

Chapter 3 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 paragraph 1 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

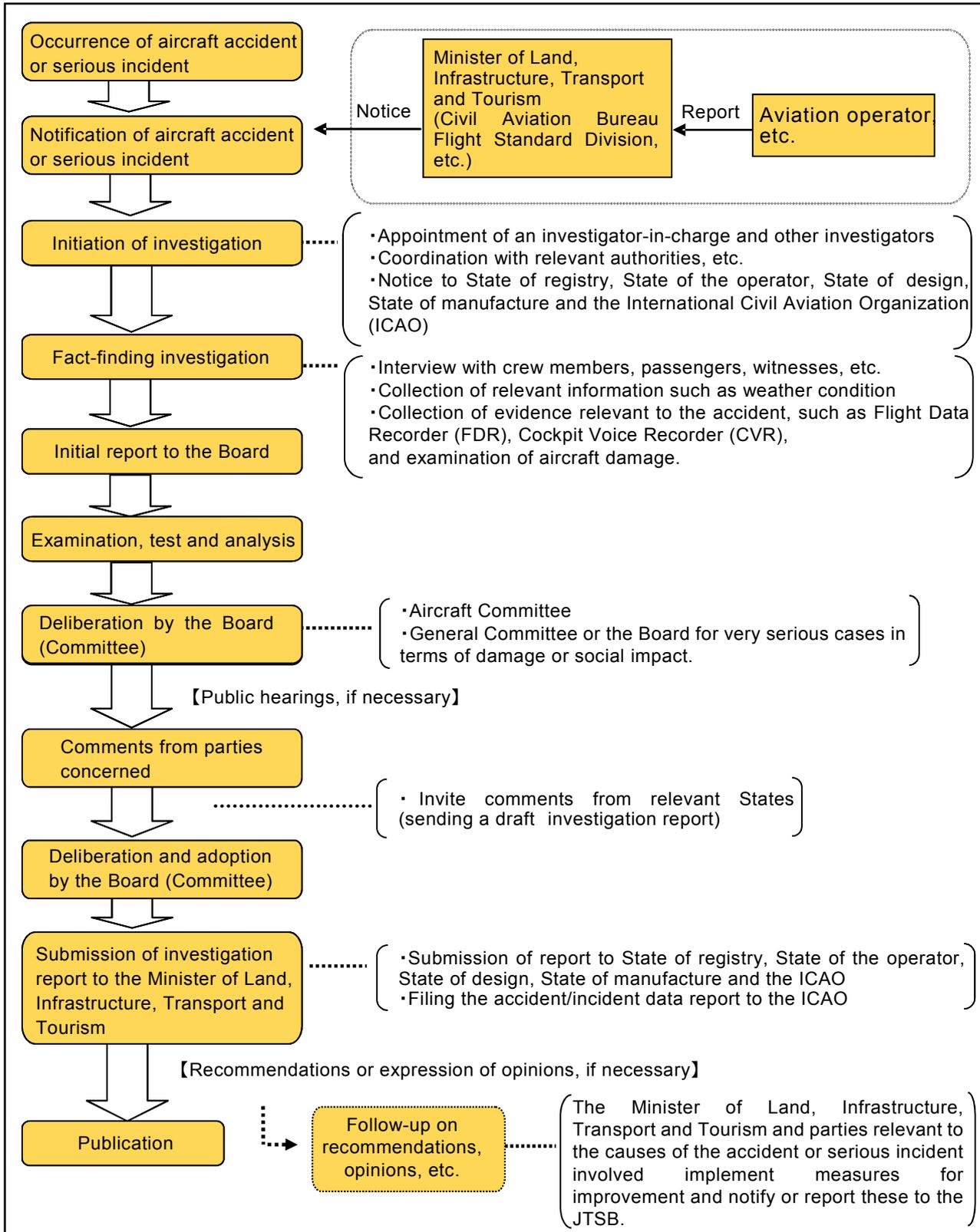
- When the pilot in command has recognized during flight that there was a danger of collision or contact with any other aircraft.

- 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 2017 as follows:

17 accident investigations had been carried over from 2016, and 20 accident investigations were newly launched in 2017. 16 investigation reports were published in 2017, and thereby 21 accident investigations were carried over to 2018.

14 serious incident investigations had been carried over from 2016, and 17 serious incident investigations were newly launched in 2017. Nine investigation reports were published in 2017, and thereby 22 serious incident investigations were carried over to 2018.

Among the 25 investigation reports published in 2017, one was issued with recommendations.

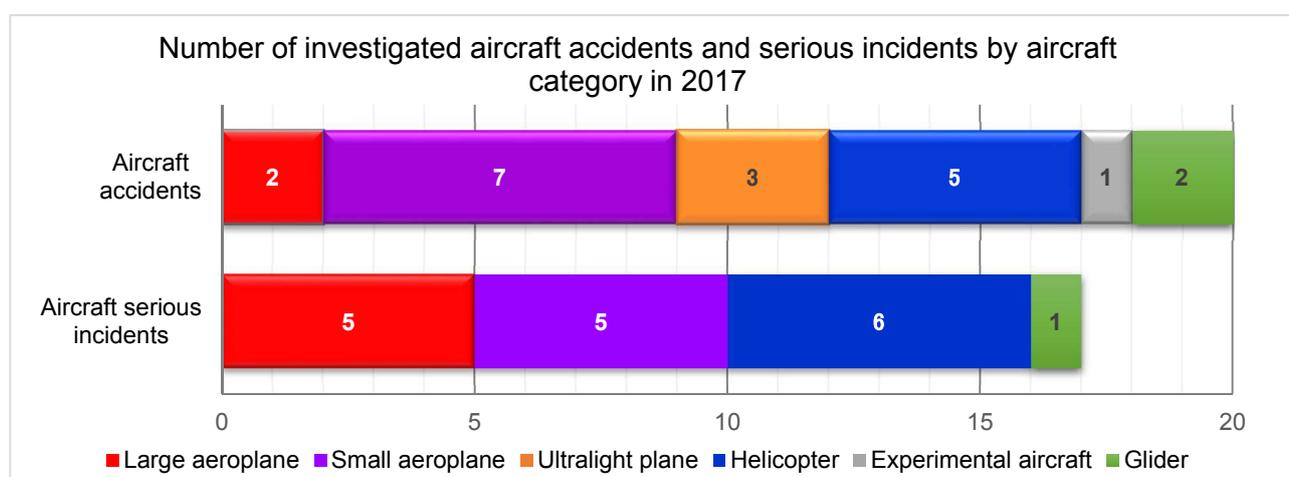
Investigations of aircraft accidents and serious incidents in 2017

Category	(Cases)								
	Carried over from 2016	Launched in 2017	Total	Published investigation reports	(Recommendations)	(Safety recommendations)	(Opinions)	Carried over to 2018	(Interim report)
Aircraft accident	17	20	37	16	(1)	(0)	(0)	21	(0)
Aircraft serious incident	14	17	31	9	(0)	(0)	(0)	22	(0)

4 Statistics of investigations launched in 2017

The aircraft accidents and serious incidents that were newly investigated in 2017 consisted of 20 aircraft accidents, up six from 14 for the previous year, and 17 aircraft serious incidents, up eight from nine for the previous year.

By aircraft category, the aircraft accidents included two cases involving large aeroplanes, seven cases involving small aeroplanes, three cases involving ultralight planes, five cases involving helicopters, one case involving experimental aircraft, and two cases involving gliders. The aircraft serious incidents included five cases involving large aeroplanes, five cases involving small aeroplanes, six cases involving helicopters, and one case involving glider.



* Large aeroplane refers to an aircraft of a maximum take-off mass of over 5,700 kg.

* Small aeroplane refers to an aircraft of a maximum take-off mass of under 5,700 kg except for ultralight plane.

In the 20 aircraft accidents, the number of casualties was 31, consisting of 22 deaths and nine injured persons.

Statistics of number of casualties (aircraft accident)

(Persons)

2017							
Aircraft category	Dead		Missing		Injured		Total
	Crew	Passengers and others	Crew	Passengers and others	Crew	Passengers and others	
Large aeroplane	0	0	0	0	2	0	2
Small aeroplane	2	4	0	0	1	3	10
Ultralight plane	0	0	0	0	2	0	2
Helicopter	2	12	0	0	0	0	14
Experimental aircraft	1	0	0	0	0	0	1
Glider	1	0	0	0	1	0	2
Total	6	16	0	0	6	3	31
	22		0		9		

5 Summaries of aircraft accidents and serious incidents which occurred in 2017

The aircraft accidents and serious incidents which occurred in 2017 are summarized as follows: The summaries are based on information available at the start of the investigations and therefore are subject to change depending on the course of investigations and deliberations.

(Aircraft accidents)

1	Date and location	Operator	Aircraft registration number and aircraft type
	February 11, 2017 Oshima Airport, Tokyo	Privately owned	JA3357 Beechcraft 35-C33A
	Summary	See “6 Publication of investigation reports” (P.35, No.10)	
2	Date and location	Operator	Aircraft registration number and aircraft type
	March 5, 2017 Near Mt. Hachibuse in Nagano Prefecture	Nagano Prefectural Fire and Disaster Prevention Center	JA97NA Bell 412EP
	Summary	The aircraft took off from Matsumoto Airport and crashed near Mt. Hachibuse, killing nine people on board.	
3	Date and location	Operator	Aircraft registration number and aircraft type
	March 14, 2017 Grass field on the premises of Kobe Airport, Hyogo Prefecture	Educational Corporation Hiratagakuen	JA500H Eurocopter AS350B3
	Summary	The aircraft took off from Kobe Airport for flight training and rolled over on a grass field on the premises of the airport. No one was injured.	

4	Date and location	Operator	Aircraft registration number and aircraft type
	March 18, 2017 Near Odaira, Itoigawa City, Niigata Prefecture	Privately owned	JA7907 Robinson R44
	Summary	The aircraft took off from the temporary airfield (Mt. Hirukura) in Itoigawa City, Niigata Prefecture, and rolled over when it landed near the abovementioned location. No one was injured.	
5	Date and location	Operator	Aircraft registration number and aircraft type
	March 24, 2017 At the sea off Beppu City, Oita Prefecture (near Beppu International Tourist Port)	Setouchi SEAPLANES, Inc.	JA02TG Quest Kodiak 100
	Summary	The aircraft took bounces during the takeoff run from water and suffered damage to the aircraft when contacting water surface.	
6	Date and location	Operator	Aircraft registration number and aircraft type
	April 15, 2017 Lake Shinji, Matsue City, Shimane Prefecture	Privately owned	JA007P Cessna T206H
	Summary	The aircraft suffered damage due to a collision with wave during takeoff run from water at Lake Shinji, heading to Tottori Airport for a familiarization flight. No one was injured.	
7	Date and location	Operator	Aircraft registration number and aircraft type
	April 16, 2017 Aki-ota Town, Yamagata District, Hiroshima Prefecture	Privately owned	JR1286 Quicksilver MXII Sprint TOP-R582L (ultralight plane)
	Summary	See “6 Publication of investigation reports” (P.37, No.14)	
8	Date and location	Operator	Aircraft registration number and aircraft type
	May 3, 2017 Shirataka Town, Nishiokitama District, Yamagata Prefecture	Privately owned	None AutoGyro Cavaron (experimental aircraft)
	Summary	See “6 Publication of investigation reports” (P.35, No.11)	
9	Date and location	Operator	Aircraft registration number and aircraft type
	May 14, 2017 Tabayama Village, Kitatsuru District, Yamanashi Prefecture	Aviation Unit of Yamanashi Prefectural Police Department	JA110Y Bell 412EP
	Summary	While the aircraft engaged in rescue work near the abovementioned location after taking off from a helipad of the Yamanashi Prefectural Police Department, a person to be rescued was hit by objects such as tree branches and killed.	
10	Date and location	Operator	Aircraft registration number and aircraft type
	June 3, 2017 Near Ashikuraji, Tateyama Town, Nakaniikawa District, Toyama Prefecture	New Central Airservice Co.	JA3989 Cessna 172P
	Summary	The aircraft took off from Toyama Airport and crashed near the abovementioned location, killing four people aboard.	

11	Date and location		Operator	Aircraft registration number and aircraft type
	June 29, 2017 On the runway at Nagasaki Airport, Nagasaki Prefecture		Educational Corporation Kimigafuchi Gakuen	JA5304 Beachcraft 58
	Summary	The aircraft made a belly landing which caused damages to the aircraft at Nagasaki Airport during a training flight. No one was injured. 		
12	Date and location		Operator	Aircraft registration number and aircraft type
	July 1, 2017 Approx. 45km southwest of Fukushima Airport At an altitude of approx. 4,500m		United Airlines	N29968 Boeing 787-9
	Summary	The aircraft took off from San Francisco and shook during its flight near the abovementioned location, injuring one of the cabin crew.		
13	Date and location		Operator	Aircraft registration number and aircraft type
	July 11, 2017 In a golf course (Himeji Aioi Country Club) in Yano Town, Aioi City, Hyogo Prefecture		Privately owned	GBYLP HALES CS RAND KR-2 (ultralight plane)
	Summary	The aircraft took off from Niigata Airport and made an emergency landing on the abovementioned location, suffering damage and injuring one person aboard.		
14	Date and location		Operator	Aircraft registration number and aircraft type
	August 14, 2017 Near Yamazoe Village, Yamabe District, Nara Prefecture		Privately owned	N702AV SOCATA TBM 700
	Summary	The aircraft took off from Yao Airport and reported that it would return to the airport, and thereafter it crashed into the mountains near the abovementioned location, suffering fatal damage.		
15	Date and location		Operator	Aircraft registration number and aircraft type
	August 27, 2017 Fukushima City, Fukushima Prefecture (in the vicinity of Bandai-Azuma Skyline Fudosawa Bridge)		Privately owned	JA2406 Hoffmann H-36 Dimona (glider)
	Summary	The aircraft took off from Fukushima Sky Park, and crashed into the mountains near the abovementioned location during flight.		
16	Date and location		Operator	Aircraft registration number and aircraft type
	September 10, 2017 Near Yamaoka Town, Ena City, Gifu Prefecture		Privately owned	JR1925 Quicksilver Max II Top-R582L Nishiyama (ultralight plane)
	Summary	The aircraft took off from the temporary airfield in Yamaoka Town, Ena City, Gifu Prefecture, and made an emergency landing in a forest near the abovementioned location, suffering damage. No one was injured.		
17	Date and location		Operator	Aircraft registration number and aircraft type
	October 8, 2017 Temporary airfield in Kurihara City, Miyagi		Privately owned	JA3447

	Prefecture		Beechcraft E33
	Summary	The aircraft attempted to take off from the temporary airfield in Kurihara City, Miyagi Prefecture, but failed, overrunning the runway. Four people were either killed or injured.	
18	Date and location	Operator	Aircraft registration number and aircraft type
	October 22, 2017 Approx. 40km east-northeast of Kumamoto Airport At an altitude of approx. 4,500m	Spring Japan	JA03GR Boeing 737-800
	Summary	The aircraft took off from Narita International Airport and shook during a descent over the abovementioned location, injuring one of the cabin crew.	
19	Date and location	Operator	Aircraft registration number and aircraft type
	November 8, 2017 Near Oaza Otomo, Ueno Village, Tano District, Gunma Prefecture	Toho Air Service Co., Ltd.	JA9672 Aerospatiale AS332L
	Summary	The aircraft took off from the temporary airfield in Hayakawa Town, Minamikoma District, Yamanashi Prefecture and crashed during its flight on a road near the abovementioned location and suffered fatal damage. Four people on board were killed.	
20	Date and location	Operator	Aircraft registration number and aircraft type
	November 10, 2017 Ono Gliding Field, Ibi District, Gifu Prefecture	Privately owned	JA05KG Schempp-Hirth V.L. Discus CS (glider)
	Summary	The aircraft attempted to make a winch-tow take-off but failed to gain enough altitude and so separated itself from the winch and tried to land on the ground. But it flipped over during landing because its right main wing hit the winch. No one was injured.	

(Aircraft serious incidents)

1	Date and location	Operator	Aircraft registration number and aircraft type
	January 19, 2017 Near the end of the Runway 01R at New Chitose Airport, Hokkaido Prefecture	ANA Wings Co., Ltd.	JA461A Bombardier DHC-8-402
	Summary	The aircraft took off from Akita Airport as a scheduled flight 1831 of ALL NIPPON AIRWAYS CO., LTD. as the joint undertaking for transport with ANA Wings, overran and came to a halt at the snow covered grassland when landing at New Chitose Airport.	
2	Date and location	Operator	Aircraft registration number and aircraft type
	February 12, 2017 At the vicinity of Kohnan Aerodrome, Okayama Prefecture	Okayama Glider Club	JA2330 Scheibe SF25C Falke (glider)
	Summary	See “6 Publication of investigation reports” (P.41, No.6)	
3	Date and location	Operator	Aircraft registration number and aircraft type
	February 14, 2017 Near Runway B at Narita International Airport, Chiba Prefecture (Thai AirAsia X)	Thai AirAsia X Co., Ltd. (Aircraft A)	HS-XTC Airbus A330-343X

	Approx. 2km south-southeast of and at an altitude of approx. 180m from the entry of Runway B at Narita International Airport (China Airlines)	China Airlines (Aircraft B)	B-18361 Airbus A330-302
	Summary	The Aircraft A crossed Holding Position Marking and entered onto the runway, despite an instruction to hold short of runway given by Aerodrome Control Facility. Because of this, the Aircraft B, approaching to land with the Landing Clearance, made a go-around as being instructed by Aerodrome Control Facility.	
4	Date and location	Operator	Aircraft registration number and aircraft type
	April 6, 2017 Over Komatsu City, Ishikawa Prefecture at an altitude of approx. 20,000 ft (approx. 6,100m)	Privately owned	JA01EP Beechcraft B200
	Summary	See “6 Publication of investigation reports” (P.42, No.9)	
5	Date and location	Operator	Aircraft registration number and aircraft type
	April 27, 2017 At a height of approx. 50m above the vicinity of Teshikaga Town, Kawakami-gun, Hokkaido Prefecture	Nakanihon Air Service Co., Ltd.	JA9743 Aerospatiale AS350B1
	Summary	The aircraft took off from the temporary airfield in Kawakami District, Hokkaido Prefecture, and sprayed fertilizer over a farm in the district. During its flight back to the temporary airfield, the aircraft dropped an empty bucket roughly 1.2m high and 1.3m across and weighing about 130kg.	
6	Date and location	Operator	Aircraft registration number and aircraft type
	June 27, 2017 On the runway at Fukushima Airport, Fukushima Prefecture	Privately owned	JA4010 Piper PA-46-310P
	Summary	The aircraft took off from Honda Airport and landed on the runway at Fukushima Airport but became stranded there.	
7	Date and location	Operator	Aircraft registration number and aircraft type
	July 1, 2017 Higashidori Village, Shimokita District, Aomori Prefecture	Japan Aerospace Exploration Agency	JA21RH Kawasaki BK117C-2
	Summary	For a test of dropping an object, the aircraft flew from the temporary airfield in Higashidori Village, Shimokita District, Aomori Prefecture, toward the dropping site but dropped the object on a sand beach on the way.	
8	Date and location	Operator	Aircraft registration number and aircraft type
	July 15, 2017 Near Runway B at Narita International Airport, Chiba Prefecture	Polar Air Cargo Worldwide Inc.	N852GT Boeing 747-8F
	Summary	When the aircraft was to take off from Runway B at Narita International Airport, it ran close to the end of the runway (approx. 85m before the end of the runway) before taking off.	
9	Date and location	Operator	Aircraft registration number and aircraft type
	August 3, 2017 Above near Kurobe City, Toyama Prefecture At an altitude of approx. 1,000m	Aero Asahi Corporation	JA6512 Eurocopter AS350B3

	Summary	The aircraft took off from the temporary airfield in Unazuki Town, Kurobe City, Toyama Prefecture, to carry an object (content: machine tools weighing approx. 700kg in total) hung outside from it but dropped the object near the abovementioned location.	
10	Date and location	Operator	Aircraft registration number and aircraft type
	August 13, 2017 Temporary Airfield of Akeno Sky Sports Club, Chikusei City, Ibaraki Prefecture	Privately owned (Aircraft A)	JA3353 Cessna172H Ram
		Privately owned (Aircraft B)	JX0157 Sakamoto SS-9 (ultralight plane)
	Summary	While Aircraft A was preparing for a take-off at the north end of the airfield in Chikusei City, Ibaraki Prefecture, Aircraft B landed on the airfield from the north.	
11	Date and location	Operator	Aircraft registration number and aircraft type
	August 27, 2017 Above near Yamashina Ward, Kyoto City, Kyoto Prefecture At an altitude of approx. 2,300m	Takumi Enterprise	JA7981 Robinson R44
	Summary	The aircraft took off from the temporary airfield in Oyabe City, Toyama Prefecture, and turned on the light to suggest that it was running out of fuel. The destination of the flight was thus changed to the ground of a school in Ogurisumaruyama, Fushimi Ward, Kyoto City, Kyoto Prefecture and the aircraft landed on the ground.	
12	Date and location	Operator	Aircraft registration number and aircraft type
	September 5, 2017 On Runway C at Tokyo International Airport, Tokyo	Japan Airlines Co.	JA743J Boeing 777-300ER
	Summary	When the aircraft was running on Runway C at Tokyo International Airport for a take-off, the flight instrument that warns of trouble on the first (left) engine blinked. After taking off, the pilot turned off the engine and requested priority in air traffic control and landed the aircraft on Runway A at the airport.	
13	Date and location	Operator	Aircraft registration number and aircraft type
	September 23, 2017 Above near Kitagawa Village, Aki District, Kochi Prefecture At a height of 70m	Nakanihon Air Service Co.	JA6717 Aerospatiale AS332L
	Summary	The aircraft took off from the temporary airfield in Kitagawa Village, Aki District, Kochi Prefecture, for goods transportation and dropped stone materials roughly 5cm to 25cm in diameter and weighing a total of about 2.7 tons near the abovementioned location during its flight.	
14	Date and location	Operator	Aircraft registration number and aircraft type
	September 23, 2017 Above near Osaka City, Osaka Prefecture	KLM Royal Dutch Airlines	PHBQC Boeing 777-200
	Summary	The aircraft took off from Kansai International Airport and dropped a fairing panel (roughly 100cm by 60cm and weighing 4.3kg) from the root of the main right wing while ascending over near the abovementioned location but continued its flight and reached Amsterdam. The panel hit a motor vehicle running near 3-Chome, Nishitemma, Kita Ward, Osaka City, Osaka Prefecture.	
15	Date and location	Operator	Aircraft registration number and aircraft type
	October 6, 2017 Above near Ishikari City, Hokkaido Prefecture At an altitude of approx. 500m	Privately owned	JA3500 Cessna 172K

	Summary	The aircraft took off from Sapporo Airfield and made an emergency landing on a sand beach along the shore of Ishikari Bay in Ishikari City, Hokkaido Prefecture, as the power output of its engine dropped during the flight.		
16	Date and location	Operator	Aircraft registration number and aircraft type	
	October 15, 2017 Near the airfield traffic pattern of Fukui Airport, Fukui Prefecture At an altitude of approx. 300m	Privately owned	JA3842 Beechcraft A36	
	Summary	The aircraft took off from Niigata Airport and made an emergency landing on the Kuzuryu River as the power output of its engine dropped while flying over near the abovementioned location.		
17	Date and location	Operator	Aircraft registration number and aircraft type	
	November 11, 2017 Above Uozumi Town, Akashi City, Hyogo Prefecture A flying altitude of approx. 1,000 to 1,100 feet (approx. 300 to 330m)	Privately owned (Reporting planes)	JA274J Robinson R44 II	
		Educational Corporation Hiratagakuen (Related plane)	JA831H Eurocopter EC135P2+	
Summary	When the reporting plane was flying level westward at an altitude of around 330m, it crossed over the other aircraft within a horizontal distance of about 30m to 60m at an altitude difference of around 30m to 60m.			

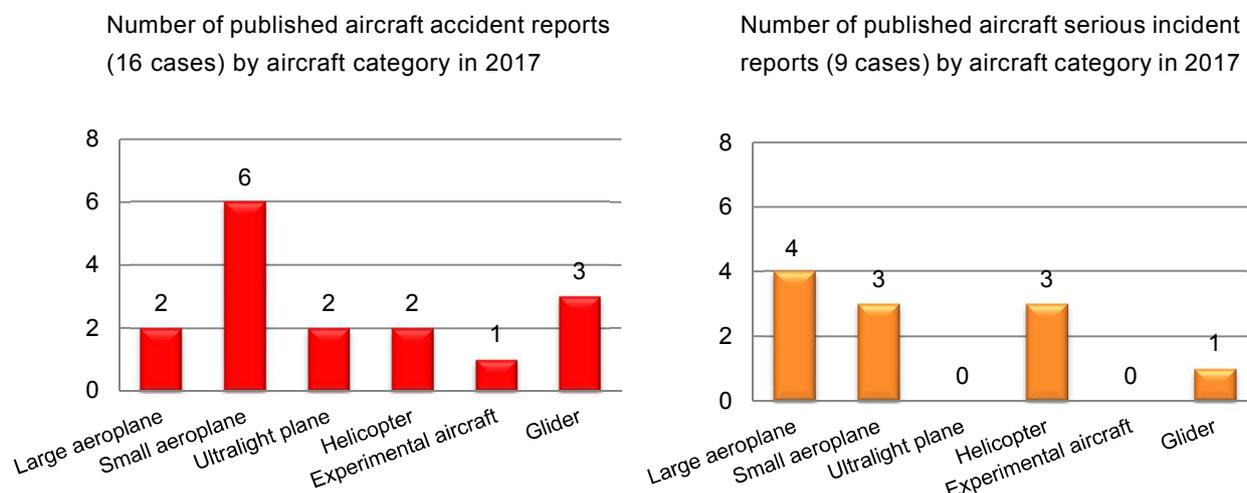
6 Publication of investigation reports

The number of investigation reports of aircraft accidents and serious incidents published in 2017 was 25, consisting of 16 aircraft accidents and nine aircraft serious incidents.

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

Note: In aircraft accidents and serious incidents, two or more aircraft are sometimes involved in a single case.

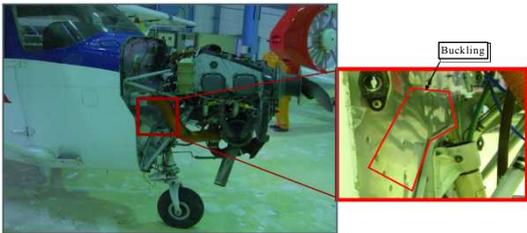
In the 16 accidents, the number of casualties was 23, consisting of 13 death, and 10 injured persons.



The aircraft accidents and serious incidents which occurred in 2017 are summarized as follows.

Aircraft accident investigation reports published in 2017

1	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	February 23, 2017	April 10, 2016 Aso City Kumamoto Prefecture	Privately owned	JA2437 S.N. Centrair C 101B (glider)
	Summary	<p>The aircraft crashed on the cross country course (lawn) by failure of forced landing in the Aso Tourism Ranch, with a winch has failed while climbing by winch launch for a familiarization flight from runway 26 of Aso Tourism Ranch landing field.</p> <p>The fuselage was destroyed. The Captain was not injured</p>		
	Probable Causes	<p>In this accident, it is highly probable that, the winch failed while the Aircraft was climbing with winch launch, and after the release of the tow line, nevertheless there was its insufficient altitude, as the Captain tried to make landing after a turn, and it was crashed by allowing the airframe contact with the groves.</p> <p>It is highly probable that the reason for the Captain tried landing after a turn although there was not enough altitude was that he could not properly read the correct AGL from the barometric altimeter and judged its value higher than the actual one. It is probably involved in the fact that the advance preparation by the Captain to read the AGL from the barometric altimeter was inadequate.</p>		
Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA2437.pdf			
2	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	March 30, 2017	May 23, 2015 Bed of the Tone River, Kashiwa City, Chiba Prefecture	Privately owned	JR0552 Maxair Drifter XP-R503 Vert L (ultralight plane)
	Summary	<p>The aircraft took off from the Moriya Temporary Airfield for a familiarization flight and made an emergency landing on a bed of the Tone River as its engine stopped working while flying over the traffic pattern of the airfield. The aircraft suffered damage to its frame.</p>		
	Probable Causes	<p>In this accident, it is probable that the aircraft suffered damage to its frame when it made an emergency landing on the grass as its engine stopped working during flight. It is probable that the engine stopped because the V-belt, which activates the cooling fan, was cut off and became unable to cool the engine enough, making it too hot.</p>		
Report	http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2017-2-1-JR0552.pdf			
3	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	March 30, 2017	March 26, 2016 Yao Airport, Osaka Prefecture	Privately owned	JA3788 Mooney M20C

	Summary	<p>The aircraft bounced while landing on Runway 27 of Yao Airport and attempted go-around, but stalled during climbing and went into spin, and then crashed into the south side shoulder of the runway. A captain and three passengers were on board and all of them were fatally injured. The aircraft was destroyed and a fire broke out.</p> 		
	Probable Causes	<p>In this accident, the aircraft bounced while landing and attempted a go-around, and it made an abnormal nose-up continued and decelerated, and then the stall could not be avoid in a situation where it imminent; consequently, it is highly probable that it stalled and went into spin, and finally it had crashed.</p> <p>Regarding the reason why the stall could not be avoid in the imminent situation, it is somewhat likely that the captain or passenger A who maneuvered the aircraft could not suppress the excessive nose-up movement because it was exceeding the maneuverable range and others. All members of the aircraft on board were died; accordingly, the investigation was unable to determine the causes.</p> <p>Besides, the aircraft had overweight and aft CG location for the aft limit corresponding to the maximum weight. It is somewhat likely that these condition affected the controllability and the stability, and contributed to the bounce on touchdown, the abnormal nose-up posture during a go-around, the decreased stability at low speed flight and the occurrence of stall and spin.</p>		
	Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA3788.pdf http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2017-2-2-p.pdf (Explanatory material) See summaries of major aircraft accident and serious incident investigation reports (P.53).</p>		
4	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	May 25, 2017	September 22, 2015 Honda Airport Okegawa City, Saitama Prefecture	Honda Airways Co., Ltd.	JA31HA Cessna 172S,
	Summary	<p>The aircraft suffered damage to its airframe upon landing on the Runway 32 of Honda Airport, for a solo flight training. A trainee who was the only person onboard the aircraft, was not injured. The aircraft sustained substantial damage, but no fire broke out.</p> 		
	Probable Causes	<p>In this accident, when the aircraft landed, it is probable that it made a dropped landing and bounced; subsequently, it strongly grounded again from the nose landing gear, the empennage struck the runway due to its reaction and the go-around operation, and then the airframe was damaged.</p> <p>Regarding the reason why the aircraft made a dropped landing at its landing, it is probable that the Trainee continued a flare operation without executing a go-around to prevent a dropped landing, even though he felt that the altitude to commence a flare operation was slightly higher more than usual.</p> <p>Regarding the reason why the Trainee continued the flare operation without executing a go-around to prevent the drop-landing, it is somewhat likely that his maneuvering skill was not the level to operate a safe and stable landing including a flare operation. Moreover, the Company did not have a proper skill management system for flight trainees and it allowed the solo flight training even though the Trainee's skill did not fulfill the Safety Criteria for Solo Flight established by it; besides, the methods for a supervision to monitor and an instruction for a solo flight training were inadequate; accordingly, it is somewhat likely that they contributed to the occurrence of the accident.</p>		
Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA31HA.pdf</p>			

5	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 18, 2017	July 26, 2015 Chofu City, Tokyo Metropolitan	Privately owned	JA4060 Piper PA-46-350P
	Summary	<p>The aircraft crashed into a private house at Fujimi Town in Chofu City, right after its takeoff from Runway 17 of Chofu Airport.</p> <p>There were five people on board, consisting of a captain and four passengers. The captain and one passenger died and three passengers were seriously injured. In addition, one resident died and two residents had minor injuries.</p> <p>The aircraft was destroyed and a fire broke out. The house where the aircraft had crashed into were consumed in a fire and neighboring houses sustained damage due to the fire and other factors.</p>		
	Probable Causes	<p>It is highly probable that this accident occurred as the speed of the Aircraft decreased during takeoff and climb, which led the Aircraft to stall and crashed into a residential area near Chofu Airport.</p> <p>It is highly probable that decreased speed was caused by the weight of the Aircraft exceeding the maximum takeoff weight, takeoff at low speed, and continued excessive nose-up attitude.</p> <p>As for the fact that the Captain made the flight with the weight of the Aircraft exceeding the maximum takeoff weight, it is not possible to determine whether or not the Captain was aware of the weight of the Aircraft exceeded the maximum takeoff weight prior to the flight of the accident because the Captain is dead. However, it is somewhat likely that the Captain had insufficient understanding of the risks of making flights under such situation and safety awareness of observing relevant laws and regulations.</p> <p>It is somewhat likely that taking off at low speed occurred because the Captain decided to take a procedure to take off at such a speed; or because the Captain reacted and took off due to the approach of the Aircraft to the runway threshold.</p> <p>It is somewhat likely that excessive nose-up attitude was continued in the state that nose-up tended to occur because the position of the C.G. of the Aircraft was close to the aft limit, or the Captain maintained the nose-up attitude as he prioritized climbing over speed.</p> <p>Adding to these factors, exceeding maximum takeoff weight, takeoff at low speed and continued excessive nose-up attitude, as the result of analysis using mathematical models, it is somewhat likely that the decreased speed was caused by the decreased engine power of the Aircraft; however, as there was no evidence of showing the engine malfunction, it was not possible to determine this.</p>		
Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA4060.pdf http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2017-4-1-p.pdf (Explanatory material) See summaries of major aircraft accident and serious incident investigation reports (P.54).</p>			
6	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 27, 2017	November 22, 2015 Matsuida Town, Annaka City, Gunma Prefecture	Privately owned	JA7963 Robinson R22 Beta (Rotorcraft)
	Summary	<p>The rotorcraft took off from Tokyo Heliport flight to Komoro Temporary Helipad at Komoro City, Nagano Prefecture. The rotorcraft collided into a slope face of a mountain at side of Joshin-etsu Expressway near Matsuida Town, Annaka City, and Gunma Prefecture.</p> <p>A captain and a passenger were on board the rotorcraft and both of them died in the collision. The rotorcraft was destroyed, but there was no outbreak of fire.</p>		



	Probable Causes	<p>In this accident, it is probable that the rotorcraft collided into a slope face of a mountain, because it continued a flight in spite of a deteriorated weather during the flight to a temporary helipad of destination and resulted in flying at low altitude in order to secure a visibility under a condition where VMC could not be maintained.</p> <p>Regarding the reason for the rotorcraft to continue a flight in spite of the deteriorated weather, it is probable that it was because the pilot was trying to find a route to the destination.</p>		
	Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA7963.pdf</p>		
7	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 27, 2017	May 5, 2016 Miharu Town, Tamura District, Fukushima Prefecture	Privately owned	JA21BB Glasflugel 304CZ-17 (glider)
	Summary	<p>The aircraft took off from the Kakuda Glider Field in Kakuda City, Miyagi Prefecture by aero tow for a training flight, but crashed in a mountain forest in Miharu Town, Tamura-Gun, Fukushima Prefecture.</p> <p>The pilot was the only person on board the aircraft, and he was fatally injured.</p> <p>The glider was destroyed, but there was no outbreak of fire.</p>		
	Probable Causes	<p>It is highly probable that this accident occurred when JA21BB crashed in a mountain forest because it broke up in mid-air while flying.</p> <p>It is somewhat likely that the glider broke up in mid-air because, after it had entered a steep turn and stalled while the pilot had succumbed to a state of hypoxia and was semi-conscious, excessive bending occurred owing to aerodynamic force on the glider and the Glider was subjected to load exceeding the ultimate maneuvering load, influenced by the fact that the glider assumed a significant nose-down attitude including spin and nosedived, and that it passed through an area of turbulence.</p> <p>It is somewhat likely that the pilot succumbed to a state of hypoxia because he had forgotten to open the oxygen valve before setting off and thus started the flight with no supply of oxygen, and had not noticed that oxygen was not being supplied because he did not check the oxygen supply during flight, and so continued to climb without noticing signs of hypoxia in himself.</p>		
	Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA21BB.pdf</p>		
8	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 28, 2017	November 16, 2015 Sendai Airport, Miyagi Prefecture	Privately owned	JA3762 Beechcraft A36
	Summary	<p>The aircraft with the captain and one passenger on board, took off from the runway 12 of Sendai Airport and during the touch-and-go training, it made a belly landing, which caused damages to the aircraft fuselage.</p>		



	Probable Causes	<p>In this accident, it is certain that the aircraft made a belly landing without extend the landing gear and damaged the aircraft fuselage.</p> <p>Regarding the aircraft landed without extend the landing gear, it is probable that because the approach was implemented under the condition that the captain had no spare time to assess the situation, to pilot or to maneuver, the captain forgot the landing gear operation, furthermore, he had forgot to confirm the landing gear operation at the before landing check and to reconfirm the landing gear operation during the final approach.</p> <p>Regarding the situation for the captain to approach without any spare to assess the situation and to pilot maneuver, it is probable that the facts to pilot or maneuver the unfamiliar aircraft without any prior understanding of any systems is involved.</p> <p>Furthermore, it is somewhat likely that because the landing gear warning device was not worked due to the functional defect, it possibly contributed the captain and the passenger who could not find out their forgetting to operate the landing gear until the last.</p>		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA3762.pdf		
9	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 28, 2017	March 17, 2016 Sakae Town, Inba District, Chiba Prefecture	Privately owned	JA50KM PZL-Bielsko SZD-50-3 Puchacz (glider)
	Summary	The aircraft launched from the Otone airfield for a flight training by aero-tow. It crashed on two houses in a residential area in Sakae-town, Inba-gun, Chiba prefecture and was destroyed and both of an instructor and a trainee on board died.		
	Probable Causes	<p>In this accident, it is probable that the Glider was crashed because it had entered a spin and could not recover from it.</p> <p>Regarding why the Glider entered the spin and could not recover from it, it is not possible to determine the cause because the persons on board died.</p>		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA50KM.pdf http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2017-6-1-p.pdf (Explanatory material) See summaries of major aircraft accident and serious incident investigation reports (P.55).		
10	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 28, 2017	February 11, 2017 Oshima Airport, Tokyo	Privately owned	JA3357 Beechcraft 35-C33A
	Summary	The aircraft suffered a damage to the aircraft, because a landing gear was retracted during a landing roll.		
	Probable Causes	<p>In this accident, it is probable that the Aircraft was damaged because the Aircraft retracted the landing gear during the landing roll.</p> <p>Regarding the retraction of landing gears during the landing roll, it is probable that there were possibilities for the Pilot to move the landing gear position switch to up position by a mistake instead of the flap position switch, and for the safety switch which should prevent to retract the landing gear on ground, not to open the landing gear retracting circuit because the safety switch had detected the situation of being mid-air due to the Aircraft was blown by wind at these conditions.</p>		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA3357.pdf		
11	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 28, 2017	May 3, 2017 Shirataka Town, Nishiokitama	Privately owned	None AutoGyro Cavaron (experimental)



		District, Yamagata Prefecture		aircraft)
	Summary	The aircraft took off during a ground-based running test at the temporary airfield in Shirataka Town, Nishiokitama District, Yamagata Prefecture, and crashed while flying level. The plane was fatally damaged and burst into flames, killing the operator.		
	Probable Causes	<p>In the accident, it is highly probable that the aircraft took off during a ground-based running test and the MR suddenly inclined backward to an abnormal angle while flying, letting the MRBs hit the rear part of the airframe and cutting it off and so the aircraft crashed.</p> <p>For the backward tilt of the MR, it is probable that the operator exponentially gave a forward entry to the control stick, making the aircraft tilt forward while creating a low load factor, and then gave so rapid a backward entry to the controlling stick that the aircraft failed to follow the MR's tilt.</p> <p>It is somewhat likely that the rapid forward entry was given to the controlling stick as the operator was short of knowledge and skills. But real reasons could not be determined due to the operator's death.</p>		
	Report	http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2017-6-5-none.pdf		
12	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	September 28, 2017	November 10, 2016 About 21nm (About 39 km) East-Southeast of Kagoshima Airport at an Altitude of About 17,000 ft (About 5,200 m)	Japan Airlines Co., Ltd.	JA658J Boeing 767-300
	Summary	The aircraft had one cabin attendant fell and injured during a takeoff climb for a flight from Kagoshima Airport to Tokyo International Airport with 129 persons on board, consisting of 11 crew members and 118 passengers.		
	Probable Causes	<p>In this accident, it is probable that the CA suffered the injury, because during the takeoff climbing at the time of the seat belt signs to be turned on, as the CA found an infant crawled out of the hands of the custodian to the vacant next seat and attempted to stand up in order to call out, lost balance, fell backward to the floor at right of the jump seat.</p> <p>It is somewhat likely that the CA lost balance, because the shake of the Aircraft increased its strength again due to the turbulence when the CA tried to stand up.</p>		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA658J.pdf		
13	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 26, 2017	May 6, 2016 Temporary airfield (Miho Airstrip), Shizuoka City, Shizuoka Prefecture	Privately owned	JA4023 Socata TB10
	Summary	The aircraft had taken off from Miho Temporary Airfield for a practice flight, then it was stranded in the area where sand had been accumulated around the end of runway 15, because it was not able to stop within the runway when it had landed on runway 15.		



	Probable Causes	<p>In this accident, it is probable that because the appropriate maneuvering operation was not performed considering the wind that was changed in the direction of the tailwind, its touchdown was long down the runway, in addition, the pilot continued the landing operation based on his judgment that it would be able to stop inside the runway at the time of its touchdown despite the distance from the touchdown position to the end of the runway was insufficient margin against the landing performance (landing roll distance), it had overrun and was stranded in the area that sand accumulated near the end of runway 15.</p> <p>Regarding why the pilot did not conduct the appropriate operation in consideration of the changed wind direction to tailwind, it is probable that the pilot did not notice the change of the wind because he did not verify the wind by checking the windsock and others.</p>		
	Report	http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2017-7-1-JA4023.pdf		
14	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 26, 2017	April 16, 2017 Aki-ota Town, Yamagata District, Hiroshima Prefecture	Privately owned	JR1286 Quicksilver MXII Sprint Top-R582L (ultralight plane)
	Summary	<p>The aircraft, with only the operator aboard, took off from the temporary airfield of Sugi-no-Tomari Sky Hobby Field in Akiota Town, Yamagata District, Hiroshima Prefecture, for a familiarization flight. As the engine stopped working during climb, the aircraft made an emergency landing on a road nearby, suffering damage to its frame and causing the operator a severe injury.</p>		
	Probable Causes	<p>In the accident, it is highly probable that the aircraft took off from the airfield and the operator tried to make an emergency landing as the engine stopped working during an ascent but suffered a severe injury.</p> <p>It is highly probable that the shutdown of the engine was ascribable to the accumulation of carbon in the piston ring of the front cylinder which caused the piston ring to firmly attach to the piston. A resultant increase in friction between the piston and the cylinder caused temperatures in the cylinder to rise and thermally expanded the piston. The piston strongly rubbed against the cylinder and so its movement was restricted. It is somewhat likely that inadequate inspection and maintenance of the aircraft was a factor contributing to the accumulation of carbon in the piston ring.</p>		
	Report	http://www.mlit.go.jp/jtsb/aircraft/rep-acci/AA2017-7-2-JR1286.pdf		
15	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	November 30, 2017	August 8, 2016 Hirasawa, Hadano City, Kanagawa Prefecture	Aero Asahi Corporation	JA6917 Kawasaki BK117C-2
	Summary	<p>The Aircraft was damaged because of a hard landing in an attempt to land at the Temporary Helipad in Hadano City, Kanagawa Prefecture, in order to transport a sick and wounded person for an emergency medical care.</p>		



	Probable Causes	<p>It is highly probable that in this accident, the rotorcraft was damaged because the landing was resulted in the hard landing. With regard to the hard landing of the rotorcraft, it is probable that because it did not used an approach path to the temporary helipad along an approach surface which is confirmed to comply with the standard, flew over the high steel tower near the temporary helipad of the planned destination, commenced the approach at a rather large approach angle and descent rate, and decreased the forward airspeed in order to transit to hover, the main rotor developed VRS and in spite that the pilot pulled CP up, the corresponding lift could not be gained.</p>		
	Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA6917.pdf</p>		
16	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 21, 2017	February 23, 2016 New Chitose Airport, Hokkaido	Japan Airlines Co., Ltd.	JA322J Boeing 737-800
	Summary	<p>The aircraft as a scheduled flight 3512 of the company, after being pushed back from an apron, was holding to taxi on a taxiway in order to depart from New Chitose Airport to Fukuoka Airport. Snow started to fall suddenly. The captain decided to move to the designated apron in order to remove the ice and snow from the aircraft. When the aircraft had stopped on a taxiway where the aircraft was moving because snow became harder, odd smells and smoke were generated within the cabin and the flame was confirmed at rear of No.2 engine (right side). Because of these, at around 15:10, an Emergency Evacuation was conducted through the evacuation slide at the Taxiway T2.</p> <p>There were 165 people in total aboard the aircraft, consisting of the captain and five other crewmembers and 159 passengers. During this Emergency Evacuation, one passenger suffered serious injury and two passenger suffered minor injuries. The aircraft was not damaged.</p>		
	Probable Causes	<p>In this accident, it is probable that while holding on the taxiway to taxi following the heavy snowfall, odd smells and smoke were generated within the cabin, following these events, because the flame from rear of No.2 engine was continued, the flight crew conducted the Emergency Evacuation from the aircraft. At the time, a passenger descended the slide, fell down to the ground from the hip of the passenger and suffered serious injury. Regarding the occurrences of odd smells and smoke in the cabin and the continuation of the flame at the rear of No.2 engine, it is probable that the Heavy Snow became intense due to the rapid weather deterioration, and because the icing was set at fan blades and low pressure compressor, the engine oil was leaked into inside of the engine and the oil vaporized into the cabin and the leaked oil was accumulated within in the tailpipe to catch the fire.</p>		
Report	<p>http://www.mlit.go.jp/jtsb/eng-air_report/JA322J.pdf http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AA2017-9-1-p.pdf (Explanatory material) See summaries of major aircraft accident and serious incident investigation reports (P.56).</p>			



Aircraft serious incident reports published in 2017

1	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 27, 2017	June 3, 2015 Naha Airport, Okinawa Prefecture	Japan Transocean Air Co., Ltd. (Aircraft A)	JA8938 Boeing 737-400
			All Nippon Airways Co., Ltd. (Aircraft B)	JA80AN Boeing 737-800
			Japan Air Self-Defense Force (Aircraft C)	57-4493 CH - 47J
Summary	<p>The Aircraft A as its scheduled flight 610 was approaching the runway 18 of Naha Airport for landing.</p> <p>The Aircraft B as its scheduled flight 1694 bound for New Chitose Airport commenced a take-off roll on the runway with the take-off clearance from the aerodrome control tower of the aerodrome control facility however, it rejected a take-off due to the fact a the Aircraft C was approaching the runway after taking off from the taxiway A-5.</p> <p>After that, although aerodrome control tower of the aerodrome control facility instructed the Aircraft A which approaching the runway to execute a go-around, it landed on the runway before the vacating of the Aircraft B.</p> <p>There were 44 persons on board the Aircraft A, consisting of the Pilot in Command (PIC), four crew members, and 39 passengers; 83 persons on board the Aircraft B, consisting of the PIC, five crew members and 77 passengers; seven persons on board the Aircraft C, consisting of the Pilot, four crew members, and two passengers. There were no injuries to these persons.</p>			
Probable Causes	<p>It is certain that this serious incident occurred as follows: when the Aircraft B rejected a take-off on the runway 18 due to the Aircraft C crossed over in its front, and the Aircraft A landed on the runway 18 before its vacating.</p> <p>It is probable that the Aircraft A landed on the runway was because the PIC, recognizing the existence of the Aircraft B on the runway when it started flare, as it had been issued the landing clearance by the aerodrome control tower, although he could not confirm the trend of the Aircraft B, based on his experience at the airport and on the same type of aircraft and the landing performance, it was judged by the PIC that it could land safely. It is also somewhat likely that the judgment is related to the fact the PIC could not confirm the trend of the Aircraft C which had crossed over the runway.</p> <p>Regarding the Aircraft A landed on the runway although the aerodrome control tower of the aerodrome control facility instructed it to execute a go-around, it is probable that it had already landed on the runway and the reverse thrust operation was started when the PIC and the FO were recognizing the instruction. In addition, it is probable that it was involved that the instruction of executing a go-around had missed the timing.</p> <p>It is highly probable that the reason why the Aircraft B rejected take-off is that, while the PIC was in the situation that he was not able to determine the flight direction of the Aircraft C approaching its departure course after the take-off of the Aircraft C and because the PIC of the Aircraft B felt a serious danger in the continued take-off; therefore, he decided to reject the takeoff.</p> <p>Besides, it is highly probable that, regarding the take-off of the Aircraft C, its pilots misunderstood the take-off clearance for the Aircraft B as the clearance for their aircraft, as well as the Pilot and the Load-master carried out external visual checks; however, it was due to delay in noticing the Aircraft B that commenced a take-off roll.</p> <p>Moreover, regarding the fact that the pilots of the Aircraft C misunderstood the take-off clearance for the Aircraft B as their take-off clearance, although they could not accurately hear what was transmitted to them by the aerodrome control tower, it is probable that they did not make mutual confirmation of the contents of the transmission. Besides, it is probable that the pilots of the Aircraft C did not notice misunderstanding the take-off clearance, as there was nothing pointed out from the aerodrome control tower of the aerodrome control facility to the wrong read-back of the Aircraft C.</p> <p>It is probable that because the Aircraft C was not pointed out from the aerodrome control tower</p>			

		of the aerodrome control facility to the wrong read-back, as the aerodrome control tower was not able to hear its read-back. About this matter, it is probable that because the characteristics of the VHF receiver used for air traffic control communication was involved.		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/57-4493_JA80AN_JA8938.pdf http://www.mlit.go.jp/jtsb/aircraft/p-pdf/AI2017-1-2-p.pdf (Explanatory material) See summaries of major aircraft accident and serious incident investigation reports (P.57).		
2	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	April 27, 2017	July 22, 2015 Yurihonjo City, Akita Prefecture	Tohoku Air Service, Inc.	JA6777 Aerospatiale AS332L1 (Rotorcraft)
	Summary	The rotorcraft took off from a temporary helipad in Iwaki-takinomata-jinai, Yurihonjo City, Akita prefecture. When the rotorcraft slung a work hut at a cargo loading site in Iwaki-fukunomata-jinai, the same city and flew to a cargo unloading site in Iwakifukunomata-jinai, the sliding doors of the slung work hut dropped from the rotorcraft to a forest.		
	Probable Causes	In this serious incident, it is probable that the sliding doors of the work hut derailed and dropped because of no effective measures taken to prevent the objects from dropping, when transporting the work hut by slinging. It is somewhat likely that contents of the education by the subcontractor A did not include the detailed method to pack the unique shaped cargo; the safety education to transport cargos was not sufficiently infiltrated; and there were a study and a check to prevent the drop from the slung object contributed no effective measures taken to prevent the objects from dropping.		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA6777.pdf		
3	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	June 29, 2017	December 4, 2015 Otone Temporary Airfield Kawachi Town, Inashiki-Gun, Ibaraki Prefecture	Privately owned	JA30HT Maule Air M-7-235C
	Summary	The aircraft damaged the tailwheel during its taxiing to an apron after landing at Otone Temporary Airfield, therefore, the aircraft could not be continued taxiing and stopped in front of the apron.		
	Probable Causes	At this serious incident, it is certain that the aircraft could not continue the operation because during its taxiing after the landing, it dropped the tailwheel from the tail spring of the airframe. Regarding the falling of the tailwheel from the airframe tail spring, it is highly probable that because the head part of the bolt connecting the tailwheel bracket assembly had a fatigue fracture generated and was fractured. Regarding the breakage due to the generation of fatigue fracture at the bolt head part, it is certain that it involved not to implement a proper maintenance work following the technical materials such as maintenance manual, parts catalogue and drawings applicable to the specification of the tailwheel.		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA30HT.pdf 		
4	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	July 27, 2017	March 1, 2016 Mihama Town, Mikata-gun, Fukui Prefecture	Aero Asahi Corporation	JA9678 Aerospatiale AS332L1 (Rotorcraft)
	Summary	The rotorcraft took off from a temporary helipad at Mihama Town, Mikata-gun, Fukui Prefecture and dropped one of cargos to mountain forest, during a flight to a work site suspending two cargos by a sling.		

	Probable Causes	<p>It is highly probable that the serious incident was occurred due to the dropping the object because the keeper of the hook in use opened during the flight of the rotorcraft.</p> <p>Regarding why the keeper of the hook opened, it is somewhat likely that because the keeper was not locked even though a load was applied and the pushrod entered in the gap generated between the keeper and the toggle due to a horizontal load because of the occurrence of the improper wire roping at the unlocked keeper condition. Regarding why the eye of the wire resulted in the improper wire roping, it is somewhat likely that because the work-classified operation manual did not have the procedure to confirm the position of lock indicator of the keeper and the ground worker did not have enough time to prepare the wire like matching the length of the wire and removing the twist.</p>			
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA9678_170727.pdf			
5	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type	
	August 31, 2017	March 21, 2016 Kagoshima Airport, Kagoshima Prefecture	Privately owned	JA01YK Cirrus SR22T	
	Summary	<p>The aircraft took off from Nagasaki Airport for the purpose of a familiarization flight, the strut assembly of the nose landing gear was fractured at landing on the runway 34 of Kagoshima Airport and the Aircraft stopped there as its nose in contact with the runway.</p> <p>There were five people on board, consisting of a captain and four passengers, there were no injured.</p> <p>The Aircraft sustained minor damages, but there was no outbreak of fire.</p>			
	Probable Causes	<p>It is certain that this serious incident occurred as the Aircraft was unable to taxi itself because the Aircraft had fractured its nose landing gear strut tube at landing and halted as leaning forward condition while the nose of the Aircraft was in contact with the runway.</p> <p>Regarding the fracture of the nose landing gear strut tube, it is probable that because undetected fatigue crack which had been generated at the forward toe of the Gusset tube weld bead of the strut tube prior to the occurrence of the serious incident progressed and the strength of the nose landing gear strut tube was decreased significantly, the load which was applied on the nose landing gear at landing of this serious incident resulted in the fracture.</p> <p>Regarding the initiation and progression of the fatigue crack at the forward of the Gusset tube weld bead of the strut tube, it is somewhat likely that the repeated occurrences of the shimmy at landing of the Aircraft had contributed.</p> <p>In addition, it is probable that the repeated application of high tensile stress onto the left side of the forward of the Gusset tube weld bead of the strut tube had contributed to the progress of the crack, because the captain had operational tendencies to initiate the left turn at the speed which the Aircraft did not decelerate sufficiently in order to vacate the runway after landing.</p>			
Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA01YK.pdf				
6	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type	
	September 28, 2017	February 12, 2017 In the vicinity of Kohnan Aerodrome, Okayama Prefecture	Okayama Glider Club	JA2330 Scheibe SF25C Falke (motor glider)	
	Summary	<p>The aircraft landed on Kohnan Aerodrome by gliding and halted on a runway, because its engine halted while flying over Okayama City and was unable to restart.</p>			
	Probable Causes	<p>In this serious incident, it is highly probable that the engine halted and could not restart due to the carburetor icing occurrences during the flight of the aircraft.</p> <p>As for the reason of occurrences of the carburetor icing, it is probable that the carburetor heater was not used while the aircraft executed descent by idling at the low oil temperature, was holding at the airspace of serious carburetor icing risk.</p>			 <p>Photo provided by Kohnan Aerodrome Management Office</p>

	Report	http://www.mlit.go.jp/jtsb/aircraft/rep-inci/AI2017-5-1-JA2330.pdf		
7	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	October 26, 2017	June 30, 2015 Approx. 55 km east-northeast of Tanegashima Airport, Kagoshima prefecture At an altitude of approx. 37,000 ft	Japan Transocean Air Co., Ltd.	JA8525 Boeing 737-400
	Summary	The aircraft during a flight as the scheduled Flight 002 from Naha Airport to Kansai International Airport, at about 55 km east-northeast of Tanegashima Airport, made emergency descend to the altitude of about 10,000 ft due to decompression inside the aircraft. After that, the aircraft continued the flight and landed at Kansai International Airport.		
	Probable Causes	It is highly probable that the serious incident occurred because the supply from the both Bleed Air systems were stopped, abnormal decompression was occurred in the cabin. As for the stoppage of the both Bleed Air supply, it is highly probable that PRSOV was closed because the Bleed Air temperature was rising and exceeding the specified values in a state of occurrence of failures due to the cracks in the both systems of 450 °F Thermostat, and malfunctions were generated due to deteriorations at the both systems of Pre-cooler Control Valve.		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA8525.pdf		
8	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 21, 2017	April 17, 2016 Approx. 33nm north-northwest of Hiroshima Airport, Hiroshima Prefecture At an altitude of approx. 38,500ft	Ibex Airlines Co., Ltd.	JA06RJ Bombardier CL-600-2C10
	Summary	The aircraft had flown as scheduled flight 084 of the company from Fukuoka Airport to Komatsu Airport, however, the aircraft returned to Fukuoka Airport because of the bad weather at the destination. During the flight to Fukuoka Airport, because bleed air supply from both right and left systems stopped, it made an emergency descent, continued the flight after descending to an altitude of about 10,000ft and landed at Fukuoka Airport.		
	Probable Causes	In this serious incident, it is highly probable that both bleed air systems stopped supplying the bleed air and the cabin altitude rose, because the AILC had detected the air leaks on both bleed air systems. It was not possible to determine why the AILC detected the bleed air leaks, although it was somewhat likely that there was any malfunction in the AILC, the bleed air leaked actually, or the sensing elements had any malfunction.		
	Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA06RJ.pdf		
9	Date of Publication	Date and location	Operator	Aircraft registration number and aircraft type
	December 21, 2017	April 6, 2017 Over Komatsu City, Ishikawa Prefecture at an altitude of approx. 20,000 ft (approx. 6,100m)	Privately owned	JA01EP Beechcraft B200
	Summary	While a the aircraft was flying from Gifu Airfield via Komatsu VORTAC to Takamatsu Airport for a training flight, smoke and smell like something were burning appeared in the cockpit. After that, since whole right windshield a cracked, it returned back to Gifu Airfield and landed.		
	Probable Causes	In this serious incident, it is probable that because screw of the terminal block at the right windshield had being loosened, the electrical resistance at the contact point increased and the terminal block was overheated, the surrounding combustible parts and components were burned out and the smoke was generated in the aircraft. Regarding loosening of the screw at the terminal blocks, it is somewhat likely that because the tightening torque was insufficient when replacing the windshield, the loosening grew bigger by		

	the vibration caused in flights. Furthermore, it is somewhat likely that it was contributed to the generating of the incident that proper measures were not taken to correct indications and symptoms of malfunctions which were occurring repeatedly.
Report	http://www.mlit.go.jp/jtsb/eng-air_report/JA01EP.pdf

7 Actions taken in response to recommendations in 2017

Actions taken in response to recommendations were reported with regard to three aircraft accidents and one aircraft serious incident in 2017. Summaries of these reports are as follows.

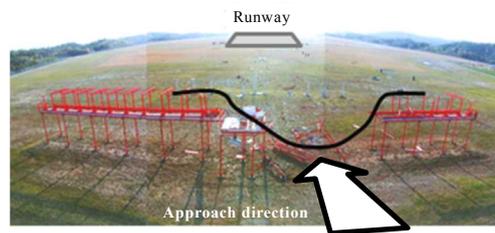
① Aircraft accident involving an Airbus A320-200 (large aeroplane), registered HL7762, operated by Asiana Airlines, Inc.

(Safety recommendations on November 24, 2016)

Following its investigation of an aircraft accident at Hiroshima airport on April 14, 2015, the Japan Transport Safety Board published an investigation report and issued safety recommendations to the Ministry of Land, Infrastructure and Transportation, Republic of Korea on November 24, 2016. The Board received the following notice concerning actions taken in response to the recommendations.

○Summary of the Accident

On Tuesday, April 14, 2015, an Airbus A320-200, registered HL7762, operated by Asiana Airlines, Inc., as the scheduled Flight 162 of the company, approached lower than the prescribed approach path during approach to Hiroshima airport. The aircraft collided with the Aeronautical Radio Navigation Aids located in front of the runway 28 at 20:05 JST and KST, and it touched down in front of the threshold of the runway. Subsequently, it moved forward on the runway, and then deviated to the south side of the runway and came to a stop inside the runway strip of the airport.



There were 81 people on board, consisting of the Pilot-in-Command (PIC), six other crew members, a boarding mechanic and 73 passengers. Among them, 26 passengers and two crew members, 28 people in total, were slightly injured.



The aircraft was substantially damaged, but there was no fire breakout.

○Probable Causes

It is certain that when landing on runway 28 at Hiroshima airport, the aircraft undershot and the PIC commenced executing a go-around; however, it collided with the Aeronautical Radio Navigation Aids located in front of runway 28 threshold, just before turning to climb.

Regarding the fact that the aircraft undershot, it is probable that there might be following aspects in causes: The PIC continued approaching without executing a go-around while the position of the aircraft could not be identified by visual references which should have been in view and identified continuously at or below the approach height threshold (Decision Altitude: DA); and as well, the first officer, as pilot-monitoring who should have monitored meteorological conditions and flight operations, did not make a call-out of go-around immediately when he could not see the runway at DA.

Regarding the fact that the PIC continued approaching without executing a go-around while the position of the aircraft could not be identified by visual references which should have been in view and identified continuously at or below DA, he did not comply with the regulations and Standard Operating Procedures (SOP), and it is probable that there was a background factor that the education and trainings for compliance of rules in the company was insufficient. In addition, regarding the fact that the first officer did not make an assertion of go-around, it is probable that the Crew Resource Management (CRM) did not function appropriately.

○Safety recommendations to the Ministry of Land, Infrastructure and Transport, Republic of Korea

The Ministry of Land, Infrastructure and Transport, Republic of Korea should supervise Asiana Airlines, Inc. in the following items:

- (1) The Company should reemphasize and reinforce the significance of compliance by flight crew members, while reviewing company procedures and ensuring comprehensive training.
- (2) The Company should surely implement the education and training that flight crew members should refer primarily to visual references, using flight instruments as supplementary tools appropriately, when approaching below DA.

○Actions taken in response to the safety recommendations

(part of the response is under evaluation)

- (1) The Company should reemphasize and reinforce the significance of compliance by flight crew members, while reviewing company procedures and ensuring comprehensive training.
 - Promotion of reporting culture
 - Distribution of Korean version of HL7762 HIJ accident investigation report to flight crew
 - Modification of mandatory training manual regarding the importance of compliance with rules
 - Slogan to emphasize the importance of compliance with regulations
- (2) The Company should surely implement the education and training that flight crew members should refer primarily to visual references, using flight instruments as supplementary tools appropriately, when approaching below DA.
 - Establishment of clear company policy in terms of the transition from instrument flight to visual flying

— Discussion regarding implementation of a new procedure in term of lost contact with visual references below DA/MDA

※The original text of the notification from the Ministry of Land, Infrastructure and Transport can be found on the JTSB website.

http://www.mlit.go.jp/jtsb/eng-air_report/MOLIT_20161124.pdf

② Aircraft accident involving a Viking DHC-6-400 (small aeroplane), registered JA201D, operated by First Flying Co., Ltd.

(Recommendations on December 15, 2016)

Following its investigation of an aircraft accident at Aguni Airport on August 28, 2015, the Japan Transport Safety Board published an investigation report and issued recommendations to the First Flying Co., Ltd. as a party relevant to the cause of the accident on December 15, 2016. The Board received the following notice concerning actions taken in response to the recommendations.

○Summary of the Accident

On Friday, August 28, 2015, at around 08:55 Japan Standard Time a Viking DHC-6-400 registered JA201D and operated by First Flying Co., Ltd. departed from the side of the runway during landing at Aguni Airport for the purpose of passenger transport, collided with the airport perimeter fence and lateral groove and damaged aircraft.



There were 14 people on board the Aircraft, consisting of a PIC, a crewmember and 12 passengers (including one company employee). Of these, a crewmember and ten passengers suffered minor injuries.

The aircraft suffered substantial damage, but there was no outbreak of fire.

○Probable Causes

It is highly probable that this accident occurred because, when the aircraft landed, the First Officer, as the PF in charge of flying, could not properly control the aircraft as it started to deflect after touchdown, as a result of which the aircraft departed from the side of the runway and collided with a fence on the airport perimeter.

It is probable that the aircraft started to deflect after touchdown because the PF forgot to perform the checklist, while the PIC, as the PM in charge of duties other than flying, did not properly monitor the situation or did not perform the necessary pointed out, as a result of which the aircraft touched down with the nose wheel deflected to the right.

It is somewhat likely that the PF could not properly control the aircraft as it started to deflect after touchdown, because his knowledge concerning the aircraft system of the aircraft was inadequate, as a result of which he did not fully understand situations that cause deflection to start.

It is somewhat likely, moreover, that the insufficient response by the PIC when an unforeseen situation arose contributed to this.

It is probable that the knowledge of the PF was inadequate and he did not fully understand situations that cause deflection to start, because the company had not properly confirmed the effectiveness of ground school training that should be undertaken prior to route training and training related to establishing knowledge.

○Recommendations to First Flying Co., Ltd.

Ascertain the current situation of ground training and flight training correctly, and then improve its system for training to enable the stipulated training to be carried out properly.

○Actions taken in response to the recommendations (completion report)

1 Content of recommendations

“Ascertain the current situation of ground training and flight training correctly, and then improve its system for training to enable the stipulated training to be carried out properly.”

2 Actions that should be taken (completion report)

2-1 On improvement measures after ascertaining the current situation of ground training and flight training correctly.

(1) Stipulation of implementation guidelines on pre-flight briefing

To prevent omissions in items subject to pre-flight confirmation, such as the purpose of flight, division of tasks assigned to pilots and measures to address an emergency situation, “group briefing” was added to Chapter 5-3-6 of the implementation guidelines (section 2). (Confirmed in Osaka Civil Aviation Bureau’s implementation guideline No. 4652, dated November 24, 2016)

(2) NWS confirmation guidelines

To stipulate the key points of confirming the work of the PTM’s centering latch, normal operations in Chapter 4 of the Aircraft Operation Manual (AOM) were revised while the means of confirming the NES’s center latch was added and stipulated in 2-6, 2-8 and 2-12 of the training manual. (Confirmed in Osaka Civil Aviation Bureau’s implementation guideline No. 4653, dated November 24, 2016)

(3) Formulation of guidelines on takeover during route training and standards for judgment

“Implementation terms for take-off and landing maneuvering by the co-pilot from the right seat” and “implementation of maneuvering by the co-pilot and candidate” in 2-2 of the chapter 2 the implementation guidelines (section 2) were revised, while “maneuvering by the co-pilot” was newly created in chapter 6 and the gist of guidelines on implementation by aircraft crew members was also revised to formulate guidelines on takeover during route training and standards for judgment (Confirmed in the West Japan Civil Aviation Bureau’s implementation guideline No. 4652, dated November 24, 2016).

(4) Familiarization training

1) NWS operation

2) Instructor takeover guidelines

Operating guidelines using NWS and instructor takeover guidelines are set forth in each flight training syllabus and will be implemented in actual training.

2-2 On “improvement of training system designed to carry out set training plans”

(1) Radical revision of the training system for air crew

1) Review and revision of training manual

Formulation of provisional training screening regulations, based on business improvement orders and measures to prevent the recurrence of the JA201D accident, and implementation of provisional training to foster flight instructors with the approval of the Civil Aviation Bureau. Revision of the air crew training screening regulations based on the training (completed in May 2017)

2) Creation of a new Training Section in charge of formulating training plans, monitoring progress, managing proficiency, and other work with a view to strengthening the training system (completed on May 1, 2016).

3) Creation of the Operation manual for the Training Section (completed on July 20, 2016).

4) Formulation of instructors’ guide, route training guide, training material for adoption of ground instructors and training material for adoption of flight instructors (Confirmed in the West Japan Civil Aviation Bureau’s implementation guideline No. 4233, dated November 2, 2016).

(2) Re-education on flight regulations

Re-education on the content of the AOM and others, and on the importance of complying with matters stipulated (completed on August 28, 2016).

Re-education conducted on the subsequently revised regulations for operational business implementation (section 2) and AOM on December 1, 2016.

On the regulations for air crew training screening which are being revised, re-education will be conducted upon completion.

(3) Reinforce safety awareness and provide compliance education

- 1) The president's "safety first" discourse was announced (on March 11, 2016) and the president gave instructions at the morning assembly at the Okinawa operational headquarters on March 24, 2016. They were also mentioned in a circular and on a bulletin board on March 14, 2016.

In addition, a program in which all workers of all sections at the Yao and Okinawa operational headquarters chant together, "Maintenance and improvement of safety is our top priority," continues.

- 2) First round of education given to all of the management, managerial staff and rank-and-file employees in accordance with their spheres of responsibility to enhance their awareness of safety and compliance was completed on May 18, 2016.
- 3) Regulations for implementation of safety education training, dated June 14, 2018, were formulated, setting up quarterly recurrent training and education to enhance the awareness of safety and compliance which is continuously held on a regular basis.

* The completion report can be found on the JTSB website.

http://www.mlit.go.jp/jtsb/airkankoku/kankoku9re_170328.pdf

8 Provision of factual information in 2017

The JTSB provided factual information on one case (one aircraft accident and two serious incident) to relevant administrative organs in 2017. The contents are as follows.

① **Aircraft serious incident involving a Boeing 777-300, registered HL7534, operated by Korean Air Lines Co., Ltd.**

(Information provided on November 8, 2017)

The Japan Transport Safety Board provided the following information on the serious incident that occurred on May 27, 2016, to Civil Aviation Bureau, the Ministry of Land, Infrastructure, Transport and Tourism.

(Summary of the serious incident)

At around 12:38 Japan Standard Time (JST: UTC+9hr) on May 27, 2016, while a Boeing 777-300, registered HL7534, operated by Korean Air Lines Co., Ltd. was making a takeoff run on Runway C at Tokyo International Airport, a malfunction occurred in engine No.1 (left-side), causing the takeoff to be aborted and the aircraft to stop on the runway, whereupon the emergency evacuation slide was used to evacuate the passengers.

(Content of investigation)

Investigations into the damaged engine No.1 and the fire breakout confirmed that the first stage high pressure turbine disk had been partially fractured, damaging its case and the engine cover.

The turbulence of the engine, which resulted from the fracture of the first stage high pressure turbine disk, caused cracks in an engine part (fuel oil heat exchanger) and fuel leaked from the part under review causing a fire outside the fire protection section including the engine cover, as confirmed by the investigations.

Fire Breakout on No. 1 Engine





② Serious aircraft incident involving a Boeing 777-200ER, registered PH-BQC, operated by KLM Royal Dutch Airlines

(Information provided on November 8, 2017)

The Japan Transport Safety Board provided the following information on the serious incident that occurred on September 23, 2017, to Civil Aviation Bureau, the Ministry of Land, Infrastructure, Transport and Tourism.

(Summary of the serious incident)

An airplane, registered PH-BQC (Boeing 777-200ER) and operated by KLM Royal Dutch Airlines, took off from Kansai International Airport on September 23, 2017, and dropped a fuselage panel from the root of the main right wing during climb, which hit a motor vehicle running around Kita Ward, Osaka City.

(Content of investigation)

Facts discovered by investigations to date

- Fractures found in the bracket (metal fitting P/N:149W5913-4) fixing the panel (198AR) to the fuselage



- After removing the bracket, bolts and screws fixing the panel to the fuselage were found fitted to the fuselage. But a wrong bolt was used.
- The panel had a hole with signs showing the passage of a bolt and a screw.

* The information provided can be found on the JTSB website.

<http://www.mlit.go.jp/jtsb/iken-teikyo/PHBQC20170923.pdf>

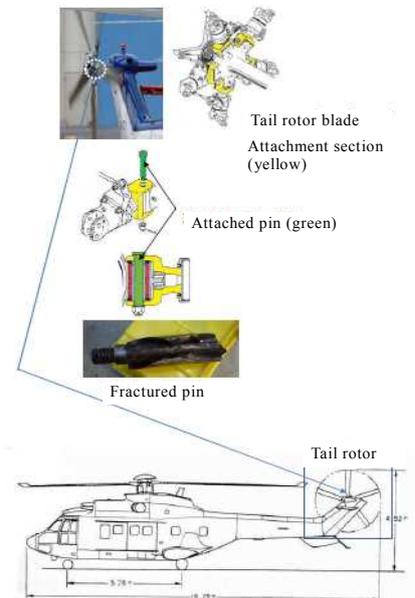
③ **Aircraft accident involving an Aeroespacial AS332L, registered JA9672, operated by Toho Air Service Co., Ltd.**

(Information provided on November 21, 2017)

The Japan Transport Safety Board provided the following information on the incident that occurred on November 8, 2017, to Civil Aviation Bureau, the Ministry of Land, Infrastructure, Transport and Tourism.

(Summary of the accident)

A helicopter, registered JA9672 (Aeroespacial AS332L) and operated by Toho Air Service Co., Ltd., took off from the temporary airfield in Yamanashi Prefecture on November 8, 2017, and crashed, while flying over Ueno Village, Gunma Prefecture, on a road in the village.



(Content of investigation)

Facts discovered by investigation to date

- A pin at the root of the tail rotor of the crashed aircraft was fractured

As a result, the users of the AS332L and AS332L1 aircraft were

- provided by the designer and manufacturer of the crashed aircraft (Airbus Helicopters SAS) with the service bulletin, dated November 21 (Japan Time), calling for checking the pin under review
- provided by the European Aviation Safety Agency with the airworthiness directive, also dated November 21 (Japan Time), requiring the implementation of the service bulletin concerned.

* The information provided can be found on the JTSB website.

<http://www.mlit.go.jp/jtsb/iken-teikyo/JA967220171108.pdf>

Column

Analysis of flight conditions via video and other means needed for aircraft accident investigations

Aircraft Accident Investigator

An aircraft accident investigation conducted by aircraft accident investigators needs to confirm the flight route taken by an aircraft concerned and its attitude before the accident in order to determine the causes of the accident. While there are a variety of means of confirmation, video images are among those used especially in the case of light aircraft.

Video images and others include those taken by monitoring cameras at an airport, meteorological and other live cameras, and smartphones and other cameras by passengers or witnesses. To deepen investigation, an important point is to gather as many records as possible and images with a large volume of information (videos).

An investigation starts with hearings with parties concerned, witnesses, local governments, facilities managers and others to determine the kinds of images and others available. When the presence of videos and others are confirmed and the owners of them agree to offer them for use, they can be used for the investigation. As images are taken for various purposes, investigators from time to time need to carefully explain the aim of the aircraft accident investigation in order to obtain the images while winning the owners' understanding. The process is a difficult part of investigation. As mentioned in the aircraft accident investigation manual for investigators, it should be noted that downsampling (processing of low resolution information) may result in depletion of valuable information contained in original data. It is therefore important to obtain original images to the maximum possible extent and accurately confirm the locations of shooting for proper use.

Of obtained images and others, horizontal and vertical profiles of a flight are reproduced (analyzed) in chronological order or combined with geographical positions. There are many things to do in the process. For example, if there are time requirements for use or there are GPS data, necessary corrections are made or both corners at the time of shooting and distortions on lenses are taken into consideration. If images have sound, a delay in the passage of time is added. If there are multiple images, they are superimposed to increase the accuracy of analytical information so as to calculate posture angles, velocity, altitude and others.



A photo of a DC-10 plane taken by a witness just before its crash (selected from the ICAO investigation manual)



Cases of estimation based on visual images obtained are an entry angle from an aboveground target, left, a flying speed from the distance and time of flight, center, and a height of flight above the ground, right.

The action guidelines of the Japan Transport Safety Board mention the implementation of scientific and objective accident investigations. The JTSB is compiling factual information, while not only maintaining but also improving existing methods on a daily basis, to analyze causes. The board is also considering utilizing various methods to make reports more visually understandable.

For use in accident investigations, we humbly ask for the supply, when we request, of video images and others applicable to the confirmation of meteorological and other conditions.

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

Stall during climbing and crash into a runway while attempting go-around

Privately owned Mooney M20C, JA3788

Summary: A privately owned Mooney M20C, registered JA3788, bounced while landing on Runway 27 of Yao Airport and attempted go-around, but stalled during climbing and went into spin, and then crashed into the south side shoulder of the runway on Saturday, March 26, 2016.

A captain and three passengers were on board and all of them were fatally injured.

The aircraft was destroyed and a fire broke out.

Summary and Findings

Flight Situation of the Aircraft

○ Preflight Check by the Captain

- the weight was 2,708 lb and exceeded the maximum weight by 133 lb
- the CG location was 0.52 in. aft for the aft limit corresponding to the maximum weight



It is somewhat likely that these conditions affected the controllability and the stability and contributed to:

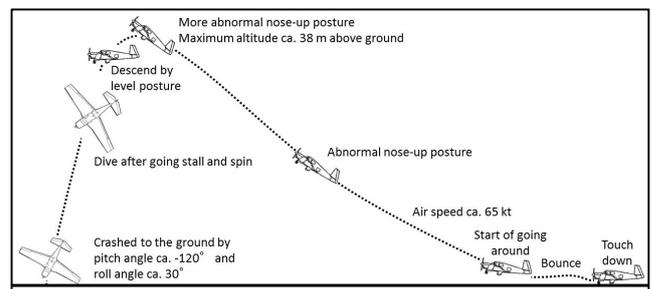
- the abnormal nose-up posture during a go-around
- the decreased stability at low speed flight
- the occurrence of stall and spin.

And, it is probable that:

- the captain and three passengers decided to make a round trip flight on the aircraft to Kobe Airport by the natural course of the conversation at the apron.
- the captain made a round trip flight with insufficient preflight check or without any check.

○ Regarding the bounce the aircraft made, it is somewhat likely that:

- the stability at low speed was reduced by the aft CG location.
- the aircraft approached the runway taking deep approach angle.



Situation of the crash (conceptual figure)

Probable Causes: In this accident, the aircraft bounced while landing and attempted a go-around, and it made an abnormal nose-up continued and decelerated, and then the stall could not be avoided in a situation where it was imminent; consequently, it is highly probable that it stalled and went into spin, and finally it had crashed.

Regarding the reason why the stall could not be avoided in the imminent situation, it is somewhat likely that the captain or passenger A who maneuvered the aircraft could not suppress the excessive nose-up movement because it was exceeding the maneuverable range and others. All members of the aircraft on board were died; accordingly, the investigation was unable to determine the causes.

Besides, the aircraft had overweight and aft CG location for the aft limit corresponding to the maximum weight. It is somewhat likely that these conditions affected the controllability and the stability, and contributed to the bounce on touchdown, the abnormal nose-up posture during a go-around, the decreased stability at low speed flight and the occurrence of stall and spin.

For details, please refer to the accident investigation report. (Published on March 30, 2017)

http://www.mlit.go.jp/jtsb/eng-air_report/JA3788.pdf

Crash into a house right after takeoff

Privately owned Piper PA-46-350P, JA4060

Summary: On Sunday, July 26, 2015, a privately owned Piper PA-46-350P, registered JA4060, crashed into a private house at Fujimi Town in Chofu City, right after its takeoff from Runway 17 of Chofu Airport.

There were five people on board, consisting of a captain and four passengers. The captain and one passenger died and three passengers were seriously injured. In addition, one resident died and two residents had minor injuries. The aircraft was destroyed and a fire broke out.

The house where the aircraft had crashed into were consumed in a fire and neighboring houses sustained damage due to the fire and other factors.

Findings

Takeoff Weight and Balance

- It is highly probable that the aircraft was approximately 58 kg heavier than the maximum takeoff weight.
- It is highly probable that the position of the C.G. was close to the aft limit.
- It is somewhat likely that the captain had insufficient understanding of the risks of making flights under such situation and insufficient safety awareness of observing laws, regulations and provisions.

Flight of the Aircraft at the Time of the Accident

- It is highly probable that the takeoff speed was approximately 73 kt, lower than the lift-off speed of 78 kt.
- The aircraft took off slower than the lift-off speed and climbed with excessive nose-up attitude, and thereby the captain could not accelerate sufficiently to reach necessary climb speed. It is probable that these were the factors for the subsequent decrease in height and the crash.



Improvement of Safety

- It is necessary to promote pilots of small private aircrafts to understand the importance to confirm that requirements (takeoff distance) for performance prescribed on the flight manual are satisfied before departure. As for the actions to the situation of degraded flight performance, it is necessary to enforce instructions and trainings to pilots of small private aircraft to plan the actions in advance.
- It is necessary to study and compile the cases of effective measures connecting entrance taxiways to runway thresholds in order to make maximum use of runway length and inform aerodrome providers and administrators of these case studies.
- It is necessary for small private aircraft to be securely maintained based on a proper understanding of technical information.



Probable Causes: It is highly probable that this accident occurred as the speed of the Aircraft decreased during takeoff and climb, which led the Aircraft to stall and crashed into a residential area near Chofu Airport.

It is highly probable that decreased speed was caused by the weight of the Aircraft exceeding the maximum takeoff weight, takeoff at low speed, and continued excessive nose-up attitude.

As for the fact that the Captain made the flight with the weight of the Aircraft exceeding the maximum takeoff weight, it is not possible to determine whether or not the Captain was aware of the weight of the Aircraft exceeded the maximum takeoff weight prior to the flight of the accident because the Captain is dead. However, it is somewhat likely that the Captain had insufficient understanding of the risks of making flights under such situation and safety awareness of observing relevant laws and regulations.

It is somewhat likely that taking off at low speed occurred because the Captain decided to take a procedure to take off at such a speed; or because the Captain reacted and took off due to the approach of the Aircraft to the runway threshold. It is somewhat likely that excessive nose-up attitude was continued in the state that nose-up tended to occur because the position of the C.G. of the Aircraft was close to the aft limit, or the Captain maintained the nose-up attitude as he prioritized climbing over speed.

Adding to these factors, exceeding maximum takeoff weight, takeoff at low speed and continued excessive nose-up attitude, as the result of analysis using mathematical models, it is somewhat likely that the decreased speed was caused by the decreased engine power of the Aircraft; however, as there was no evidence of showing the engine malfunction, it was not possible to determine this.

For details, please refer to the accident investigation report. (Published on July 18, 2017)

http://www.mlit.go.jp/jtsb/eng-air_report/JA4060.pdf

Crash into houses not recovering from a spin

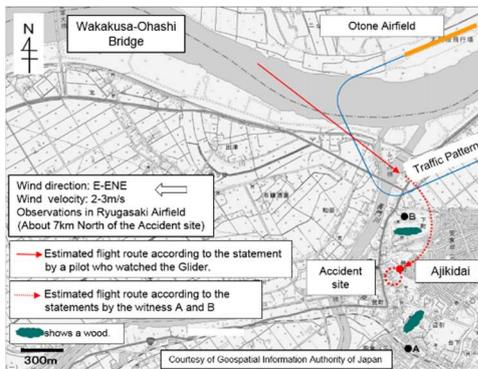
Privately owned PZL-Bielsko SZD-50-3 Puchacz, JA50KM

Summary: On Thursday, March 17, 2016, a privately owned PZL-Bielsko SZD-50-3 Puchacz, registered JA50KM, launched from the Otone airfield for a flight training by aero-tow. It crashed on two houses in a residential area in Sakae-town, Inba-gun, Chiba prefecture and was destroyed and both of an instructor and a trainee on board died.

Findings

Situation at the time of the accident

- Thermal: The temperature is apt to rise due to solar radiation since the area around the accident site is a densely populated residential area.
- It is somewhat likely that a thermal was existing locally at the time of the accident.
- It is probable that the glider was banked to left and crashed with the posture that the nose was so low.



The glider had entered a spin since it was flying while rotating with the posture that the nose was so low.

It had entered a spin

There are following possibilities:

- It stalled and entered a spin during a turn in a thermal
- It stalled during turn to manage the altitude in order to land.

It could not recover from the spin

There are following possibilities:

- The recovery operation was not appropriate
- The recovery operation was executed, but the height loss was too large against the flight altitude.

Probable Causes: In this accident, it is probable that the glider was crashed because it had entered a spin and could not recover from it.

Regarding why the Glider entered the spin and could not recover from it, it is not possible to determine the cause because the persons on board died.

For details, please refer to the accident investigation report. (Published on September 28, 2017)

http://www.mlit.go.jp/jtsb/eng-air_report/JA50KM.pdf

Passenger injuries during emergency evacuation using evacuation slides

Boeing 737-800, JA322J

Summary: On Tuesday, February 23, 2016, a Boeing 737-800 registered JA322J and operated by Japan Airlines Co., Ltd, as a scheduled flight 3512 of the company, after being pushed back from an apron, was holding to taxi on a taxiway in order to depart from New Chitose Airport to Fukuoka Airport. Snow started to fall suddenly. The captain decided to move to the designated apron in order to remove the ice and snow from the aircraft. When the aircraft had stopped on a taxiway where the aircraft was moving because snow became harder, odd smells and smoke were generated within the cabin and the flame was confirmed at rear of No.2 engine (right side). Because of these, at around 15:10, an Emergency Evacuation was conducted through the evacuation slide at the Taxiway T2.

There were 165 people in total aboard the aircraft, consisting of the captain and five other crewmembers and 159 passengers. During this Emergency Evacuation, one passenger suffered serious injury and two passenger suffered minor injuries.

The aircraft was not damaged.

Findings

The icing was set at the engine

It is probable that the heavy snow became intense due to the rapid weather deterioration, the icing was set at fan blades and low pressure compressor, the amount of air flow inlet decreased, the efficiency for a compressor lowered, and then the engine oil was leaked into inside of the engine.



○The odd smells and smoke

They were generated because the engine oil was mixed with compressed air from the air-conditioning system and it flew into the cabin in fog like condition.



○Flame at the rear part of the engine

After the engine stopped, the engine oil remained at inside of the tailpipe was ignited by its exposure to the heat of tailpipe.



Emergency Evacuation

Many of passengers attempted to go down the slide with baggage not following instructions from the cabin attendants. The cabin attendants removed their baggage near the emergency exit and some of the baggage were piled up at the space in front of the cockpit door. The flight crews hesitated to move to the cabin fearing the risk of clogging the evacuation route for passengers



Overhead bin after the emergency evacuation

○Accident when using an evacuation slide

The body of the passenger jumped forward, hit ground from the hip as the passenger was sliding down the slide.

→One passenger suffered serious injury



Probable Causes: In this accident, it is probable that while holding on the taxiway to taxi following the heavy snowfall, odd smells and smoke were generated within the cabin, following these events, because the flame from rear of No.2 engine was continued, the flight crew conducted the Emergency Evacuation from the aircraft. At the time, a passenger descended the slide, fell down to the ground from the hip of the passenger and suffered serious injury.

Regarding the occurrences of odd smells and smoke in the cabin and the continuation of the flame at the rear of No.2 engine, it is probable that the Heavy Snow became intense due to the rapid weather deterioration, and because the icing was set at fan blades and low pressure compressor, the engine oil was leaked into inside of the engine and the oil vaporized into the cabin and the leaked oil was accumulated within in the tailpipe to catch the fire.

For details, please refer to the accident investigation report. (Published on December 21, 2017)

http://www.mlit.go.jp/jtsb/eng-air_report/JA322J.pdf

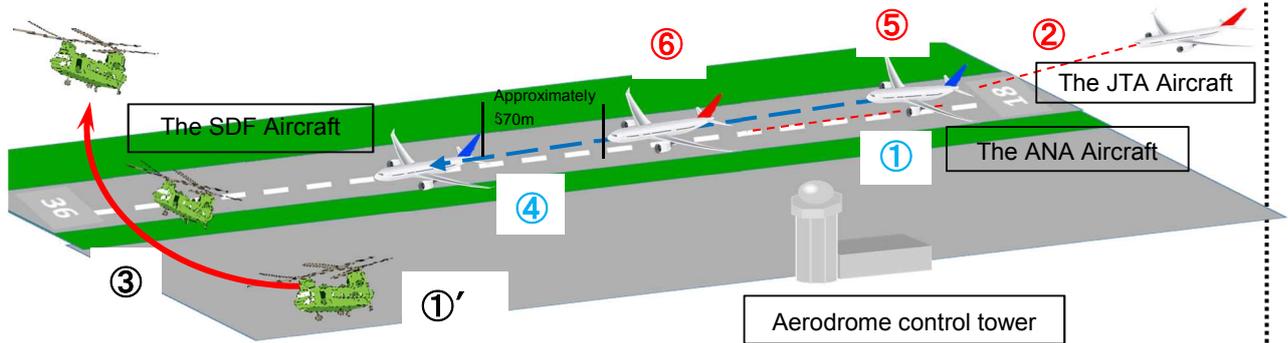
Landing on a runway before it is vacated of another aircraft rejecting takeoff

Japan Air Self-Defense Force CH-47J, 57-4493
All Nippon Airways Co., Ltd. Boeing 737-800, JA80AN
Japan Transocean Air Co., Ltd. Boeing 737-400, JA8938

Summary and findings: On Wednesday, June 3, 2015, a Boeing 737-400, registered JA8938 (the JTA Aircraft) operated by Japan Transocean Air Co., Ltd. as its scheduled flight 610 was approaching the runway 18 of Naha Airport for landing. A Boeing 737-800, registered JA80AN (the ANA Aircraft) operated by All Nippon Airways Co., Ltd. commenced a take-off roll on the runway [①] with the take-off clearance from the aerodrome control tower of the aerodrome control facility however, it rejected a take-off [④] due to the fact a CH-47J of Japan Air Self-Defense Force, registered 57-4493 (the SDF Aircraft) was approaching the runway [③] after taking off from the taxiway A-5 [①'] (and the tower issued a landing clearance to the JTA Aircraft [②]).

After that, although aerodrome control tower of the aerodrome control facility instructed the JTA Aircraft which approaching the runway to execute a go-around [⑤], it landed on the runway [⑥] before the vacating of the ANA Aircraft at 13:24 JST.

There were 44 persons on board the JTA Aircraft, consisting of the Pilot in Command (PIC), four crew members, and 39 passengers; 83 persons on board the ANA Aircraft, consisting of the PIC, five crew members and 77 passengers; seven persons on board the SDF Aircraft, consisting of the Pilot, four crew members, and two passengers. There were no injuries to these persons.



Probable Causes:

○The take-off of the SDF Aircraft

→Its pilots misunderstood the take-off clearance for the ANA Aircraft as the clearance for their aircraft.

→It is highly probable that the Pilot and the Load-master were delayed in noticing the ANA Aircraft that commenced a take-off roll.

○The pilots of the SDF Aircraft misunderstood the take-off clearance for the ANA Aircraft as their take-off clearance

→Although they could not accurately hear what was transmitted to them by the tower, it is probable that they did not make confirmation of the contents of the transmission.

→It is highly probable that the pilots of the SDF Aircraft did not notice misunderstanding the take-off clearance, as there was nothing pointed out from the tower to the wrong read-back of the SDF Aircraft.

○The ANA Aircraft rejected take-off

→It is highly probable that while the PIC was in the situation that he was not able to determine the flight direction of the SDF Aircraft approaching its departure course after the take-off of the SDF Aircraft and because the PIC of the ANA Aircraft felt a serious danger in the continued take-off; therefore, he decided to reject the take-off.

○The JTA Aircraft landed on the runway

→The PIC of the JTA Aircraft recognized the existence of the ANA Aircraft on the runway when it started flare, but

- it had been issued the landing clearance by the aerodrome control tower
- it was judged by the PIC that it could land safely, based on his experience at the airport and on the same type of aircraft and the landing performance.

→It is somewhat likely that the judgment is related to the fact the PIC could not confirm the trend of the SDF Aircraft which had crossed over the runway.

○The JTA Aircraft landed on the runway although the aerodrome control tower instructed it to execute a go-around

→It had already landed on the runway and the reverse thrust operation was started when the PIC and the FO were recognizing the instruction.

→It was involved that the instruction of executing a go-around had missed the timing.

It is certain that this serious incident occurred as follows: when the Aircraft B rejected a takeoff on the runway 18 due to the Aircraft A crossed over in its front, and the Aircraft C landed on the runway 18 before its vacating.

For details, please refer to the serious incident investigation report. (Published on April 27, 2017)

http://www.mlit.go.jp/jtsb/eng-air_report/57-4493_JA80AN_JA8938.pdf