AIRCRAFT ACCIDENT INVESTIGATION REPORT

PASSENGER INJURY DURING DISEMBARKATION

USING EVACUATION SLIDES

JETSTAR JAPAN CO., LTD

AIRBUS A320-232, JA14JJ

CHUBU CENTRAIR INTERNATIONAL AIRPORT

AT ABOUT 07:51 JST, JANUARY 7, 2023

March21, 2025

Adopted by the Japan Transport Safety Board

Chairperson TAKEDA Nobuo
Member TAKANO Shigeru
Member MARUI Yuichi
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1. PROCESS AND PROGRESS OF THE AIRCRAFT ACCIDENT INVESTIGATION

1.1 Summary of the Accident	On Saturday, January 7, 2023, an Airbus A320-232, JA14JJ, operated by Jetstar Japan Co., Ltd., took off from Narita International Airport and started to fly to Fukuoka Airport, however, it changed the destination to Chubu Centrair International Airport in response to a bomb threat against the aircraft. After the landing at Chubu Centrair International Airport, when disembarking from the aircraft using evacuation Slides on the taxiway, one passenger suffered serious injury, and four passengers sustained minor injuries.
1.2 Outline of the Accident Investigation	On February 10, 2023, the Japan Transport Safety Board (JTSB) designated an investigator-in-charge and two other investigators to investigate this accident. Although this accident was notified to the French Republic, as the State of Design and Manufacture of the aircraft involved in this accident, the French Republic did not designate its accredited representative. Comments on the draft Final Report were invited from the parties relevant to the cause of the accident and the Relevant State.

2. FACTUAL INFORMATION

1 History of the Flight

According to the statements of the Pilot in Command (PIC), First Officer (FO), cabin crew members and injured passengers, as well as the records of the flight data recorder and the cockpit voice recorder, the history of the flight is summarized as below.

On January 7, 2023, at about 06:36 Japan Standard Time (JST: UTC + 9hrs, unless otherwise stated all times are indicated in JST on a 24-hour clock), an Airbus A320-232, JA14JJ, operated by Jetstar Japan Co., Ltd., took off from Narita International Airport as scheduled Flight 501 and started to fly to Fukuoka Airport, with 142 persons on board, consisting of the PIC, five other crew members, and 136 passengers.

After that, the company obtained the information that there had been a bomb threat against the aircraft and informed the aircraft to that effect by radio. Upon receiving this information, the aircraft changed its destination to Chubu Centrair International Airport.

After the aircraft landed on Runway 36 at Chubu Centrair International Airport at 07:41, it stopped facing south on Taxiway A. After stopping the aircraft, the PIC judged that the passenger should be disembarked from the aircraft immediately and decided to use the evacuation Slides (hereinafter referred to as the "Slide(s)").

After instructing the cabin crew members to perform a "Non-urgent Evacuation" (The disembarkation implementation procedures are stipulated in the company regulations. see 2.7 (3)) suing the Slides, the PIC made announcement to the passengers informing that a evacuation with the use of the Slides shall be performed because they had received a bomb threat. After the announcement, the four cabin crew members opened each responsible door (see Figure 1) and deployed the Slides. At around 07:50, the passengers started to disembark, and all passengers completed the disembarkation from the aircraft at around 07:55. At this time, a passenger who disembarked from the aircraft via the left aft exit (L2), suffered serious injury and four other passengers sustained minor injuries.

However, there were no explosives found on board the aircraft.

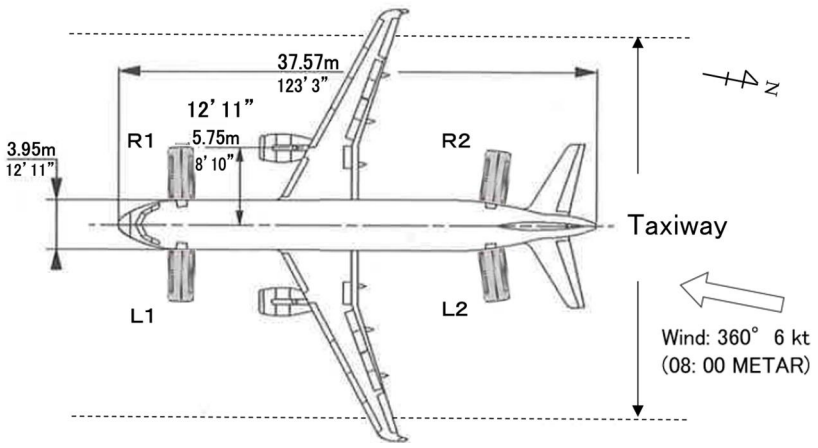

Figure 1: Three Angle Views of the Aircraft
(when the Slides used for the disembarkation are deployed)

	This accident occurred at about 07:51 on January 7, 2023, on Taxiway A (34°50'52" N, 136°48'37" E) at Chubu Centrair International Airport.
2.2 Injuries to Persons	One passenger (Male, Age 67) suffered serious injury (Lumbar fracture). Four passenger sustained minor injuries (Male, Age 40, Female, Age 40, Female, Age 26, and Female, Age 24) (Scratches on hand, cuts on feet and others).
2.3 Damage	None
2.4 Personnel Information	(1) PIC: Age 43 Airline transport pilot certificate (Airplane) October 23, 2014 Type rating for Airbus A320 December 6, 2012 Class 1 aviation medical certificate Validity: August 28, 2023 Total flight time 10,124 hours 04 minutes Flight time on the same type of aircraft 7,116 hours 01 minutes (2) FO: Age 47 Commercial pilot certificate (Airplane) March 10, 2000 Type rating for Airbus A320 July 23, 2018 Instrument flight certificate January 15, 2007 Class 1 aviation medical certificate Validity: November 1, 2023 Total flight time 4,093 hours 47 minutes Flight time on the same type of aircraft 2,710 hours 04 minutes (3) Customer Service Manager (cabin crew in charge of left front exit): Age 38 16 years of cabin crew experience (4) Cabin crew member A (in charge of left aft exit): Age 36 3 years of cabin crew experience (5) Cabin crew member B (in charge of right front exit): Age 35 10 years of cabin crew experience (6) Cabin crew member C (in charge of right aft exit): Age 49 7 years of cabin crew experience
2.5 Aircraft Information	Aircraft type Airbus A320-232 Serial number 5695 Date of Manufacture August 27, 2013 Certificate of airworthiness No. Tou-2021-135 Validity: This Certificate is valid from June 29, 2021 and remains valid as long as the aircraft identified above is maintained in accordance with Jetstar Japan Co., Ltd.'s continuing airworthiness maintenance program.
2.6 Meteorological Information	Aviation Routine Weather Reports (METAR) data at the time of this accident at Chubu Centrair International Airport were as follows: 08:00 Wind direction: 360°, Wind velocity: 6 kt, Prevailing visibility: 10 km or more Clouds: Amount 1/8, Type Cumulus, Cloud base 2,000 ft Clouds: Amount 3/8, Type Stratocumulus, Cloud base 4,000 ft Temperature: 4 °C, Dew point: 2 °C Altimeter setting (QNH): 1,014 hPa, 29.97 inHg
2.7 Additional Information	(1) Video Images of Disembarkation The disembarkation by crew members and passengers in this accident was

	filmed by a visitor on the Sky deck of Chubu Centrair International Airport Terminal, and the Chubu Central Japan International Airport Co., Ltd. personnel. (2) Slide Deployment Status According to the statements of crew members and the filmed video images, all Slides at each exit were normally deployed. In addition, during the disembarkations, those Slides were not hit by a gust of wind, and no leakage of gas filled in the Slides was observed. In the detailed check of the aircraft's Slides conducted after the accident, scratch marks on the Slides were confirmed, but there was no such damage that could impede the use of those Slides. (3) About "Non-urgent Evacuation" Regarding the disembarkation using the Slides, the company takes two types of responses such as "Emergency Evacuation" and "Non-urgent Evacuation". With respect to "Non-urgent Evacuation", there are no national standard criteria or guidelines*1, but the disembarkation implementation procedures are stipulated in the company regulations. In an "Emergency Evacuation", maximum speed would be required and the use of all the emergency exits including over-wing exits are considered, on the other hand, in a "Non-urgent Evacuation", the number of injured passengers shall be minimized by sliding down the Slides slowly, and over-wing exits are not used. Besides, in an Emergency Evacuation, the cabin crew members are required to instruct and call for passengers using the Slides to "Jump onto the Slide!", on the other hand, in a Non-urgent Evacuation, they are required to instruct passengers to "Sit and slide!" Furthermore, neither the safety briefing card installed in the passenger seats of aircraft operated by the company, nor the pre-flight safety demonstration provided to passengers explained that there is a disembarkation method called "Non-urgent Evacuation", and passengers need to raise up their upper body when sliding down the Slides. To inform passengers about keeping upper body upright when descending the Slides, it is stated in the "General Guidelines for Safety Information Provided to Passengers" (Kokukansanji No. 857, March 29, 2022), which provide necessary matters for the review of the safety information that should be provided to passengers according to the Detailed Regulation of Evaluation for Operation Manual, and state that that the safety briefing card should have the information that passengers need to raise up their upper body when descending

*1 The Emergency Evacuation Standards Aviation Rulemaking Committee (ARC), which was established by the Federal Aviation Administration (FAA) in April 2019, recommends the FAA, in coordination with other state aviation authorities and aircraft accident investigative agencies, to collect, catalogue, and analyze for "Rapid Disembarkations", a concept similar to "Non-urgent Evacuation" for better understanding the decision-making processes that lead to these events. The ARC further recommends the FAA and its regulatory partners to use this information in order to determine whether a decision to initiate a "Rapid Disembarkation" is ever appropriate in certain limited circumstances (in the Final Report dated May 20, 2020).
The Report is available on the following webpage (accessed 24 December 2024)
https://www.faa.gov/regulationspolicies/rulemaking/committees/documents/emergency-evacuation-standards-aviation-1

the Slides so that they are able to see their landing point (the Guidelines 3-2, c, i).

(4) Cabin Crew Members' Instructions during Disembarkation

When passengers disembarked, an individual cabin crew member was positioned at each exit, and repeated calling out to passengers, such that "unfasten your seat belts, Leave your luggage, High heels off, come this way for the exit, form one line, sit and slide, and put your hands on laps,", which are set forth in the company regulations as instructions during disembarkation using the Slides.

However, the passenger, who suffered serious injury, using the left aft exit, stated that the passenger had recognized neither the presence of Cabin Crew Member A positioned near that exit, nor the instructions from Cabin Crew Member A such as "Sit and slide, and Put your hands on laps."

(5) Disembarkation of Passengers

According to the statements of crew members and the video images, they performed disembarkation as follows:

The disembarkation started about one minute after the PIC made announcement about the disembarkation using the Slides, and it took 4 minutes 35 seconds until all crew members and passengers completed their disembarkation. During disembarkation, the passengers in the cabin stayed calm without rushing to each exit. In addition, most of passengers were starting to descend the Slide after sitting at each exit.

The PIC was instructing the cabin crew members to guide the passengers who had disembarked to the left side of the aircraft (terminal side). Upon receiving this instruction, as judging that it would be dangerous for passengers who disembarked to pass through under the aircraft, Cabin Crew Member C in charge of right aft exit did not allow the passengers to disembark from the relevant exit. Cabin Crew Member B in charge of right front exit guided the passengers to disembark from the left front exit, and directed them to the right front exit only when they jammed in the aisle.

Table 1 shows the number of crew members and passengers who disembarked from each exit.

Table 1: The Number of Evacuators who Disembarked from Each Exit

Exit	Passengers	Crew	Total	Those who fell or landed from their low back
Left front (L1)	52 (One infant among them)	3	55	4 (Two slightly injured)
Left aft (L2)	58	1	59	4 (One seriously injured and one slightly injured)
Right front (R1)	26 (One infant among them)	1	27	2 (One slightly injured)
Right aft (R2)	0	1	1	0

(6) Status of Injured Passengers

a Passenger with serious injuries

A seriously injured passenger (Male, Age 67) stated that he landed on

the ground from his low back as his descending the slide speed increased during the disembarkation from the left aft exit.

In addition, according to the video image, the relevant passenger started to slide down the Slide without taking a sitting posture at the emergency exit, and immediately afterwards, he was in a face-up posture and sliding down the Slide on his back, and in that posture, his body jumped out of the Slide and he landed on the ground on his low back.

b Passengers with minor injuries

Table 2 shows how the four passengers who suffered minor injuries disembarked.

Table 2: Disembarkation Status of Passengers with Minor Injuries

	Sex	Age	Exit	Details of injury	Disembarkation status
1	Female	26	Left front (L1)	Cuts on left feet	Going slightly leaning backward before landing, the evacuator was in posture as if landing on her bottom.
2	Male	40	Left front (L1)	Scratches on right arm (elbow)	The evacuator was sliding the Slide keeping his upper body upright. But stood up on the Slide downside and fell forward after getting off the Slide.
3	Female	24	Left aft (L2)	Scrapes on right palm Twisted a hand	Going slightly leaning backward before landing, the evacuator jumped out of the Slide with almost faceup posture and landed on her legs and low back (as if landing on his bottom). At the Slide's end, the evacuator's body had jumped out of the Slides not directly facing the sliding direction but facing diagonally to the left relative to the travel direction.
4	Female	40	Right front (R1)	Scrapes on letf palm Twisted a hand	The evacuator stood up after landing and fell forward. (unknown about her situation while descending the Slide.

※The details of injury are based on a report from the company.
※Disembarkation status is based on analysis of the filmed video image.

(7) Assistance by Passengers at the Time of Using the Slides

The assistance by passengers at the time of using the Slides is provided on the purpose of preventing injuries to passengers when their landing on the ground from the Slides. Assisting passengers are assigned on the request of crew members, and before take-off, the passengers that occupy an exit seat receive the request. On this occasion, the Detailed Regulation of Evaluation for Operation Manual established by the Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism states, the Operation Manual shall stipulate that the emergency exit seats*2 should not be assigned (allocated) to those who are considered inappropriate to assist a safe evacuation in the event of an emergency evacuation. Besides, the company specifies use conditions of the emergency exit seats, "Exit seat passengers are encouraged to voluntarily assist in the evacuation in the event of an unexpected emergency" and others.

The company did not document the procedures to ensure to have assisting passengers at the bottom of the Slides and request them to assist in the event of a Non-urgent Evacuation using the Slides.

*2 "Emergency exit seats" mean the exit seat rows in principle and refer to the seat rows on the aft aisle side, among those adjacent to the aisle connecting the left and right emergency exits. Not including the seats rows with the aisle in front separated by galleys, restrooms, partitions and others.

On the accident flight, there were no passengers who had received a request for assistance before take-off as the emergency exit seat was vacant, and no request was made to secure assisting passengers even before initiating a non-urgent evacuation.

During the Non-urgent Evacuation, a cabin crew member requested some passengers on the verge of disembarking to assist the following other passengers, but the assistance by the relevant passengers was not provided, and only the FO, who had disembarked earlier for guiding the passengers on the ground, assisted the last four passengers who had disembarked from the left aft exit.

(8) Similar Events

According to the JTSB Digests No. 26*3 (Published December 2017 ; Injuries suffered in Use of Evacuation Slides during an Emergency Evacuatio), of the events for which accident investigation reports were published by the JTSB, its predecessors, the Aircraft Accidents Investigation Commission, and the Aircraft and Railway Accidents Investigation Commission, emergency evacuations using the Slides took place in 14 events, and passengers suffered injuries in 13 events.

In "2. Circumstances Where Injuries Occurred" of the JTSB Digests, specific circumstances of injuries are described as follows (partially omitted):

- *When landing on as if jumping out of the Slide's end, the evacuator sustained damage to the low back.*
- *With no one on the ground to assist, the evacuator landed straight on the low back and bruised it.*
- *As the descending speed increased, the evacuator's body was thrown off and the evacuator's hand was broken.*

In "4. Summary" of the JTSB Digests, it is pointed out that an appropriate evacuation posture shall be taken, and the cooperation by assisting passengers at the bottom of the Slides could reduce the number of injured evacuators.

The following details are reported in the reports about the Events introduced in the Digests.

a. Boeing 747-400, JA8096 (Occurred on May 2, 1993)

In the Aircraft Accident Investigation Report (Aircraft Accident Report 94-6) , it is reported that where an emergency evacuation was conducted because during taxiing after landing, the cabin was filled with white smoke, it was reported that there were some of ground crew members who were assisting the evacuation at the bottom of the Slide tried to catch an evacuator who had slid down the Slides in front of them, thus tumbled over with the passengers due to the force of the fall (page 109 of the report).

Besides, in the investigation, an examination of the Slide function was conducted, which revealed, regarding the effect of the posture of descending the Slides, that sliding down the Slide on the back more likely make it difficult to take a normal posture at the time of landing on the ground in

*3 For more information, see the following JTSB website.
https://www.mlit.go.jp/jtsb/bunseki-kankoubutu/jtsbdigests_e/jtsbdigests_No26/No26_pdf/jtsbdi-26_all.pdf

comparison to sitting straight when sliding down the Slide (Page 124 of the report) (see Figure 2). Furthermore, it is analyzed that the Slide is designed for a prompt escape in the event of an emergency, therefore, in case of involving such factors as worsening the sliding conditions, injuries may occur (on page 132 of the report).

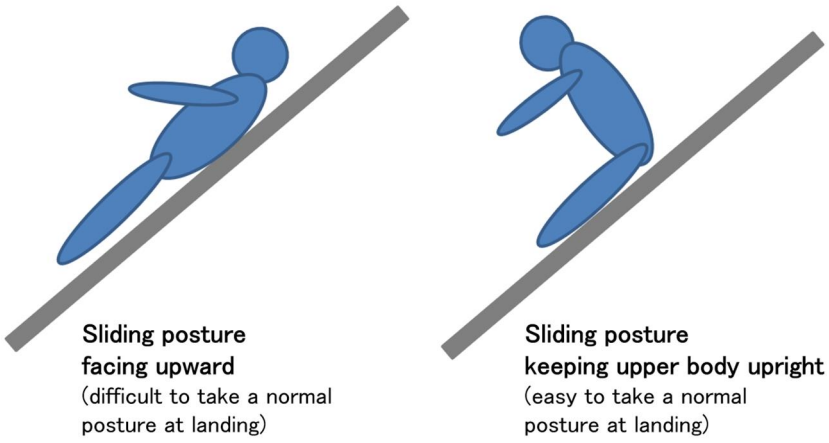

Figure 2: Posture in Descending the Slides

b. Airbus Industry A330-303VH-QPE (Occurred on August 21, 2005)

In the Aircraft Accident Investigation Report (Aircraft Accident Report AA2008-3), it is reported that during the flight, a warning was displayed indicating the presence of smoke in the cargo compartment, therefore, the flight crew made the decision to change their destination and an emergency evacuation was conducted after landing. And in the analysis conducted on prevention of injuries in the event of an emergency evacuation, it is stated that by paying full attention in a way most appropriate for the nature of the emergency as long as time al-lows, crew members must make every effort to request the passengers sitting near emergency exits to provide assistance on the ground for the following passengers, and prevent situations where passengers may become incapable of moving by themselves due to injuries during evacuation (on page 40 of the report).

c. Boeing 737-800, JA322J (Occurred on February 23, 2016)

In the Aircraft Accident Investigation Report (Aircraft Accident Report AA2017-9), it is reported that while holding on the taxiway following the heavy snowfall, odd smells and smoke were generated in the cabin, and the flame from the rear engine on the right side was confirmed, therefore crew members conducted the emergency evacuation from the aircraft. In the analysis conducted on situations in the event of an emergency evacuation, it is described that on the ground, two assisting passengers assigned by a cabin crew member were helping the evacuation on both sides and at the bottom of the Slide, pulling up the evacuating passengers and urging them to move away from the aircraft, but it is probable that as the passenger with serious injury was unable to receive sufficient assistance, when sliding down the Slide, his body jumped forward, he landed on the ground on his low back and suffered the injury (on page 35 of the report).

	In addition, it is probable that keeping upper body upright make it difficult for the evacuator body to jump out of the Slide and helps the assisting passenger to assist the evacuator (on the same page of the report).

3. ANALYSIS

(1) Passenger Sustained Serious Injury

The JTSB concludes as follows:

The seriously injured passenger was in a posture of sliding down on his back from the time when starting to slide down the Slide, and in that posture, his body jumped out of the Slide and he landed on the ground on his low back. From this, the passenger was highly probable seriously injured because he landed on the ground on his back.

The reason the relevant passenger landed on the lower back on the ground because sliding down the Slide on his back, he was unable to take an appropriate posture at landing on the ground, as in the report on the past similar Event a., which states that descending the Slide on the back makes it difficult to take a normal landing posture. Descending the Slide on his back, he was unable to take an appropriate posture at landing on the ground, as in the report on the past similar Event a., which states that descending the Slide on the back makes it difficult to take a normal landing posture.

To prevent injuries during the disembarkation using the Slides, it is important to descend the Slide by keeping upper body upright that makes it easy to take an appropriate landing posture, as recommended in the past similar Event c. Therefore, it is vital to surely inform passengers that they should put their hands on the laps, extend their hands forward, and keep their body upright when sliding the Slides by having the visual of landing point.

(2) Assisting Passengers' Positions at the Bottom of the Slides

The JTSB concludes as follows:

In this accident, the last four passengers who had disembarked from the left aft exit could be assisted by the FO at the bottom of the Slide, but other passengers were unable to receive assistance at the bottom of the Slides. This is probably because the company's manual did not specify the procedures to request the assistance of passengers in the event of a non-urgent evacuation, and in fact, when actually starting the caution disembarkation, no such a request had been made by crew members.

In terms of injury prevention, as described in the report on the past similar Event b. and the JTSB Digests, it is possible that positioning assisting passengers at the bottom of the Slides would reduce the injuries to passengers descending the Slides. Therefore, it is important to ensure to request for the assisting passengers to assist other passengers on the ground in advance before initiating the disembarkation using the Slides.

On the other hand, in the report about Event a. described in 2.7 (8), it is stated that an assisting passenger at the bottom of the Slides collided with the passenger who had descended the Slide and tumbled over with them. In light of this, it is necessary to keep in mind: not only preventing the descending passengers from sustaining injuries but also preventing the relevant assisting passengers from sustaining injuries due to collision with the evacuating passengers.

(3) Using the Slides during Non-urgent Evacuation

The JTSB concludes as follows:

As analyzed in the report on the past similar Event a., in case of involving factors worsening the sliding conditions such as not taking a posture to keep upper body upright, using the Slides

during a non-urgent evacuation has a risk that passengers may sustain injuries just like using the Slides during an emergency evacuation. With regard to a non-emergency evacuation and rapid disembarkation, which are situations between emergency evacuation and normal disembarkation, it is desirable that aviation industry as a whole should share the status quo, and consider the need for the future action.

4. PROBABLE CAUSES

The JTSB concludes that it is certain that the probable cause of this accident was that, during a non-emergency evacuation using the evacuation slide, the passenger descended the slide in a supine position, landed on the lower back on the ground and suffered serious injuries.

It is probable that the passenger slid down the slide in a supine position, as there were no safety instructions on how to take a safe posture when sliding down the evacuation slide for passengers on board.

5. SAFETY ACTIONS

5.1 Safety Actions Required	As indicated in the analysis, it is important for air carriers operating aircraft equipped with the Slides to ensure to inform the passengers of the posture taken when sliding down the Slides and request for assisting passengers to assist other passengers on the ground.
5.2 Safety Actions Taken after the Accident	(1) Measures Taken by the Company a. Informed the relevant people in the company of the summary of this accident. (On January 13 and February 10, 2023) b. Added the regulations on requesting passenger assistance in the event of a non-emergency evacuation using the Slides, in the manual used by the cabin crew members. (Operation started on July 15, 2023) c. Created an instruction video on assistance and others in emergencies and provided education to all company employees. (From May 20 through June 30, 2023) d. Added a note informing passengers that when using the evacuation Slides, "Please firmly keep your body upright so as to have the visual of landing point" on the company's webpage*4. (On June 26, 2023) e. The safety guidebook in the passenger cabin has been revised and a diagram has been added to show the correct position to take when descending the slide.(November 28, 2024) (2) Safety Actions Taken by the Civil Aviation Bureau (CAB) of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) a. Developed and issued (on June 5, 2023) a guideline for the specified Japanese air carriers*5 (excluding those operating only cargo airplanes) to establish procedures and others to ensure the assisting passengers, whether or not there are passengers assigned to the position at the emergency exit seats. b. MLIT has raised awareness among general aircraft users of the points

*4 https://www.jetstar.com/jp/ja/help/articles/boarding

*5 The "specified Japanese air carrier" refers to a Japanese air carrier whose management scale shall be that the seating capacity of the aircraft used shall be 100 or more or maximum take-off weight of the aircraft shall be no less than 50 thousand kilograms.

	to be observed during an emergency evacuation through the MLIT website*6 and others.

*6 https://www.mlit.go.jp/koku/koku_tk10_000039.html