700m) approximately 160km north-northwest of Tokyo International Airport (Mt. Yamizo in Fukushima Prefecture (approximately 20km east of Nasushiobara)). One passenger who was standing in aisle was thrown off-balance and sustained injuries. The aircraft continued to fly afterward and landed in Tokyo International Airport.		
	Probable Causes	It is highly probable that this accident occurred because the aircraft was shaken as it encountered turbulence during a descent, causing one passenger who was not in his seat to be thrown off-balance to sustain serious injuries. It is probable that the turbulence was caused by VWS (Vertical Wind Shear) or unstable atmospheric conditions where convective clouds developed.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/HL7473.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/HL7473.pdf</a>		

2	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	January 31, 2014	September 15, 2012 Kawashima Temporary Helipad Kujukuri Town, Sanbu Gun, Chiba Prefecture	Private	JA120H Eurocopter EC120B (rotorcraft)
	Summary	The aircraft, which was parked on the grass, rolled over to the right rearward during its transition to take off from the above temporary helipad. Two passengers sustained injuries.		
	Probable Causes	In this accident, the helicopter rolled over to the right pivoting around the right skid rear end which was trapped by the grass roots during its transition to take off from the grass helipad and sustained damage. It is highly probable that the pilot's following actions contributed to the occurrence: he raised the collective pitch unintentionally when he tried to wiggle the helicopter to confirm the skid restraints applying rudder inputs, as he sensed the slight rigidity of skids when the helicopter was light on the skids before liftoff.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA120H.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA120H.pdf</a>		
3	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	May 30, 2014	November 26, 2012 At an altitude of approx. 36,000ft (10,900m) above Fujinomiya City, Shizuoka Prefecture	Japan Airlines Co., Ltd.	JA610J Boeing 767-300 (large aeroplane)
	Summary	During the flight at the altitude of 36,000ft (10,900m) from Narita International Airport to Shanghai Pudong International Airport (China), the aircraft was shaken above Fujinomiya City, Shizuoka Prefecture. One passenger, who had left his seat, lost his body's balance and sustained injuries. The aircraft continued to fly afterward and landed in Shanghai Pudong International Airport. There was no substantial damage to the aircraft.		
	Probable Causes	It is highly probable that this accident occurred because the aircraft encountered the turbulence and was shaken at the cruising altitude of 36,000 ft. This shaking caused one of the passengers who had been away from his seat to lose his body's balance and to sustain serious injuries. It is probable that the turbulence the aircraft encountered was caused by the large VWS formed in a temporally and spatially limited narrow range due to the strong southerly warm wind which flowed into the developing front side of the Low.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA610J.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA610J.pdf</a>		
4	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	June 27, 2014	June 9, 2013 Yanagita Town, Utsunomiya City, Tochigi Prefecture	Private	JR1003 Ultralight Aircraft Challenger II-R503L (ultralight plane)
	Summary	During the solo flight around a temporary airfield in Yanagita Town, Utsunomiya City, Tochigi Prefecture, the aircraft flew away from the traffic pattern, hit a power pole, and crashed. The pilot sustained injuries.		
	Probable Causes	It is probable that the accident occurred as the aircraft crashed after its right main wing collided with a power pole because it became difficult for the pilot to control the aircraft due to the wind effect. The maneuverability of the aircraft gradually lowered as the aircraft's speed reduced. It is probable that the aircraft's deceleration was caused by the fact that the pilot reduced power and continued flying as well as the fact that the pilot failed to confirm the speed because he was concentrated on		



		maneuver of the control stick.		
	Report	<a href="http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2014-3-1-JR1003.pdf">http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2014-3-1-JR1003.pdf</a>		
5	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	June 27, 2014	December 31, 2013 On sea surface near the Kouri Bridge, Nago City, Okinawa Prefecture	ILAS Air Service Co., Ltd.	JA106Y Robinson R44 II (rotorcraft)
	Summary	<p>The aircraft performed sightseeing flights from Kouri-jima temporary helipad in Kouri island, Nakijin-son, Okinawa prefecture. It crashed into the sea surface near the Kouri Bridge in Nago City, Okinawa Prefecture.</p> <p>The pilot and two passengers sustained injuries.</p>		
	Probable Causes	<p>It is highly probable that the accident occurred as the helicopter during sightseeing flight descended at excessive speed and descent rate until close to sea surface, the captain misjudged the altitude over calm and high degree of transparency sea surface, delayed the transition from descent to climb, crashed into sea surface and the helicopter was destroyed.</p> <p>Regarding the helicopter descended at excessive speed and descent rate until close to sea surface, it is highly probable that the Standard Operation Procedures which described detailed flight procedure in the Company were not provided and flight procedure of each flight operation was left to the captain's discretion. Moreover, the captain did not try to follow the laws and regulations and significantly lacked safety considerations.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA106Y.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA106Y.pdf</a>		
6	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 25, 2014	August 21, 2012 At an altitude of approx. 40,000ft over Matsue City, Shimane Prefecture	Asiana Airlines. Inc.	HL8258 Airbus A330-300 (large aeroplane)
	Summary	<p>The aircraft took off from Honolulu International Airport, the United States of America, for Incheon International Airport, the Republic of Korea, as a scheduled flight 231. While flying at approximately 40,000 ft over Matsue City, Shimane Prefecture, the aircraft was shaken. Two passengers were seriously injured and one passenger was slightly injured.</p> <p>There were 221 people on board, consisting of the PIC, 14 other crew members and 206 passengers.</p> <p>The aircraft was not damaged.</p>		
	Probable Causes	<p>It is highly probable that in this accident, serious injury was sustained by a passenger walking in the rear aisle due to the severe shaking of the aircraft, and that serious injury was sustained by another passenger seated nearby when the passenger removed the seat belt in order to help the injured passenger, the aircraft shook severely again at that moment.</p> <p>It is probable that the initial severe shaking of the aircraft was a result of the aircraft passing through or nearby cumulonimbus, due to the PIC and the R Captain failing to notice that the weather radar was off, and encountering atmospheric disturbances with severe changes in wind direction and speed coupled with strong updrafts. It is possible that the next shaking of the aircraft may have been influenced by the PIC's control operations after disengaging the A/P to stabilize the aircraft.</p> <p>It is probable that the reason for the PIC and the R Captain failing to notice that the weather radar was off was that their monitoring of the weather conditions and instruments was insufficient.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/HL8258.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/HL8258.pdf</a>		



7	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 25, 2014	September 23, 2013 Osaki, Yachiyo City, Chiba Prefecture	Private	JA3492 Fuji Heavy Industries FA-200-160 (small aeroplane)
	Summary	<p>During the flight over Yachiyo City, Chiba Prefecture, at the altitude of 1,500ft after taking off from Otone Temporary Airfield located in Inashiki County, Ibaraki Prefecture, for sightseeing, the engine of the aircraft stopped and the aircraft made an emergency landing in a harvested rice field in Osaki, Yachiyo City, Chiba Prefecture, after the engine stopped.</p> <p>The pilot and three other passengers were on board the aircraft.</p> <p>One person sustained injuries, and the aircraft sustained substantial damage.</p>		
	Probable Causes	<p>It is highly probable that this accident occurred due to the check valve mounted between the left fuel tank and the sump tank of the aircraft becoming stuck in the closed position, resulting in the consumption of fuel only from the right fuel tank, leading to an engine stop due to interruption of the fuel supply by depletion of the fuel in the right fuel tank, compelling the making of the emergency landing, and resulting in damage to the aircraft during said emergency landing.</p> <p>It is somewhat likely that the left check valve became stuck in the closed position due to both age-related degradation of the left check valve and the presence of foreign substances, but this could not be determined.</p> <p>It is somewhat likely that misinterpretation of the asymmetrical consumption of the fuel during the preflight check as a temporary and ordinary phenomenon contributed to the accident.</p>		
Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA3492.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA3492.pdf</a>			
8	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 25, 2014	September 14, 2013 In the air, approx. 300m over Menuma Gliding Field, Kumagaya City, Saitama Prefecture	Private (Glider A)	JA22WP Rolladen-Schneider LS4-B (glider)
			Private (Glider B)	JA22RW Alexander Schleicher ASK21 (glider)
	Summary	<p>The JA22WP launched from Runway 14 in Gliding field No. 1 of Menuma Gliding field in Kumagaya-City, Saitama Prefecture for the gliding competition, and JA22RW in the launching process at Gliding field No. 2 in Menuma Gliding field for the flight training, came into contact in the mid-air, and JA22WP was substantially damaged, while JA22RW sustained a minor damage.</p> <p>A pilot was on board JA22WP, and a flight instructor and a trainee pilot were on board JA22RW, but no one was injured.</p>		
Probable Causes	<p>It is highly probable that this accident occurred when JA22WP, launched from Gliding field No. 1 for the gliding competition, came into contact with climbing JA22RW, by flying diagonally across the airspace over the adjacent Gliding field No. 2, where JA22RW was in the launching process.</p> <p>It is highly probable that the reason why the JA22WP flew diagonally across the airspace above the adjacent Gliding field No. 2, where JA22RW was in the launching process, was that the Pilot of JA22WP had become preoccupied with finding a thermal in order to achieve an advantage in the gliding competition, and had lacked awareness to avoid flying into the airspace over the adjacent Gliding field.</p> <p>Furthermore, it is somewhat likely that the cause for the Pilot of JA22WP to lack</p>			




The Aircraft



		the awareness to avoid flying into the airspace above the adjacent Gliding field was attributed to the fact that a standard practice, advising the launched glider to avoid flying into the airspace over the adjacent Gliding field, was not specified in any regulations.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA22WP_JA22RW.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA22WP_JA22RW.pdf</a>		
9	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 25, 2014	June 15, 2014 Near the Kitami District Temporary Operation Site (For Agricultural Use), Kitami City, Hokkaido	Non-Profit Organization Aero Sports Kitami	JA2523 PZL-Bielsko SZD-50-3 Puchacz (glider)
	Summary	The glider, which was boarding the pilot only, undershot when landing to Kitami District Temporary Operation Site (for Agricultural Use) located in Kitami City, Hokkaido Prefecture. The aircraft collided with a metallic fence and a bank and sustained substantial damage.		
	Probable Causes	In this accident, it is probable that the glider was not corrected to appropriate approach path by using dive brakes and lowered approach path during an approach, subsequently collided with the fence and the bank at the west side of airfield and sustained damage.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA2523.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA2523.pdf</a>		
10	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 30, 2014	August 18, 2012 Otone Airfield, Kawachi Town, Inashiki-gun, Ibaraki Prefecture	Private	JA3814 Cessna 172N Ram (small aeroplane)
	Summary	The aircraft took off from the Otone Airfield for a familiarization flight. During a touch and go attempt back at the airfield, the aircraft bounced on the first touchdown and after the ensuing landing the aircraft ran obliquely resulted in running off the runway. The aircraft became airborne again and struck one of the workers mowing grass on the south side of the runway. The worker suffered fatal injuries. On board the aircraft were the Captain and three passengers, none of whom was injured. The aircraft sustained substantial damage, but there was no outbreak of fire.		
	Probable Causes	It is highly probable that in this accident, the aircraft veered off the runway at the Otone Airfield during a touch and go attempt, striking a worker who was mowing grass. With regard to deviation of the aircraft from the runway, it is highly probable that it was because the Captain moved the throttle lever to full open for takeoff concurrently with operating the left rudder to correct the direction of the landing roll, and that the Captain's maneuver was caused the aircraft to abruptly swerve to the left, which is the characteristic of the single-engine propeller airplane with a propeller rotating clockwise, and that the Captain could not take appropriate corrective actions. With regarding to the Captain's failure to correct the deflection of the aircraft, it is somewhat likely that the Captain was upset by the bouncing and other factors after the ensuing landing. In addition, it is somewhat likely that the Captain did not have well-established capability to successfully handle in such the situations as something unexpected happened to him or something made the Captain temporally and psychologically pressed. Moreover, it is somewhat likely that the weight and the location of the center of gravity, which were both beyond the operating limitations, had an adverse effect on the characteristic and maneuverability of the aircraft.		
				
				



	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA3814.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA3814.pdf</a>		
11	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	November 27, 2014	March 16, 2013 Yamamoto, Asanamihara, Matsuyama City, Ehime Prefecture	Private	JA23TN Robinson R22 Beta (rotorcraft)
	Summary	<p>The aircraft took off from a temporary operation site in Fukuyama City, Hiroshima Prefecture, for a leisure flight en route to Matsuyama Airport. The aircraft was damaged during a forced landing near Asanamihara, Matsuyama City, Ehime Prefecture, after the captain noticed an abnormality in the engine RPM.</p> <p>The captain and one passenger were on board the aircraft, and the captain suffered a minor injury.</p> <p>The aircraft was destroyed, but there was no outbreak of fire.</p>		
	Probable Causes	<p>It is probable that when the engine/rotor RPM increased while cruising to the destination airport, the captain could not deal with the situation, which led him to aim for a bamboo grove to make a forced landing, and that the airframe was damaged at the time.</p> <p>It is probable that the reason the captain could not deal with the situation is because he decided that the cause of the rotor over-speeding was that the engine was over-speeding and out of control, without confirming the engine/rotor RPM from the indication of the tachometer.</p> <p>It is somewhat likely that the reason the engine/rotor RPM increased involved the power switch of the alternator being in the off position for some reason and there being no power supply from the alternator, which caused the master battery power to be consumed leading to a lack of the power supply required to operate the governor, which in turn caused the operation of the governor to be suspended. However, because it was not possible to identify when the alternator switch became in the off position, it could not be determined why the RPM increased.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA23TN.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA23TN.pdf</a>		
12	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 18, 2014	March 31, 2012 On Runway 34L of Tokyo International Airport	Japan Airlines Co., Ltd.	JA701J Boeing 777-200 (large aeroplane)
	Summary	<p>The aircraft took off from Shanghai Hongqiao International Airport and approached Runway 34L of Tokyo International Airport. When the aircraft made go-around after touching down on the runway, the lower part of its aft fuselage made contact with the runway, and then damaged the airframe. Afterwards, the aircraft landed at Tokyo International Airport.</p> <p>There were 308 people on board, consisting of a Pilot-In-Command (PIC), 11 crew members, and 296 passengers, but nobody sustained injuries.</p> <p>The aircraft sustained substantial damage, but there was no outbreak of fire.</p>		
Probable Causes	<p>In this accident, it is highly probable that the aircraft continued rolling with the pitch-up attitude after touchdown, causing the aft fuselage to come into contact with the runway and be damaged.</p> <p>It is highly probable that the aircraft continued rolling with the pitch-up attitude due to the following reasons: after touchdown, the PIC had felt that the aircraft had bounced to the extent necessary for go-around, and judged to make go-around to avoid a hard landing, even after he became aware that the reverse thrust levers had been raised, he continued go-around; hence, it took time for the engine thrust to increase and he continued to pull his control column. Moreover, it is somewhat likely that, in a situation in which the PIC had been assisting the control of</p>			
				

		the FO, and without the PIC's declaring a takeover, the intention of the PIC was not properly conveyed to the FO, the sharing of duties between PF (Pilot mainly in charge of flying) and PM (Pilot mainly in charge of duties other than flying). became momentarily unclear, and the monitoring of flight information such as pitch angle and speed, which was the duty of PM, was not performed adequately.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA701J.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA701J.pdf</a> <a href="http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2014-8-1-p.pdf">http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2014-8-1-p.pdf</a> (Explanatory material)		
13	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 18, 2014	July 27, 2014 Koya, Kounosu City, Saitama Prefecture	Private	JR1096 Beaver RX550-R503L (ultralight plane)
	Summary	<p>During the familiarization flight over Fukiage Temporary Airfield located in Kounosu City, Saitama Prefecture, the aircraft crashed in the grass field outside of the Temporary Airfield when it attempted to perform a go-around.</p> <p>One pilot was on board the aircraft.</p> <p>The pilot sustained injuries, and the aircraft was destroyed.</p>		
	Probable Causes	<p>It is probable that this accident occurred, while performing a go-around, the pilot pedaled the left rudder hard when he increased the engine output in the nose-up attitude at a low speed close to stall speed, which made the aircraft suddenly rolled to the left and losing the altitude and resulted in a crash.</p> <p>It is probable that the pilot pedaled the left rudder hard in the nose-up attitude at a low speed closing to stalling speed because he tried to avoid colliding with a trailer for aircraft storage.</p> <p>It is probable that the aircraft approached the trailer because the pilot could not appropriately control the aircraft, which drifted to the right direction after being exposed to strong cross wind from the right. It is also probable that the maneuver of the go-around was affected by the fact that the trailer was placed in the area where there should be no obstacle.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2014-8-2-JR1096.pdf">http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2014-8-2-JR1096.pdf</a>		




## List of published investigation reports on aircraft serious incidents (2014)

1	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	January 31, 2014	November 25, 2012 Satsuma-Iojima Airfield, Mishima-mura, Kagoshima Prefecture	Private	JA3689 Fuji Heavy Industries FA-200-180 (small aeroplane)
	Summary	<p>When the aircraft landed at the above Airfield, the left brake became ineffective. The aircraft veered off the runway to the right as the captain intentionally pedaled the right brake hard, and it came to a halt upside down on the meadows.</p> <p>One passenger sustained injuries.</p>		
	Probable Causes	<p>It is highly probable that this serious incident occurred when the left brake became ineffective, and the aircraft ran off the runway to the right as the captain intentionally applied the right brake hard, and came to a halt after tumble in the meadows, and thus became unable to taxi by itself.</p> <p>It is highly probable that the left brake system became ineffective because the O-ring of the left master cylinder in the brake system was worn out, and the master cylinder could not maintain sealing capability and could not sufficiently</p>		





		<p>transmit the brake fluid pressure to the brake linings. It is possible that the wear of the O-ring was caused from aging deterioration.</p>		
	Recommendations	<p>Recommendations to Fuji Heavy Industries Ltd. (January 31, 2014)</p> <p>In the Fuji Heavy Industries FA-200 series aircraft, the O-ring of the master cylinder in the brake system is to be replaced if found defective when the master cylinder is disassembled and visually inspected at the 1,000hrs check. However, an O-ring tends to expand when soaked in hydraulic fluid, and in addition, the O-ring becomes hardened when pressured and may have wear or damage which is hard to recognize visually. Therefore, it is recommended to consider that the O-ring should be replaced when the master cylinder is disassembled and usable duration of the O-ring should be established.</p>		
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA3689.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA3689.pdf</a></p>		
2	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 25, 2014	June 30, 2013 Ryugasaki Airfield in Handa Town, Ryugasaki City, Ibaraki Prefecture	Private	JA3919 Piper PA-28-161 (small aeroplane)
	Summary	<p>When the aircraft landed at the above Airfield, it could not stop within the runway and stopped in a grass overrun area.</p> <p>No one sustained injuries, and there was no damage to the aircraft.</p>		
	Probable Causes	<p>It is probable that the serious incident occurred because the airplane overran the runway due to the inadequate way of using the brakes, in addition to landing with making the touchdown point farther away.</p> <p>As for landing with making the touchdown point farther away, it is probable that deceleration became insufficient due to the operation of correcting the lifted path.</p> <p>Moreover, it is somewhat likely that the existence of a tailwind component against the airplane became a factor of the lifted path and the increase in the LGRD.</p>		
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA3919.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA3919.pdf</a></p>		
3	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	June 27, 2014	October 12, 2011 On Runway 06R at Kansai International Airport	Hawaiian Airlines (Aircraft A)	N588HA Boeing 767-300 (large aeroplane)
			All Nippon Airways Co., Ltd. (Aircraft B)	JA8356 Boeing 767-300 (large aeroplane)
	Summary	<p>N588HA was holding short of Runway 06R at Kansai International Airport for takeoff as the scheduled flight 450 of the company for Honolulu International Airport (in the State of Hawaii in the United States), while JA8356 was on final approach to Runway 06R of Kansai International Airport as the scheduled (cargo) flight 8519 of the company.</p> <p>When an arriving aircraft passed in front of N588HA that had been holding, the air traffic controller instructed N588HA again to hold, and then cleared JA8356 to land. However, N588HA entered the runway and, as a result, JA8356 made a go-around following the instructions of the air traffic controller.</p> <p>There were 208 people on board N588HA, consisting of a Pilot in Command (PIC), 11 other crewmembers and 196 passengers, while two people on board JA8356, consisting of a PIC and another crewmember. No one was injured on either aircraft and no damage was sustained to the two aircraft.</p>		
	Probable Causes	<p>It is probable that this serious incident occurred as a departing aircraft</p>		
				

		<p>(N588HA) entered a runway despite the fact that it had been instructed to continue holding short of the runway, leading to an arriving aircraft (JA8356), which was cleared to land after the instruction to N588HA, attempting to land on the same runway.</p> <p>It is probable that N588HA entered the runway because the flight crewmembers of the aircraft incorrectly heard the instruction to continue holding as an instruction to hold on the runway and misunderstood whereas the Controller assumed that his instruction was correctly understood by N588HA and did not request clarification despite the fact that the readback from N588HA did not match the phraseology of the original instruction.</p> <p>It is probable that the following contributed to the mishearing of the instruction by the flight crewmembers.</p> <ol style="list-style-type: none"> <li>(1) The words included in the instruction were the same as those previously used in the U.S. to instruct aircraft to hold on the runway.</li> <li>(2) The crewmembers were expecting that the next instruction from the Tower would be for them to hold on the runway.</li> <li>(3) The instruction to hold was issued to N588HA, which had been holding short of the runway, just when an arriving aircraft passed in front of them.</li> <li>(4) The crewmembers thought that they would be able to take off before JA8356 landed.</li> </ol> <p>It is probable that the following contributed to the Controller's assuming the instruction to be understood by N588HA.</p> <ol style="list-style-type: none"> <li>(1) The Controller did not know that the phraseology used in the readback was previously used in the U.S. to instruct aircraft to hold on the runway.</li> <li>(2) The readback included the same words that were used in the instruction.</li> </ol>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/N588HA_JA8356.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/N588HA_JA8356.pdf</a>		
4	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 25, 2014	September 6, 2011 At an altitude of 41,000ft, approx. 69nm east of Kushimoto, Wakayama Prefecture	Air Nippon Co., Ltd.	JA16AN Boeing 737-700 (large aeroplane)
	Summary	<p>The aircraft nosedived after having an unusual attitude (upset) at an altitude of 41,000 ft about 69 nm east of Kushimoto while flying from Naha Airport to Tokyo International Airport as the scheduled flight 140 of the All Nippon Airways Co., Ltd.</p> <p>There were 117 people on board the aircraft, consisting of the captain, the first officer, three cabin attendants and 112 passengers. Of these people, two cabin attendants sustained slight injuries.</p> <p>There was no damage to the aircraft.</p>		
	Probable Causes	<p>It is highly probable that this serious incident occurred in the following circumstances: During the flight, the first officer erroneously operated the rudder trim control while having an intention of operating the switch for the door lock control in order to let the captain reenter the cockpit. The aircraft attitude became unusual beyond a threshold for maintaining the aircraft attitude under the autopilot control. The first officer's recognition of the unusual situation was delayed and his subsequent recovery operations were partially inappropriate or insufficient; therefore, the aircraft attitude became even more unusual, causing the aircraft to lose its lifting force and went into nosedive. This led to a situation which is equivalent to "a case where aircraft operation is impeded."</p> <p>It is probable that the followings contributed to the first officer's erroneous operation of the rudder trim control while having an intention of operating the door lock control; he had not been fully corrected his memories of operation about the door lock control of the Boeing 737-500 on which he was previously on duty; the door lock control of the Boeing 737-500 series aircraft was similar to the rudder trim control of the Boeing 737-700 series aircraft in their placement, shape, size and operability. It is</p>		



		<p>somewhat likely that his memories of operation about the switch for the door lock control of the Boeing 737-500 aircraft had not been fully corrected because he failed to be fully accustomed with the change in the location of the switch for the door lock control. It is somewhat likely that this resulted from lack of effectiveness in the current system for determining the differences training contents and its check method, under which the Air Nippon Co., Ltd. and other airlines considered and adopted specific training programs to train pilots about how to operate the flight deck switches when their locations changed and the Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism reviewed and approved them. It is probable that the first officer's failure to properly manage tasks contributed to his erroneous operation of the rudder trim control.</p> <p>It is somewhat likely that the similarities between the switches for the door lock control and the rudder trim control in their operability contributed to the delay in his recognition of the erroneous operation. Moreover, he was excessively dependent on autopilot flight and he failed to be fully aware of monitoring the flight condition.</p> <p>It is somewhat likely that the first officer's recovery operations were partially inappropriate or insufficient because he was startled and confused on the occurrence of an unexpected unusual situation in which the stick shaker was activated during the upset recovery maneuver. It is somewhat likely that the followings contributed to his startle and confusion: he had not received upset recovery training accompanied with a stall warning and in unexpected situations, thereby he lacked the experience of performing duties in such situations before the serious incident, and he had not received upset recovery training at a high altitude.</p>
	<p>Recommendations</p>	<p>Recommendations to the Minister of Land, Infrastructure, Transport and Tourism (September 25, 2014)</p> <p>The Minister should study the possibility of making "upset recovery training" mandatory for the air transport services provider and urge them to implement this training at a high altitude upon considering defined flight envelope validated region of flight simulators. If necessary, they should also be urged to introduce a system to examine whether the recovery process is made outside the validated region.</p> <p>Moreover, guidance should be made to have airlines prepare scenarios for such training in which a stall warning and others will be simultaneously activated or in which an upset cannot be expected by trainees.</p> <p>It should be noted that measures based on this recommendation shall be implemented after an international trend over related matters is fully confirmed.</p> <p>Recommendations to All Nippon Airways Co., Ltd. (September 25, 2014)</p> <p>(1) Thorough Implementation of Basic Compliance Matters for Cases when Aircraft is Operated by a single pilot and Training to This End</p> <p>The preventive measures concerned, as described in the OM information published by Air Nippon Co., Ltd. and in The Flight ANA Group, should be thoroughly implemented for all flight crew members as specific and permanent basic compliance matters and they should be continuously trained to this end.</p> <p>(2) Implementation of High Altitude Upset Recovery Training Accompanied with Stall Warning and Other Events</p> <p>All Nippon Airways Co., Ltd. should implement "upset recovery training" at a high altitude upon considering defined flight envelope validated region of flight simulators. If necessary, All Nippon Airways Co., Ltd. should also introduce a system to examine whether the recovery process is made outside the validated region of flight envelope. Moreover, scenarios in which a stall warning and others will be simultaneously activated or in which an upset cannot be expected by trainees should be prepared for such training.</p>
	<p>Safety Recommendations</p>	<p>Safety Recommendations to the Federal Aviation Administration (FAA) (September 25, 2014)</p> <p>The aircraft designer and manufacturer shall study the need to reduce or eliminate the similarities between the rudder trim control and the switch for the door lock control of the Boeing 737 series aircraft, in terms of the shape, size and operability as mentioned in this report. In particular, it shall consider the effectiveness of changing</p>

		the shape and size of the rudder trim control to the design adopted for the rudder trim control for Boeing models other than those of the Boeing 737 series, in which the switch has a cylindrical shape about 50mm in diameter without a brim, so that the difference of the size and shape can be recognized only with a touch.		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA16AN.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA16AN.pdf</a> <a href="http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-4-2-p.pdf">http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-4-2-p.pdf</a> (Explanatory material) See 10 Summaries of major aircraft accident and serious incident investigation reports (case studies) (P.41)		
5	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 25, 2014	December 8, 2012 East end of the runway at Shonai Airport, Yamagata Prefecture	All Nippon Airways Co., Ltd.	JA57AN Boeing 737-800 (large aeroplane)
	Summary	<p>The aircraft took off from Tokyo International Airport as a scheduled Flight 899 of the above-mentioned company, and landed at Shonai Airport. The landing ended up a runway overrun and it came to a halt in a grass area.</p> <p>There were a total of 167 people on board, consisting of a PIC, five crew members, and 161 passengers.</p> <p>No one was injured, nor was there any damage to the aircraft.</p>		
	Probable Causes	<p>In the serious incident, it is highly probable that the overrun occurred as the aircraft failed to exert the expected braking force under the informed runway conditions after the landing.</p> <p>It is probable that the changed runway conditions due to snowfall and other elements near freezing temperature after the snow/ice measurement negatively affected the expected braking force.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA57AN.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA57AN.pdf</a>		
6	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 25, 2014	January 16, 2013 Takamatsu Airport, Kagawa Prefecture	All Nippon Airways Co., Ltd.	JA804A Boeing 787-8 (large aeroplane)
	Summary	<p>The airplane took off from Yamaguchi Ube Airport for Tokyo international Airport as its scheduled flight 692. When it was climbing through 32,000 ft over Shikoku Island, an EICAS message of battery failure came on accompanied by unusual smell in the cockpit. The airplane diverted to Takamatsu Airport and landed there.</p> <p>An emergency evacuation was executed using slides on T4 taxiway.</p> <p>Four passengers out of 137 occupants (the Captain, seven crewmembers and 129 passengers) suffered minor injuries during the evacuation.</p> <p>Although the main battery was damaged, it did not lead to a fire.</p>		
	Probable Causes	<p>The emergency evacuation was executed on Takamatsu Airport taxiway in the serious incident, which was a consequence of emergency landing deriving from the main battery thermal runaway during the airplane's takeoff climb.</p> <p>Internal heat generation in cell 6 very likely developed into venting, making it the initiating cell, resulting in cell-to-cell propagation and subsequent failure of the main battery. It is very likely that cell 6 internal heat generation and increased internal pressure caused it to swell, melt the surrounding insulation material and contact the brace bar creating a grounding path that allowed high currents to flow through the battery box. The currents generated arcing internal to the battery that contributed to cell-to-cell propagation consequently destroying the battery.</p>		



		<p>Cell 6 heat generation was probably caused by internal short circuit; however, the conclusive mechanism thereof was not identified.</p> <p>In the serious incident, the internal short circuit of a cell developed into cell heat generation, thermal propagation to other cells, and consequently damaged the whole battery. The possible contributing factors to the thermal propagation are that the test conducted during the developmental phase did not appropriately simulate the on-board configuration, and the effects of internal short circuit were underestimated.</p>		
	Safety Recommendations	<p>Safety Recommendations to the Federal Aviation Administration (FAA) (September 25, 2014)</p> <p>1. Actions to be taken by the Federal Aviation Administration</p> <p>(1) Provide instruction to airplane manufactures and equipment manufactures to perform equipment tests simulating actual flight operations.</p> <p>(2) Review the technical standards for lithium ion battery to ensure that the electric environment is appropriately simulated, and if necessary, amend the standards.</p> <p>(3) Review the lithium ion battery failure rate estimated during the 787 type certification, and if necessary, based on its result, review the lithium ion battery safety assessment.</p> <p>(4) Review the type certificate for its appropriateness on heat propagation risk.</p> <p>(5) Assess the impact of contactor opening after the cell vent on the flight operation and take appropriate actions, if necessary.</p> <p>2. Measures to Be Taken to Instruct The Boeing Company as a Designer and Manufacturer of the 787</p> <p>(1) Continue the study of internal short circuit mechanism considering the effects of non-uniform winding formation and other factors deriving from manufacturing process; and continue efforts to improve lithium ion battery quality and its reliability, reviewing the LIB operational conditions, such as temperature.</p> <p>(2) Improve BCU and contactor operations which are outside the design envelop.</p>		
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA804A.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA804A.pdf</a>  <a href="http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-4-3-p.pdf">http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-4-3-p.pdf</a>(Explanatory material)</p>		
7	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	November 27, 2014	June 4, 2011 Above Okushiri Airport, Hokkaido	Hokkaido Air System Co., Ltd.	JA03HC SAAB 340B (large aeroplane)
	Summary	<p>The aircraft took off from Hakodate Airport as a scheduled Flight 2891. During the approach to Runway 31 of Okushiri Airport, the aircraft executed a go-around and once started climbing, but it soon reversed to descend. Consequently, its flight crew became aware of the situation and executed an emergency operation to avoid crash to the ground.</p> <p>The aircraft flew back to Hakodate Airport, following some holdings over Okushiri Airport.</p> <p>There were a total of 13 persons on board: the Pilot-in-Command, the First Officer and a cabin attendant as well as 10 passengers, but no one was injured. In addition, there was no damage to the aircraft.</p>		
	Probable Causes	<p>In this serious incident, during the approach to Runway 31 of Okushiri Airport, the aircraft executed a go-around and once started climbing but it soon reverted to descend and came close to the ground. Consequently, flight crewmembers came to realize the situation and executed an emergency operation to avoid crash to the ground.</p> <p>It is highly probable that the aircraft's descent and approach to the ground was caused by the following factors:</p> <p>(1) The PIC followed the Flight Director command bar instructions, which indicated the descent because the altitude setting was not changed to the initial go around altitude, and subsequently the PIC made the aircraft descend even lower than the FD command bar instructions.</p> <p>(2) The PIC and the FO could not notice descending of the aircraft and their recovery maneuvers got delayed.</p> <p>It is highly probable that these findings resulted from the fact that the PIC could</p>		



		<p>not perform a fundamental instrument flight, the PIC and the FO used the autopilot/Flight Director System in an inappropriate manner without confirming the flight instruments and the flight modes, and the FO could not transiently carry out closer monitor of the flight instruments because of the other operations to be done.</p> <p>Moreover, it is probable that the FO's operation of engaging an autopilot and changing the vertical mode to make the aircraft climb by using the Autopilot/Flight Director System eventually became a factor to delay avoiding maneuvers against ground proximity.</p> <p>It is probable that the Company didn't create a standard procedure, reflecting the contents of Aircraft Operating Manual, for its crewmembers to confirm and call out the changes mode, without noticing its importance and didn't carry out adequate training. Furthermore, it is probable that the PIC and the FO excessively relied on the autoflight system.</p>		
	Recommendations	<p>Recommendations to Hokkaido Air System Co., Ltd. (November 27, 2014)</p> <p>(1) Calling out and confirming the mode change for sure Hokkaido Air System Co., Ltd. should make its flight crewmembers comply with the specifics of Airplane Operating Manual (confirmation and callouts of mode changes upon using the Autopilot/Flight Director system or on progress of automatic mode changes), as described in 2.13.4 without fail, and it should consider that Flight Training Guide shall be revised in some related matters.</p> <p>(2) Appropriate use of autoflight system and management of pilots' skill It is important for the Hokkaido Air System Co., Ltd. to increase the opportunities for training as well as utilizing simulator's session to improve raw data instrument skills. The Hokkaido Air System Co., Ltd. also should clarify the problems caused by excessive reliance on the autoflight system and consider to fully inform its flight crewmembers of specific countermeasures against them.</p>		
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA03HC.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA03HC.pdf</a>  <a href="http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-5-1-p.pdf">http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2014-5-1-p.pdf</a>(Explanatory material)</p>		
8	Date of publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 18, 2014	July 8, 2012 Japanese Red Cross Asahikawa Hospital Landing Field, Asahikawa City, Hokkaido	Aero Asahi Corp.	JA6911 McDonnell Douglas MD900 (rotorcraft)
	Summary	The aircraft diverted to Asahikawa Airport and landed at the Airport due to the fact that engine No.1 stopped immediately after taking off from the above Field.		
	Probable Causes	<p>It is probable that this serious incident occurred due to the severely damaged CT vane ring (at the six o'clock position) causing the hot sections to become severe overtemperature condition, leading to the CT blades becoming fractured and the PT blades downstream also becoming fractured .</p> <p>For the reason as to why the CT vane ring was severely damaged at the six o'clock position in comparison with the other positions, it is somewhat likely that the cracks that extended into the fillet radii of the vane, and/or cracks that converged at a point had formed, and that said cracks expedited the progress of the cracks. However, it was not possible to identify the cause of this as the CT vane ring had been burnt away.</p>		
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-air_report/JA6911.pdf">http://www.mlit.go.jp/jtsb/eng-air_report/JA6911.pdf</a>		

## 7 Summaries of recommendations and opinions

Summaries of recommendations and opinions for 2014 are as follows.

① Aircraft Serious incident involving privately owned Fuji Heavy Industries FA-200-180, registered JA3689.

(Recommended on January 31, 2014)

○Summary, Probable Causes and Recommendations of the Serious incident

See 「6 Statistics of published aircraft accident and serious incident investigation reports」 on Page 17 No.1

② Aircraft Serious incident involving Boeing 737-700, registered JA16AN, operated by Air Nippon Co., Ltd.

(Recommended on September 25, 2014)

○Summary, Probable Causes and Recommendations of the Serious incident

See 「Statistics of published aircraft accident and serious incident investigation reports」 on Page 19 No.4

③ Aircraft Serious incident involving SAAB 340B, registered JA03HC, operated by Hokkaido Air System Co., Ltd.

(Recommended on November 27, 2014)

○Summary, Probable Causes and Recommendations of the Serious incident

See 「Statistics of published aircraft accident and serious incident investigation reports」 on Page 22 No.7

④ Aircraft Serious incident involving Boeing 787-8, registered JA804A, operated by All Nippon Airways Co., LTD.

(Recommended on September 25, 2014)

○Summary, Probable Causes and Recommendations of the Serious incident

See 「Statistics of published aircraft accident and serious incident investigation reports」 on Page 21 No.6



## Column

### Participating in the Exercise for Underwater Recovery in Taiwan

#### Aircraft accident investigator

It has been a year since I was employed as an aircraft accident investigator. Since investigations of aircraft accidents are highly specialized work, they require expertise and experience regarding aircraft, including piloting, maintenance, air traffic control, weather, aeromechanics, designs, etc.

Investigations of aircraft accidents also use various investigation equipment, so we must be familiar with the use. Therefore, we, investigators aim to improve our accident investigation capabilities by undergoing various trainings and workshops.

In this column, I would like to introduce the “Exercise for Underwater Recovery”, which was held by the aircraft accident investigation organization “Aviation Safety Council (ASC)” of Taiwan, in June of 2014.

The Underwater Recovery is utilized to specify the location of aircraft when it crashes in the ocean, large river/lake, etc. in order to withdraw the black box and aircraft, etc. It is an international requirement for black boxes to equip a transmitter, which automatically transmits acoustic signals when they crash into water. In case an aircraft crash into water, it enables us to search for the location of the black box by using the acoustic signals transmitted by the transmitter. There are special signal receiver that can't be easily handled by anyone. In order to be able to accurately specify the location, we must undergo a certain amount of exercise. Although underwater accidents, in which the aircraft location cannot be specified, don't happen frequently, we cannot be in the condition where we don't know how to handle the receiver and are not able to conduct accident investigations in case of such accidents. Therefore, I attended the exercise held by the ASC and learned the operation procedures.

The training was held in the 3km radius sea area located north of the Taiwan island, off the coast of Bisha Fishing Port in Keelung City. A total of 18 investigators, including 13 investigators from Taiwan, 4 investigators from Singapore, and 1 investigator from Japan divided into 3 boats and specified the location of the training transmitter by using special signal receivers.

A training transmitter to simulate a black box that transmits the acoustic signal is somewhere underwater within this sea area. Each team records the locations of 12 check points, which were pre-arranged on the sea surface, in GPS and goes around the check points. At each check point, each team lowers the signal receiver under water to listen to the acoustic sound of the training transmitter. Simply put, a signal receiver is like an underwater microphone, which can change directions, with a handle about 1.5m long. When you slowly turn the handle while listening to the sound with the receiver, the sound becomes loudest in one direction. You record the direction of the microphone as well as the coordinate of the boat at the time, and you draw a line in the direction from which the sound was heard in the coordinate where the measurement is made. You repeat this process at each point, and where the lines cross each other is the location of the training transmitter. In reality, a program is included in a mobile PC, and the location is displayed on the PC screen when we enter the coordinates and directions.

The training is done by assigning and switching roles, including the measurement role, recording role, and role to guide the boat to the point. The exercise was hard, due to the work that I was



not used to as well as sea sickness, but I was able to specify the location of the training transmitter by cooperating with investigators of Taiwan. The fact that I was able to achieve the exercise goal while attempting to communicate with poor English skills resulted in great confidence. Aircraft accidents can occur anywhere in the world. We may have to investigate accidents in collaboration with foreign investigators. Unless we repeatedly confirm what is unclear and thoroughly discuss before the investigation, we wouldn't be able to smoothly conduct the accident investigation. Not only that, but it is also possible that time passes without making progress, resulting in we losing the trace of the accident. I hope to continue making efforts to better myself and utilize this experience in the future aircraft accident investigations.

## 8 Actions taken in response to recommendations in 2014

Actions taken in response to recommendations were reported with regard to three aircraft accidents and one aircraft serious incident in 2014. Summaries of these reports are as follows.

### ① Aircraft accident involving a privately owned Piper PA-46-350P (small aeroplane), registered JA701M (Recommended on September 28, 2012)

As a result of the investigation of an aircraft accident which occurred at Mt. Yago approximately 14km northeast of Kumamoto Airport on January 3, 2011, the JTSB published an investigation report and made recommendations to the Minister of Land, Infrastructure, Transport and Tourism on September 28, 2012. The Board received the following notice on the measures in response to the recommendations.

#### ○ Summary of the Accident

A privately owned Piper PA-46-350P, registered JA701M, took off from Kumamoto Airport at around 17:11 Japan Standard Time for Kitakyushu Airport and went missing on Monday, January 3, 2011. It was found on the south-southeast slope of Mt. Yago, 14 km northeast of the airport next day.

Two persons on board, a PIC and a passenger, suffered fatal injuries.

The aircraft was destroyed; however, no fire broke out.

#### ○ Probable Causes

It is highly probable that the aircraft collided with the mountain slope during its in-cloud post-takeoff climb with low climb rate on its VFR flight to Kitakyushu Airport from Kumamoto Airport, resulting in the aircraft destruction and fatal injuries of two persons on board—the PIC and the passenger.

It is somewhat likely that the contributing factor to in-cloud flight toward mountain slope with low climb rate is the PIC's lack of familiarization with terrain features near Kumamoto Airport; however, the JTSB was unable to clarify the reason.

#### ○ Recommendations

In order to prevent the accidents in in-cloud flight under Visual Flight Routes, Civil Aviation Bureau publicizes again the following contents to the pilot associations and also make them known to a pilot individual using the opportunities of the newly introduced system "Pilot Competency Assessment" (2012 MLIT Ordinance No. 22):

- Commence flying only when VMC is maintained all across the enroute based on the latest weather



Accident Aircraft



Accident Aircraft  
(At the accident site)

information.

- Prepare alternative plan in case of deteriorating weather while collecting weather information on enroute.
- Decide well in advance on returning to the departed airport or landing at a proper place.

○Actions Taken in Response to the Recommendations (notice)

While Japan Civil Aviation Bureau (JCAB) has been calling attention to the items, that are required to be publicized in the recommendation, hither to (Kokukuko No. 86, dated April 20, 2002, Kokukuko No. 359, dated August 2, 2012), JCAB has decided to newly prepare a pamphlet to encourage each pilot to re-acknowledge the hazard in in-cloud VFR flight based on the recent accident cases and to publicize this by distributing the pamphlet to pilots by using the opportunities such as “Pilot Competency Assessment”, etc.

Pamphlet distribution and publicizing methods are as follows:

1. JCAB has decided to confirm how to secure flight safety for VFR flight with examinees in the oral examination conducted by pilot competence examiners, who are certified according to the stipulations under Article 71-3-1 of the Civil Aeronautics Act (Act No. 231 of 1952) and to distribute the above pamphlet to examinees in the briefing after the examination.

There are 940 certified pilot competent examiners as of the end of November, 2013, and JCAB are scheduled to complete the pamphlet shipment to these examiners by the end of December of the same year.

2. JCAB has decided to utilize the opportunities of certification and periodical seminars for pilot competence examiners, which are held by Regional Civil Aviation Bureaus, to notify the response regarding the distribution of the above pamphlet to these examiners. Also JCAB has decided to request Regional Civil Aviation Bureaus to distribute the above pamphlet to all pilots belonging to air transport service operators that mainly perform VFR flight and issue notifications.

In addition, JCAB has decided to distribute the above pamphlet to pilots through airport offices, etc. that are managed by Regional Civil Aviation Bureaus when the opportunity presents itself.

3. JCAB has issued the Kokukuko No. 738, dated December 2, 2013 “Thorough accident prevention in VFR operation” (hereinafter referred to as “the Notice”) to the All Japan Air Transport and Service Association to notify regarding accident prevention of flight in cloud by VFR again. JCAB also requested member operators to cooperate with the activities promoted by JCAB.
4. JCAB has issued the Notice to the Japan Aircraft Pilot Association to notify regarding accident prevention of flight in cloud by VFR again. JCAB has also requested them to notify regarding the above pamphlet in seminars, etc. hosted by the Association and to encourage member pilot competence examiners to cooperate with the activities promoted by JCAB.

\*This notice, including materials, is published on the JTSB website:

[http://www.mlit.go.jp/jtsb/airkankoku/kankoku1re\\_140129.pdf](http://www.mlit.go.jp/jtsb/airkankoku/kankoku1re_140129.pdf)

- ② Aircraft accident involving a Beechcraft A36 (small aeroplane), registered JA4215, operated by the Obihiro Branch School of the Independent Administrative Institution Civil Aviation College  
(Recommended on December 20, 2013)

As a result of the investigation of an aircraft accident which occurred on the slope of Mt. Tsurugi in Memuro-cho, Kasai-gun, Hokkaido, on July 28, 2011, the JTSB published an investigation report and made recommendations to the Minister of Land, Infrastructure, Transport and Tourism and the Independent Administrative Institution Civil Aviation College as one of the parties relevant to the cause of the accident, on December 20, 2013. The Board received the following report (completion report) on the implementation of measures in response to the recommendations.

○ Summary of the Accident

On Thursday, July 28, 2011, a Beechcraft A36, registered JA4215, operated by the Obihiro Branch School of the Independent Administrative Institution Civil Aviation College, took off from Obihiro Airport for flight training at 09:11 Japan Standard Time. At around 09:22, when practicing basic instrument flight in the training and testing area, the airplane crashed into the slope of Mt. Tsurugi in Memuro-cho, Kasai-gun, Hokkaido.



Airplane of the same type

On board the airplane were four persons: an instructor who was captain, two students, and an instructor in educational and research flight. Three of them: the captain, one of the students, and other instructor suffered fatal injuries, and the remaining student sustained serious injury.

The airplane was destroyed and a post-crash fire broke out.

○ Probable Causes

It is highly probable that the accident occurred as follows: The airplane conducting VFR BIF training operated by a hooded student was instructed by his instructor to fly into the mountainous area; It then flew into clouds or close to the clouds that covered the mountains, losing sight of ground references and approached the ground very close against the instructor's expectation; The instructor took the controls from the student and attempted to evade the mountains, but the airplane failed to change its course to an appropriate direction and crashed into the slope of the mountain.

It is somewhat likely that the instructor flew close to or into the clouds which covered the mountain with some intention; however, his death denied us the clarification his intention.

It is somewhat likely that the basic safety policy of the College was not instilled into the field instructors, and that there was a gap in safety awareness between management and field instructors. It is also somewhat likely that behind the accident was a problem that involved the entire organization of the College—a work environment/organizational culture that consequently allowed unsafe

behaviors.

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

The Minister should grasp reliably the actual condition of efforts towards improvement of the safety management system of the College, check the implementation status whether such various safety measures set by the College based on the medium-term plans, etc. are carried out continuously and certainly by such as periodically audits in the field and provide more guidance depending on the results until the College becomes able to operate a safety management system autonomously and steadily. Moreover, in setting safety-related medium-term goals as prescribed in the Act on General Rules for Independent Administrative Agencies, the Minister should consider how the College's medium-term goals should be, such as setting specific goals to ensure that a safety culture is brewed and safety activity is implement surely and continuously, including reviewing in timely manner, based on the organizational climate cannot be built in a day but also it is brewed by daily ongoing activity.

○ Recommendations to the Independent Administrative Institution Civil Aviation College

(1) Review of the Training Procedures

In the accident, it is somewhat likely that the airplane of the College was into or close to clouds during VFR training, and that another instructor onboard the airplane gave no advice about this behavior.

The College should aim to create an opened educational environment that enables observer instructors and students to give advice on safety issues in the training airplane without hesitation if necessary. Therefore, it should also consider to introduce effective methods, such as utilizing of installed video cameras in the airplane, etc.

(2) Strengthening of the Safety Management System

The College should establish a system for grasping the actual condition of instructors' teaching methods and provide them with appropriate guidance and supervision.

The possible contributing factors to the accident occurrence are that the safety management of the College actually deviated from its philosophy in its Safety Management Regulations and that there was a gap in safety awareness between management and field instructors, creating a work environment/organizational culture that allowed unsafe acts—a problem that involved the entire organization.

Thus in order to prevent recurrence of such situation and brew and keep an appropriate organizational climate, the College needs to establish a safety management system with the commitment of the all personnel from the General Safety Manager to field instructors and to properly operate it with continued reviewing.

(3) Review of medium-term plans and other related plans

In order to make sure to carry out the initiatives recommended in (1) and (2) above and make them an integral part of its administration, the College should review the medium-term and annual



plans and reflect these initiatives on the plans.

○ Actions Taken by the Independent Administrative Institution Civil Aviation College in Response to the Recommendations (completion report)

(1) Review of the training procedures

The college aimed to create an opened educational environment that enables instructors and students to give advice without hesitation if necessary through the following initiatives and will continue making efforts to maintain/improve the appropriate environment in the future.

- The college has implemented education regarding assertions (necessary advice regarding safety) and provided clear guidance for instructors to create an environment where they can make assertions.
- The college has implemented education on CRM (Crew Resource Management: Refers to making efficient use of all available human resources, hardware, and information in order to ensure safe and efficient airplane operation).

In addition, the following measures were taken in order to be able to objectively comprehend and evaluate the training situation. With these measures, the college think that the training environment, in which instructors and students can give advice if necessary, has been sufficiently established, judging from the student questionnaire survey results, etc.

- Student questionnaire surveys were implemented after each flight to comprehend the training situation.
- The management conducted interviews with students regarding the training situation.
- Observation of flight training by the management has been enhanced.
- The college has strengthened the function to check inappropriate guidance by establishing regulations regarding harassment, etc. and strictly operating them.
- The college used GPS logger to confirm the flight route, etc. after each flight.
- The college has introduced a system to bring in and use IC recorders to record the sound within aircraft.

Video cameras are difficult to be installed for the time being, due to the facts that there is no equipment that has confirmed to be in compliance with the safety standards of small aeroplanes and that there is no installation method that has been deemed safe. The college will continue the investigation/consideration to consider whether or not installation is possible.

(2) Strengthening of the safety management system

In addition to the above (1), the college has been providing instructors with appropriate guidance and supervision by grasping the actual condition of instructors' teaching methods and promoting the establishment of the safety management system, appropriate operation of the system, and continuous review of the system, as follows:

- The college has assigned a person who had experience of aircraft accident investigation to the



position to assist the Safety Manager in order to comprehensively review its safety management system and took drastic safety measures.

- In addition to the enhancement of questionnaire surveys, etc. mentioned in (1), the college has established a group dedicated to receiving confidential incident reports with protecting reporters. Not only that, but the college also provide feedback based on the analyzed results, etc. In addition, the college also encourages people to submit confidential incident reports through safety month, etc.

- In order to develop a safety culture, the college periodically provides safety training by inviting external experts.

- The college has established the Joint Safety Committee in addition to each school's monthly Safety Committee meetings to periodically discuss/share safety issues and resolve them.

- General Safety Promotion Conference is periodically held to consider safety promotion. The college also prepares the annual safety operation plan and promote periodical safety audits, etc. based on the plan with the aim of maintaining/strengthening the safety management system.

- The college has made all staff/students read the entire Obihiro accident investigation report and held special lectures for students and staff.

- Based on the Safety Management Regulations, the college has reconfirmed that operations are appropriately conducted and has also confirmed that reported items based on the Safety Management Regulations are appropriately reported and appropriately considered/responded.

- The college has not only clarified that they would aim to promote safety based on the "establishment of a fair culture" within the Safety Management Regulations but also made it known to staff and students through posters, etc.

### (3) Review of medium-term plans and other related plans

The college has revised the third medium-term plan (FY2011 – 2015) and reflected the revision on the FY2014 plan.

\*The completion report is published on the JTSB website:

[http://www.mlit.go.jp/jtsb/airkankoku/kankoku5re\\_140528.pdf](http://www.mlit.go.jp/jtsb/airkankoku/kankoku5re_140528.pdf)

### ③ Aircraft serious incident involving a privately owned Fuji Heavy Industries FA-200-180 (small aeroplane), registered JA3689

(Recommended on January 31, 2014)

As a result of the investigation of an aircraft serious incident which occurred in Satsuma-Iojima airfield on November 25, 2012, the JTSB published an investigation report and made recommendations to Fuji Heavy Industries Ltd. as one of the parties relevant to the cause of the serious incident on January 31, 2014. The Board received the following report (completion report) on the implementation of measures in response to the recommendations.

○ Summary of the Serious Incidents, Probable Causes, and Description of the Recommendations

Refer to “6 Statistics of published aircraft accident and serious incident investigation reports” (Page 17 No.1).

○ Actions Taken in Response to the Recommendations (completion report)

- (1) “Consider that the O-ring should be replaced when the brake master cylinder is disassembled”

According to the service manual, the O-ring for brake master cylinder was supposed to be replaced every 1,000 hours as necessary. The

service manual was revised so that O-ring is replaced when the brake master cylinder is disassembled. The service manual was also revised so that the O-ring for other parts, which are required to be disassembled, is also replaced at the time of disassembly.

- (2) “Consider to establish the usable period of the O-ring for brake master cylinder”

Based on the flight time of FA-200, the usable period was established as 5 years.

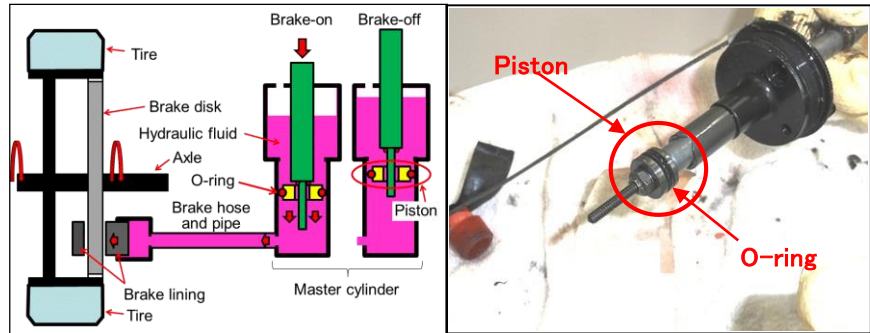
Although the O-ring for brake master cylinder was to be replaced every 1,000 hours as necessary according to the service manual, the service manual was revised so that it is replaced every 1,000 hours or 5 years, whichever comes first.

- (3) Other

Service bulletin was issued to ensure that O-rings of the aircraft in operation are replaced. Service news and the service bulletin were published on our special website for FA-200 (<http://www.fhi.co.jp/fa200/>).

\*The completion report is published on the JTSB website:

[http://www.mlit.go.jp/jtsb/airkankoku/kankoku5re\\_140528.pdf](http://www.mlit.go.jp/jtsb/airkankoku/kankoku5re_140528.pdf)



Schematic of brake system

Worn O-ring

④ **Aircraft accident involving a Eurocopter AS350B3 (rotorcraft), registered JA6522, operated by Shikoku Air Service Co., Ltd.**

(Safety Recommendation on June 28, 2013)

As a result of the investigation of an aircraft accident which occurred in Hiketa, Higashikagawa City, Kagawa Prefecture on September 22, 2011, the JTSB published an investigation report and made safety recommendations to the European Aviation Safety Agency (EASA) on June 28, 2013. The Board received the following responding report on the actions taken in response to the safety recommendations.

○ Summary of the Accident

On Thursday, September 22, 2011, a Eurocopter AS350B3, registered JA6522, operated by Shikoku Air Service Co., Ltd., took off from Takamatsu Airport at around 09:23 for power transmission lines inspection flight. A burnt smell and white smoke rose in the cabin during this flight, and at around 10:10, the helicopter made a forced landing at a baseball field located at Hiketa, Higashikagawa City, Kagawa Prefecture.

On board the helicopter were a pilot and two passengers, but none of them suffered injury.

After the forced landing, the helicopter caught fire and was destroyed.

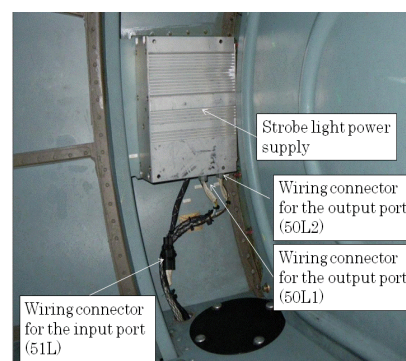
○ Probable Causes

In this accident, it is highly probable that a fire occurred in the rear hold of the Helicopter and the Helicopter made a forced landing.

Regarding a fire in the rear hold, it could not be identified the ignition source; nevertheless it is possible that a fire occurred from the wiring connected to the strobe light power supply, which was installed in the rear hold, and that it spread to inflammables placed around the power supply.

This is because the wiring was not designed and structured so that it was fully protected so as to prevent it from being damaged due to the movement of embarkation and preclude a risk of occurring a fire even if it was damaged or destroyed.

It is also possible that since it was not covered with nets to prevent its movement, embarkation in the rear hold damaged the wiring, which was not fully protected from damage due to the movement of the embarkation.



Installation of the strobe light power supply (on the type of helicopter)

- Safety Recommendations

- (1) Electrical equipment and its wiring in the baggage compartment

The EASA should make it mandatory to modify the rear hold of the Eurocopter AS350 series so that electrical equipment and its wiring are fully protected.

- (2) Manifestation of the matters which must be dealt with immediately by memory among the emergency procedures

In the Flight Manual of the Eurocopter AS350 Series, the EASA should urge the designer and manufacturer of the helicopter to specify the memory items among emergency procedures so that they can be performed immediately.

- Actions Taken in Response to the Safety Recommendations

On November 27, 2013, EASA issued the Airworthiness Directive 2013-0281 which supersedes the Airworthiness Directive 2011-0244-E and requires the installation of the protector assembly on the wiring and on the power supply unit of the position strobe light installation, thus providing a terminating action of the repetitive inspections and allowing any deactivated systems to be activated again.

\*The report (original) from the European Aviation Safety Agency (EASA) is published on the JTSCB website.

[http://www.mlit.go.jp/jtsb/airkankoku/anzenkankoku7re\\_140318.pdf](http://www.mlit.go.jp/jtsb/airkankoku/anzenkankoku7re_140318.pdf)

## 9 Provision of factual information in 2014

The JTSCB provided factual information on one case (one aircraft serious incident) to relevant administrative organs in 2014. The contents are as follows.

**① Aircraft serious incident involving a Cessna TU206G (small aeroplane), registered JA4000, operated by Honda Airways Co., Ltd.**

(Disseminated on June 11, 2014)

The JTSCB provided factual information regarding the aircraft serious incident involving a Cessna TU206G, which occurred on November 16, 2013, as follows to the Japan Civil Aviation Bureau, the Ministry of Land, Infrastructure, Transport and Tourism:

(Summary of the Serious Incident)

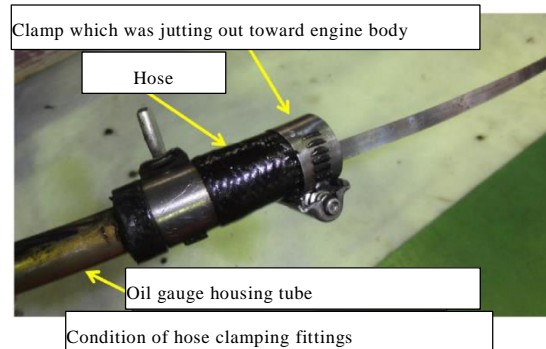
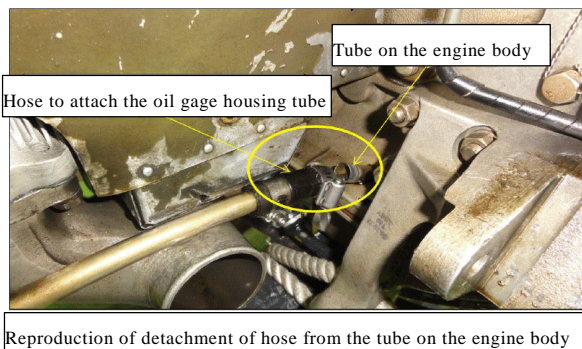
On Saturday, November 16, 2013, a Cessna TU206G (Continental TSIO-520-M7 engine), registered JA4000, operated by Honda Airways Co., Ltd., which had been heading to a photography

location over Noshiro City, Akita Prefecture for an aerial survey, experienced a low oil pressure, and then at about 11:43 Japan Standard Time, experienced engine halt; consequently, made a forced landing to the site of closed Akita Airport in Akita City, Akita Prefecture.

(Provision of factual information)

(1) The following items were clarified in the aircraft investigation into the serious incident:

- ① Hose for the oil gauge housing tube, which is part of the oil gauge used to measure the engine oil amount, was detached from the tube on the engine body.
- ② The fitting which clamps the hose connecting the oil gauge housing tube to the tube on the engine body was out of position; therefore, the clamp jutted out toward the engine body, and the hose connection came loose.



(2) When the engine manufacturer conducted the engine teardown examination, the following items were clarified.

- ① In the photo that was taken around the oil gauge housing after the serious incident, traces of oil splattering around the housing were confirmed.
- ② A test run was performed with the oil gauge housing tube detached from an engine of the same model. The results revealed leakage of oil around the housing.

\*This information dissemination is published on the JTSB website.

<http://www.mlit.go.jp/jtsb/iken-teikyo/JA206J20130606.pdf>



## Column

### Accident investigator training in a university overseas

#### Aircraft accident investigator

There is a university overseas where they teach methods of accident investigations.

The university is Cranfield University in the U.K. Cranfield University is located adjacent to Cranfield Airport, which is approximately 100km north-northwest of London.

Aircraft accident investigation training course of the university started in 1977, and a new 3-week fundamentals of accident investigation course, in which students learn accident investigation methods that are common for aircraft, railway, and marine, was opened in 2004.

In the aircraft accident investigation course, those who have completed the fundamentals of accident investigation course learn for another 3 weeks about specialized aircraft accident investigations.

In the fundamentals of accident investigation course, students learn about the fundamentals of accident investigations, such as investigation methods on accident sites, potential hazards on accident sites, effective interview methods, human factors, simulated investigation demonstrations outside, etc.

In the aircraft accident investigation course, students are required to actually practice what they learned in the lectures of the fundamentals of accident investigation course. As the photo shows, mock accident aircraft, parts, and pieces are arranged by the university staff to simulate accident sites.

Accident sites may have a collision depression that is assumed to have been made by accident aircraft or tree branches that are assumed to have been cut by the accident aircraft, etc.

Students investigate the simulated accident sites to collect evidence while collaborating within the team. They prepare accident investigation reports while actually interviewing witnesses, who suddenly show up at accident sites, and responding to the media (students are not informed prior to the occasion), etc. They ultimately receive detailed evaluations from teachers with great experience.

Several railway and marine accident investigators from the JTSB attend the fundamentals of accident investigation course, and several aircraft accident investigators attend the fundamentals of accident investigation course and the aircraft accident investigation course every year.

24 people from over six countries attended the fundamentals of accident investigation course, which started in February of this year, and 15 people attended the aircraft accident investigation course,





which started in February after the other course.

Over 50% of the students are accident investigators from various countries, and the rest are airline company employees, aircraft manufacturer employees, and engine manufacturer employees.

## 10 Summaries of major aircraft accident and serious incident investigation reports (case studies)

## Crashed into sea surface during sightseeing flights

Robinson R44II, registered JA106Y, operated by ILAS Air Service Co., Ltd.

**Summary:** On Tuesday, December 31, 2013, the aircraft crashed into sea surface near Kouri Bridge while performing sightseeing flights using Kouri-jima temporary helipad in Kouri island, Nakijin-son, Okinawa prefecture, at around 15:48 Japan Standard Time.

Onboard the aircraft were a pilot and two passengers, and all three of them suffered serious injuries.

The aircraft was destroyed and sank to the sea bed.

## Findings

According to the moderate wind at the time of the accident and high degree of transparency sea surface vicinity of the accident site in the area where billows didn't enter from the open sea, it is highly probable that decision of altitude by visual sense was extremely difficult because discrimination between the sea surface and the sea bed was difficult.

It is highly probable that the captain try to descend at about 120 kt until they could see the Kouri bridge, the highest point height is 25 m (about 83 ft) from sea surface (Nearly Highest High-water Level), just beside, for special service to the passengers. According to the Safety Notice, low altitude flight is very dangerous, not to mention the flight at excessive speed and descent rate until close to sea surface is extreme in hazard. It is highly probable that the captain's action significantly lacked safety considerations.

It is probable that the captain tried to fly 150 m away from Kouri bridge to keep the minimum safety altitude (※1). However, it is highly probable that the helicopter had away only about 70 m from the bridge when it crashed into sea surface. To observe strictly the minimum safety altitude by visual sense, the pilot must fly with enough margin of separation from obstacles. Though the flight altitude is above 500 ft (150 m) in the operation plan for this sightseeing flight, it is highly probable that the captain did not try to follow this restriction.

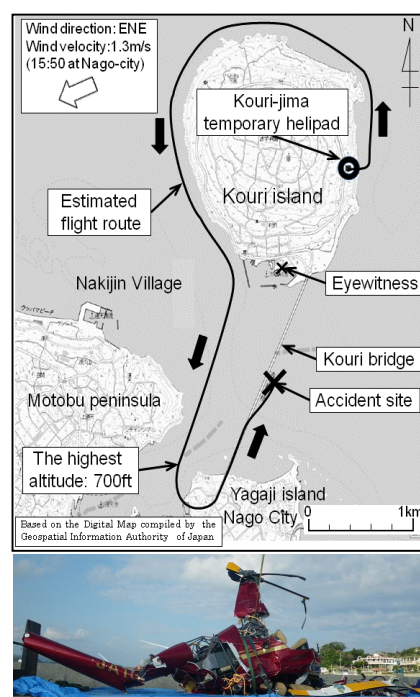
※1 "minimum safety altitude" in the Civil Aeronautics Act is an altitude at which an aircraft can continue flight while maintaining a distance of 150 meters or more from persons or objects on the ground or on water in the case of above an area without human beings or houses. (Omitted)

## Rescue

The helicopter did not equip with a lifeboat which shall be onboard in this accident flight. It is highly probable that the situation was dangerous that could result in loss of human life without rescue activities properly and quickly by the witness and the rescuer. Emergency equipment to be equipped with an aircraft in accordance with the provisions of regulations shall be onboard without fail.

**Probable causes:** It is highly probable that the accident occurred as the helicopter during sightseeing flight descended at excessive speed and descent rate until close to sea surface, the captain misjudged the altitude over calm and high degree of transparency sea surface, delayed the transition from descent to climb, crashed into sea surface and the helicopter was destroyed.

Regarding the helicopter descended at excessive speed and descent rate until close to sea surface, it is highly probable that the Standard Operation Procedures which described detailed flight procedure were not provided in the Company and flight procedure of each flight operation was left to the captain's discretion. Moreover, the captain did not try to follow the laws and regulations and significantly lacked safety considerations.



For details, please refer to the investigation report. (Published on June 27, 2014)

[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA106Y.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA106Y.pdf)

## Runway excursion during landing after sightseeing flights

Fuji Heavy Industries FA-200-180, registered JA3689, privately owned

**Summary:** On Sunday, November 25, 2012, when making a landing in Satsuma-Iojima Airfield in Mishima-mura, Kagoshima Prefecture, the aircraft veered off the runway and advanced through meadows with horizontal attitude; and then the aircraft came to a halt upside down after making a slow tumble just before a halt at around 11:40 Japan Standard Time.

Onboard the aircraft were a pilot and three passengers, and one passenger sustained minor bruising to the head.

The aircraft was slightly damaged with one of the propeller blades bending rearwards, etc.

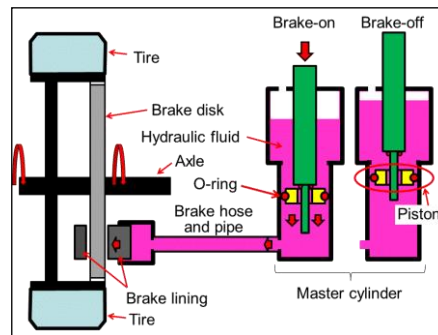
### Findings

It is probable that the captain could not anticipate the left brake would become ineffective as he performed brake check during taxiing and found normal function before take-off and the left brake was effective just after touch-down. It is highly probable that the left brake became ineffective at the landing and the aircraft ran off the runway to the right as the captain intentionally applied the right brake hard, and then the nose wheel was tackled by the meadows and the aircraft came to a halt after tumble.

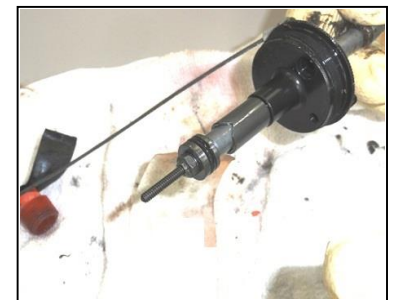


Serious incident aircraft

Since the wear of a rubber-made O-ring (mounted on the piston to prevent fluid leaks) in the left master cylinder of the brake system was confirmed, it is highly probable that the left brake system became ineffective because the master cylinder could not maintain sealing capability and brake fluid pressure could not be sufficiently transmitted to the brake linings.



Schematic of brake system



Worn O-ring

In the record of the 1,000hrs check performed on October 2011, the check mark indicating to have carried out the replacement was recorded on the check item which instructs to replace the O-ring as necessary. However, it is highly probable that the O-ring had not been replaced at the time of this check, in consideration of the fact that the O-ring of the left master cylinder was worn out enough to result in the hydraulic fluid leaks although this serious incident occurred after about a year and only about 46 flight hours since the last check, and that there is no requirement in the service manual to replace the O-ring in the case of no defect, and that there was no record of the O-ring name which is to be recorded when replaced. (Total flight time: 3,804hrs. 19min)

**Probable causes:** It is highly probable that this serious incident occurred when the left brake became ineffective, and the aircraft ran off the runway to the right as the captain intentionally applied the right brake hard, and came to a halt after tumble in the meadows, and thus became unable to taxi by itself.

It is highly probable that the left brake system became ineffective because the O-ring of the left master cylinder in the brake system was worn out, and the master cylinder could not maintain sealing capability and could not sufficiently transmit the brake fluid pressure to the brake linings.

It is possible that the wear of the O-ring was caused from aging deterioration.

For details, please refer to the investigation report. (Published on January 31, 2014)

[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA3689.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA3689.pdf)

## Nosedived from upset during flight

Boeing 737-700, registered JA16AN, operated by Air Nippon Co., Ltd.

**Summary:** On Tuesday, September 6, 2011, the aircraft operated by Air Nippon Co., Ltd., nosedived after having an unusual attitude (upset) at around 22:49 Japan Standard Time (JST: UTC+9hr, unless otherwise stated all times are indicated in JST) at an altitude of 41,000 ft about 69 nm east of Kushimoto while flying from Naha Airport to Tokyo International Airport as the scheduled flight 140 of the All Nippon Airways.

There were 117 people on board the aircraft, consisting of the captain (hereinafter referred to as “the PIC”), the first officer (hereinafter referred to as the FO”), three cabin attendants (hereinafter referred to as “the CAs”) and 112 passengers (including one infant). Of these people, two cabin attendants sustained slight injuries.

There was no damage to the aircraft.

### Findings

It is probable that the followings contributed to the first officer’s erroneous operation of the rudder trim control (rudder trim SW ※1) while having an intention of operating the door lock control (door lock selector) when the PIC tried to reenter the cockpit after using the restroom; he had not been fully corrected his memories of operation about the door lock control of the Boeing 737-500 on which he was previously on duty; the door lock control of the Boeing 737-500 series aircraft was similar to the rudder trim control of the Boeing 737-700 series aircraft in their placement, shape, size and operability.

※1 “rudder trim control (rudder trim SW)” is a switch to be operated to shift the rudder neutral position either to the left or to the right.

The results of the flight simulator examination indicate that the upset occurred because the FO did not quickly recognize his erroneous operation.

It is probable that the following factors were responsible for his delayed recognition:

(1) Similarities in the operability of the Both Switches

Because the operations of two switches are similar -- they must be held at the rotated positions --, it is somewhat likely that the FO felt nothing unusual in continuously holding the wrong switch when he was operating the Rudder Trim SW while having an intention of operating the Door Lock Selector.

(2) Monitoring of flight conditions

It is somewhat likely that the FO was excessively dependent on autopilot flight and he failed to be fully aware of monitoring the flight condition.

It is probable that the following factors contributed to this:

(1) Upset Recovery Training

The FO did not receive upset recovery training accompanied with a stall warning and in an unexpected situation; accordingly, the upset which suddenly occurred and the activation of the stick shaker (※2) during recovery operation were the first such event for the FO to experience. Therefore, it is somewhat likely that the FO got startled and confused on the unusual situation.

(2) High altitude Upset Recovery Training

Because the FO did not receive upset recovery training at a high altitude, it is somewhat likely that he was startled and confused on the activation of the stick shaker.

※2 “stick shaker” is a typical stall warning system. This system shakes the Column to warn the pilot that the aircraft is going to be stalled.

**Probable causes (Excerpt):** It is highly probable that this serious incident occurred in the following circumstances: During the flight, the FO erroneously operated the Rudder Trim SW while having an intention of operating the Door Lock Selector in order to let the PIC reenter the cockpit. The aircraft attitude became unusual beyond a threshold for maintaining the aircraft attitude under the autopilot control. The FO’s recognition of the unusual situation was delayed and his subsequent recovery operations were partially inappropriate or insufficient; therefore, the aircraft attitude became even more unusual, causing the Aircraft to lose its lifting force and went into nosedive. This led to a situation which is equivalent to “a case where aircraft operation is impeded.”



Rudder Trim SW operation



Unusual attitude (demonstration)

For details, please refer to the investigation report. (Published on September 25, 2014)

[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA16AN.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA16AN.pdf)



## Emergency evacuation after emergency landing at Takamatsu Airport (malfunction of main battery)

Boeing 787-8, operated by All Nippon Airways Co., LTD., registered JA804A

**Summary:** On Wednesday, January 16, 2013, the aircraft operated by All Nippon Airways Co., LTD., registered JA804A, took off from Yamaguchi Ube Airport for Tokyo international Airport at 08:11 local time as its scheduled flight 692. When it was climbing through 32,000 ft over Shikoku Island, an EICAS message of battery failure came on at 08:27 accompanied by unusual smell in the cockpit. The airplane diverted to Takamatsu Airport and landed there at 08:47.

An emergency evacuation was executed using slides on T4 taxiway at 08:49.

Four passengers out of 137 occupants (the Captain, seven crewmembers and 129 passengers) suffered minor injuries during the evacuation.

Although the main battery was damaged, it did not lead to a fire.

### Findings

Judging from the deformation observed in the CT scan image, the FDR main battery voltage value, Kakuda test results in November, 2013, and the battery damage, the cell vented (※1) first was very likely cell 6.

※1 “vent” denotes that pressure within a cell causes safety valve to be ruptured.

Possible major causes for battery heat generation are overcharging, over-discharging, external short circuit, cell case short circuit, and internal short circuit. The FDR records and battery damage suggest that the possible cause of battery heat generation is, among other things, internal short circuit.

Fluctuating charging currents and transient peak voltage are observed on 787 battery system, it is possible that these electric transient or other factors combined may have affected the lithium metal deposition leading to an internal short circuit.

We have three possible candidates for interior short circuit: lithium metal deposition in the cell, metal piece contamination, and damaged separator. Given the fact that all similar battery incidents (※2) occurred in January, during cold season, among three candidates, lithium metal deposition deriving from charging under cold conditions could have existed. However, it is unlikely that lithium metal deposition was the sole causal factor of the internal short circuit leading to venting. It is possible that these electric transient or other factors combined may have affected the lithium metal deposition leading to an internal short circuit.

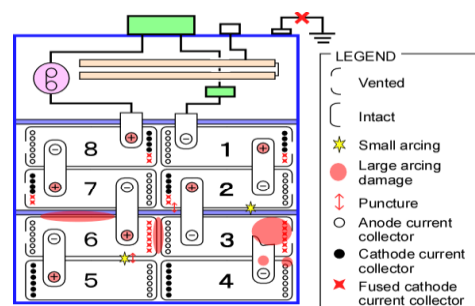
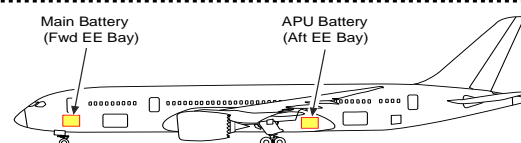
※2 “Three similar battery incidents” are Takamatsu event, Boston event (on January 7, 2013), and Narita event (on January 14, 2014).

**Probable causes:** The emergency evacuation was executed on Takamatsu Airport taxiway in the serious incident, which was a consequence of emergency landing deriving from the main battery thermal runaway during the airplane’s takeoff climb.

Internal heat generation in cell 6 very likely developed into venting, making it the initiating cell, resulting in cell-to-cell propagation and subsequent failure of the main battery. It is very likely that cell 6 internal heat generation and increased internal pressure caused it to swell, melt the surrounding insulation material and contact the brace bar creating a grounding path that allowed high currents to flow through the battery box. The currents generated arcing internal to the battery that contributed to cell-to-cell propagation consequently destroying the battery.

Cell 6 heat generation was probably caused by internal short circuit; however, the conclusive mechanism thereof was not identified.

In the serious incident, the internal short circuit of a cell developed into cell heat generation, thermal propagation to other cells, and consequently damaged the whole battery. The possible contributing factors to the thermal propagation are that the test conducted during the developmental phase did not appropriately simulate the on-board configuration, and the effects of internal short circuit were underestimated.



Main battery damage

For details, please refer to the investigation report. (Published on September 25, 2014)

[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA804A.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA804A.pdf)

## Emergency operation to avoid collision with the terrain

SAAB 340B, registered JA03HC, operated by Hokkaido Air System Co., Ltd.

**Summary:** On Saturday, June 4, 2011, the aircraft 340B, registered JA03HC, operated by Hokkaido Air System Co., Ltd., took off from Hakodate Airport as a scheduled Flight 2891. During the approach to Runway 31 of Okushiri Airport, the aircraft executed a go-around and once started climbing, but it soon reversed to descend. Consequently, at around 11:38 Japan Standard Time, its flight crew became aware of the situation and executed an emergency operation to avoid crash to the ground.

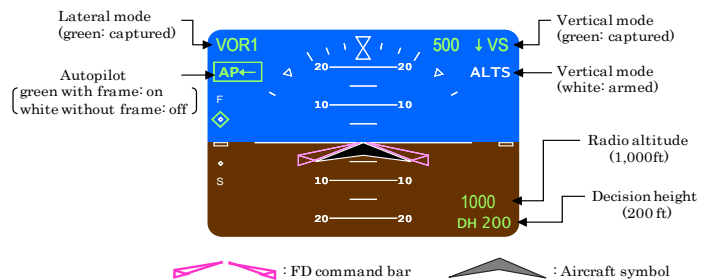
The aircraft flew back to Hakodate Airport, following some holdings over Okushiri Airport.

There were a total of 13 persons on board: the Pilot-in-Command, the First Officer and a cabin attendant as well as 10 passengers, but no one was injured. In addition, there was no damage to the aircraft.

### Findings

It is possible that the PIC had to push the control column forward to control the nose up tendency accompanying engine power increase for go-around, and while feeling something uncomfortable about the FD command bar, he actually followed its directions. Therefore, it is highly probable that the PIC eventually made the Aircraft descend without his intention.

It is highly probable that the PIC could not perform a fundamental instrument flight at this time.



### EADI (Electronic Attitude Director Indicator)

the attitude indication symbol of aircraft, the FD command bar to show pitch and roll command signals

The FO could not closely monitor the instruments transiently and did not realize that the Aircraft was descending. It is probably involved that the Aircraft was accelerating, and the FO had already checked the initial climb state immediately after executing the go-around operation and the FO assumed that the Aircraft would climb as usual.

But they don't always need to follow AOM and it might be only necessary for them to call out the mode as long as they can. AOM also urges both PF and PM to confirm the mode indication and call it out while using the AP/FD system, but the corresponding part of FTG does not necessarily require them to do so. Accordingly, the relevant descriptions were vague and inconsistent. Based on the findings, it is probable that the procedures of mode confirmation and callout as well as importance of these procedures had not been specified as standard procedures of the Company in a manner of reflecting AOM, and education and training for these procedures were not sufficient.

It is highly probable that the PIC and the FO failed in their basic confirmation and monitoring practices in using the autoflight system of the Aircraft.

The Company should consider reviewing the contents of its education and training programs so that its flight crewmembers may fully understand the basic principles of the autoflight system without fail. It is probable that the PIC and the FO excessively relied on the autoflight system.

**Probable causes (Excerpt):** In this serious incident, during the approach to Runway 31 of Okushiri Airport, the Aircraft executed a go-around and once started climbing but it soon reverted to descend and came close to the ground. Consequently, flight crewmembers came to realize the situation and executed an emergency operation to avoid crash to the ground.

It is highly probable that the Aircraft's descent and approach to the ground was caused by the following factors:

- (1) The PIC followed the Flight Director command bar instructions, which indicated the descent because the altitude setting was not changed to the initial go around altitude, and subsequently the PIC made the Aircraft descend even lower than the FD command bar instructions.
- (2) The PIC and the FO could not notice descending of the Aircraft and their recovery maneuvers got delayed.

It is highly probable that these findings resulted from the fact that the PIC could not perform a fundamental instrument flight, the PIC and the FO used the Autopilot/Flight Director System in an inappropriate manner without confirming the flight instruments and the flight modes, and the FO could not transiently carry out closer monitor of the flight instruments because of the other operations to be done.

For details, please refer to the investigation report. (Published on November 27, 2014)

[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA03HC.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA03HC.pdf)