

AI2021-4

**AIRCRAFT SERIOUS INCIDENT
INVESTIGATION REPORT**

SKYMARK AIRLINES INC.

J A 7 3 A B

ALL NIPPON AIRWAYS CO., LTD.

J A 8 8 5 A

April 22, 2021

The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board (and with Annex 13 to the Convention on International Civil Aviation) is to prevent future accidents and incidents. It is not the purpose of the investigation to apportion blame or liability.

TAKEDA Nobuo
Chairperson
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT

AIRCRAFT CLEARED TO LAND IS APPROACHING A RUNWAY WHICH IS CROSSED BY OTHER AIRCRAFT TOKYO INTERNATIONAL AIRPORT AROUND 18:05 JST, JUNE 15, 2019

1. SKYMARK AIRLINES INC.
BOEING 737-800, JA73AB
2. ALL NIPPON AIRWAYS CO., LTD.
BOEING 787-9, JA885A

April 1, 2021

Adopted by the Japan Transport Safety Board

Chairperson TAKEDA Nobuo
Member MIYASHITA Toru
Member KAKISHIMA Yoshiko
Member MARUI Yuichi
Member NAKANISHI Miwa
Member TSUDA Hiroka

1. PROCESS AND PROGRESS OF THE INVESTIGATION

1.1 Summary of the Serious Incident	On Saturday, June 15, 2019, a Boeing 787-9, registered JA885A, operated by All Nippon Airways Co. Ltd., crossed Runway 34L at Tokyo International Airport after receiving an ATC clearance, when a Boeing 737-800, registered JA73AB, operated by Skymark Airlines Inc., was on the final approach to the runway after receiving a landing clearance.
1.2 Outline of the Serious Incident Investigation	<p>The occurrence covered by this report falls under the category of “Attempt of landing on a runway being used by other aircraft” as stipulated in Article 166-4, Item (ii) of the Ordinance for Enforcement of Civil Aeronautics Act (Ordinance of Ministry of Transport No. 56 of 1952) prior to revision by the Ministerial Ordinance on Partial Revision of the Ordinance for Enforcement of Civil Aeronautics Act (Ordinance of Ministry of Land, Infrastructure, Transport and Tourism No. 88 of 2020), and is classified as a serious incident.</p> <p>On June 16, 2019, upon receiving the serious incident notification, the Japan Transport Safety Board (JTSB) designated an investigator-in-charge and three other investigators to investigate this serious incident.</p> <p>The United States of America, as the State of Design and Manufacture of the aircraft involved in the serious incident, designated its accredited representative.</p>

Comments were invited from parties relevant to the cause of this serious incident and the Relevant State.

2. FACTUAL INFORMATION

2.1 History of the Serious Incident	<p>According to the statements of the flight crew of a Boeing 737-800, registered JA73AB, operated by Skymark Airlines Inc. (hereinafter referred to as “the Aircraft A”), the flight crew of Boeing 787-9, registered JA885A, operated by All Nippon Airways Co. Ltd. (herein referred to as “the Aircraft B”), the air traffic controller (hereinafter referred to as “the Trainee”) who was receiving on-the-job-training (hereinafter referred to as “the OJT”) at the tower control position (west) of Tokyo Aerodrome Control Facility (hereinafter referred to as “the Tower West Position”), and the air traffic controller who was giving the training to the Trainee at the Tower West Position (hereinafter referred to as “the Supervisor A”), and records of flight data recorders of the Aircraft A and the Aircraft B, ATS communications*¹ records, and flight tracking records, the history of the serious incident is summarized as follows.</p> <p>On June 15, 2019 around 14:25, a team of air traffic controllers (hereinafter referred to as “the controller(s)”), including the Trainee and the Supervisor A, started the operations of air traffic services in the operation room at Tokyo Aerodrome Control Facility (hereinafter referred to as “the Tower”). The team was routinely carrying out the operations by dividing the operation hours into the 50-minute time slot and rotating the position in charge in each time slot. The Trainee received the OJT at the ground control position in the first three time slots, and for the fourth time slot the Trainee received the OJT at the Tower West Position that controls Runway 34L (hereinafter referred to as “Runway A”). The OJT from the first to the fourth time slots were given by the supervisors*² other than the Supervisor A. Whenever the OJT in each time slot was over, the Trainee left the position in order to receive the feedback from the supervisor and take a break.</p> <p>The Supervisor A started to carry out air traffic control services and related operations at the Tower West Position around 17:45. And around 10 minutes later, the Trainee started receiving the OJT for the fifth time slot at the Tower West Position. According to the Supervisor A, around this time, Tokyo International Airport was under the instrument meteorological condition, but the weather was getting better, and it was possible to have arrival aircraft on the final approach course in sight about 2 nm from the approach end of Runway A. Besides, the air traffic volume was not heavy and the Trainee had already received the OJT for the fourth time slot at the Tower West Position, therefore, the Supervisor A judged on the situation that there would be no problem in conducting the OJT for the Trainee. The Trainee and</p>
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*¹ “ATS communications” refers to voice communication and data communication that are used as a mean of Air Traffic Services (air traffic control services, flight information services and alerting services).

*² Appointment Criteria of the “supervisor” is specified as follows, “an official who completed the training specified by the Director General of the Civil Aviation Bureau, acquired all the necessary and valid certificates in the air traffic control facility to which he or she belongs, and has the period of work experience specified by the chief of the said facility.

the Supervisor A wore their headsets, and the Supervisor A was monitoring*³ the operations by the Trainee, sitting to the right rear of the Trainee.

The Aircraft A was cleared for ILS approach from the Tokyo Approach, changed the frequencies for communication while approaching Runway A, and established radio communications with the Tower West Position at 18:00:30. The Trainee instructed the Aircraft A to continue the approach because the preceding arrival aircraft (hereinafter referred to as “the Aircraft C”) was on the final approach, 9 nm ahead of the Aircraft A.



Figure 1: The Aircraft A

The Aircraft B landed on Runway 34R (hereinafter referred to as “Runway C”) at 17:59:14. The Aircraft B was taxiing toward the international terminal according to instructions by the controllers while switching the frequencies for the tower control position (East), the ground control position (East), and the ground control position (West). The Supervisor A had been estimating the timing for crossing Runway A around when the Aircraft B landed on Runway C, and expected that it would be possible to have the Aircraft B cross Runway A before the landing of the Aircraft A, but at the same time, the Trainee did not notice the existence of the Aircraft B who was taxiing toward the international terminal.



Figure 2: The Aircraft B

The Supervisor A had been estimating the timing for crossing Runway A around when the Aircraft B landed on Runway C, and expected that it would be possible to have the Aircraft B cross Runway A before the landing of the Aircraft A, but at the same time, the Trainee did not notice the existence of the Aircraft B who was taxiing toward the international terminal.

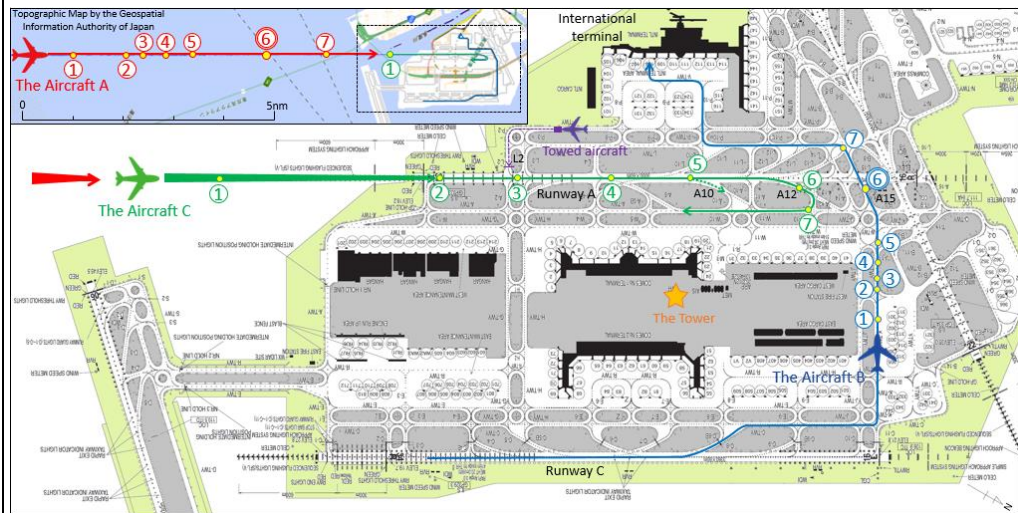


Figure 3: Situation at the time of occurrence of the serious incident

*³ “Monitoring” is to observe behaviors of the trainee, evaluate the available capacity, monitor the proficiency level, and supplementarily instruct and advise the trainee.

According to the Trainee and the Supervisor A, at that time, the ground control position (West) to their left was continuously busy. Regarding the Aircraft C who was about to land, the Tower West Position received their coordination from that position to instruct the Aircraft C to vacate the runway via Taxiway A12, and thus the Trainee and the Supervisor A accepted it. At the same time, the Trainee was concerning about aircraft being towed*⁴ on the taxiway on the international terminal side, but the Supervisor A judged that the Supervisor A should coordinate personally regarding the towed aircraft because the Trainee would have a high load with instructing the Aircraft C as coordinated and having the Aircraft B cross Runway A, and advised the Trainee not to concern about the towed aircraft at the moment.

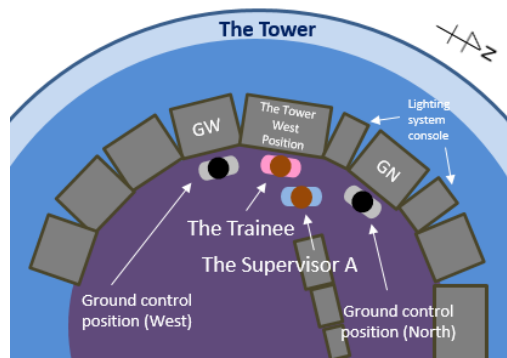


Figure 4: Situation of the Tower West Position and its next positions

At 18:03:19 (Positional relationship, ① in Figure 3), after confirming that the Aircraft C, immediately before landing, had reached over the Approach Lighting System, the Trainee issued the landing clearance to the succeeding Aircraft A. The Trainee confirmed the read-back from the Aircraft A, and on the electronic strip*⁵, attached a LAND stamp*⁶. On the other hand, during this time the Supervisor A was coordinating with the ground control position (North) to its right in order to have the towed aircraft taxi to Taxiway L2, and listening to check whether the operations were carried out without delay according to the coordination. Therefore, the Supervisor A must have heard the landing clearance the Trainee issued to the Aircraft A and the read-back from the Aircraft A through the Supervisor A's headset, but failed to listen to them, and did not notice that the Trainee attach a LAND stamp on the electronic strip.

At 18:03:40 (Positional relationship, ② in Figure 3), the Aircraft B called the Tower West Position, when the Trainee noticed the existence of the Aircraft B for the first time, and instructed the Aircraft B to hold short of Runway A at 18:03:47 (Positional relationship, ③ in Figure 3). According to the Trainee, with little experience in issuing a clearance of crossing Runway A to the aircraft having landed on Runway C, the Trainee was not able to judge on the instant between which arrival aircraft the Trainee would be able to have the Aircraft B cross the runway. Subsequently referring to radar screen and others, the Trainee judged that the Trainee would be able to have the Aircraft

*⁴ "Towing" is to pull / move an aircraft on the ground by another vehicle.

*⁵ "Electronic Strips" shall be described in 2.7(2).

*⁶ "LAND Stamp" refers to a function stamp to record the landing clearance issued by a controller on the electronic strips. (See Figure 5)

B cross the runway after the landing of the Aircraft A and placed the electronic strip of the Aircraft B on its top in the according order. Around this time, the Aircraft C touched down on Runway A, and reduced the speed on its

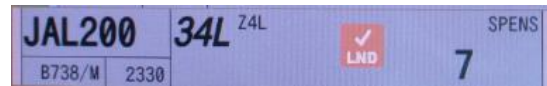


Figure 5: Electronic strip where the LAND Stamp (Red square) was attached (This is different from the one of the serious incident aircraft)

landing roll. The Supervisor A urged the Trainee to promptly issue instruction so that the Aircraft C might not vacate the runway via taxiway A10. At 18:03:57 (Positional relationship, ④ in Figure 3), therefore, the Trainee instructed the Aircraft C to vacate the runway via Taxiway A12. Because the Trainee did not issue a clearance of crossing to the Aircraft B, the Supervisor A urged the Trainee to issue the clearance while confirming that the Aircraft C sufficiently reduced the speed and was heading toward Taxiway A12. At 18:04:09 (Positional relationship, ⑤ in Figure 3), the Trainee cleared the Aircraft B for crossing Runway A as urged by the Supervisor A. The Aircraft B crossed Runway A while visually confirming the Aircraft C, who was vacating the runway, on its left side.

While subsequently receiving feedback instructions from the Supervisor A regarding the procedure to issue a clearance of crossing the runway, when the Aircraft B was crossing the runway, the Trainee looked on the electronic strips in preparation for issuing a landing clearance to the next arrival aircraft and found the LAND stamp on the strip of the Aircraft A. The Trainee remembered that the Trainee had issued the landing clearance to the Aircraft A, and reported it to the Supervisor A. The Supervisor A was surprised and confirmed the LAND stamp on the electronic strip, but was half in doubt about this because he had not listened to the landing clearance that the Trainee had issued to the Aircraft A. Therefore, at 18:05:17 (Positional relationship, ⑦ in Figure 3), the Supervisor A issued a landing clearance to the Aircraft A for confirmation. At 18:06:17, the Aircraft A landed on Runway A.

This serious incident occurred on Runway 34L at Tokyo International Airport around 18:04:46 (Positional relationship, ⑥ in Figure 3) on June 15, 2019, when the approaching Aircraft A was on the final approach course and flying over about 5,700 m (about 3.1 nm) from the runway threshold, the distance between the Aircraft A and the Aircraft B was approximately 8,400 m (about 4.5 nm).

2.2 Injuries to Persons	None
2.3 Damage to the Aircraft	None
2.4 ATC Personnel Information	(1) The Trainee Air Traffic Control Certificate April 1, 2019 Aerodrome control service April 1, 2019

	<p>Medical Certificate Validity: June 30, 2020</p> <p>(2) The Supervisor A</p> <p>Air Traffic Control Certificate July 1, 2010</p> <p>Aerodrome control service July 1, 2010</p> <p>Medical Certificate Validity: June 30, 2020</p> <p>The term of office of the supervisor March 31, 2022</p>
2.5 Aircraft Information	<p>(1) Aircraft A</p> <p>Aircraft type: Boeing 737-800</p> <p>Serial number: 63408</p> <p>Date of manufacture: April 30, 2019</p> <p>Airworthiness Certificate: 2019-018</p> <p>(2) Aircraft B</p> <p>Aircraft type: Boeing 787-9</p> <p>Serial number: 43870</p> <p>Date of manufacture: September 22, 2016</p> <p>Airworthiness Certificate: 2016-028</p>
2.6 Meteorological Information	<p>The Aviation Routine Weather Report and the Aviation Special Weather Report for the Airport around the time of the serious incident were as follows:</p> <p>18:00 Wind direction 310°; Wind velocity 13 kt; Prevailing visibility 4,000 m</p> <p>Light shower rain, mist</p> <p>Cloud: Amount FEW 1/8; Type Stratus; Cloud base 400 ft;</p> <p>Cloud: Amount SCT 4/8; Type Stratus; Cloud base 700 ft;</p> <p>Cloud: Amount BKN 5/8; Type Stratus; Cloud base 1,000 ft;</p> <p>Temperature 17°C; Dew point 17°C;</p> <p>Altimeter setting (QNH): 29.37 inHg</p> <p>Temporarily Prevailing Visibility 3,000 m, Light shower rain, mist</p> <p>18:08 Wind direction 310°; Wind velocity 15 kt; Prevailing visibility 6 km</p> <p>Light shower rain,</p> <p>Cloud: Amount FEW 1/8; Type Stratus; Cloud base 500 ft;</p> <p>Cloud: Amount SCT 4/8; Type Stratus; Cloud base 800 ft;</p> <p>Cloud: Amount BKN 6/8; Type Stratus; Cloud base 1,000 ft;</p> <p>Temperature 17°C; Dew point 17°C;</p> <p>Altimeter setting (QNH): 29.37 inHg</p>
2.7 Additional Information	<p>(1) The Supervisor A and the Trainee</p> <p>When the serious incident occurred, the Supervisor A had already gotten about eight years of work experience since acquiring all the certificates in Tokyo Aerodrome Control Facility, and had been appointed as a supervisor in charge of the Trainee since the Trainee joined the same team. The Supervisor A created opportunities to speak with the Trainee at least once every cycle of rotating shifts and supervised the Trainee while evaluating the Trainee's progress.</p> <p>After completing the basic training at Aeronautical Safety College, the Trainee was assigned to Tokyo Aerodrome Control Facility as the Trainee's first work place. After obtaining a qualification as a flight data position controller (FD), the Trainee was officially assigned as a controller in April</p>

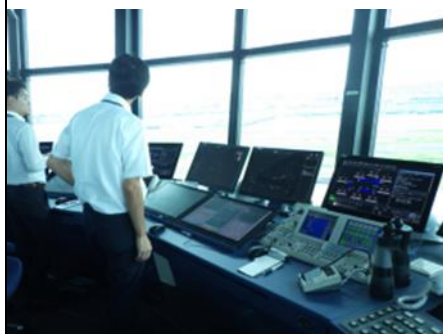
2019, and from the end of the same month, the Trainee began to receive the OJT at the ground control position and the tower control position. According to the standard training period prescribed by the Tower, the goal period of the OJT for the Trainee would end in February 2020, and had been in the process of completing approximately one fifth of the training period at the time of the serious incident.

(2) The operation of strips

The strips (flight strips) used in air traffic control services are rectangular shaped strips containing the aircraft flight number, aircraft type, assigned runway, parking spot, etc., which are necessary for the controllers to carry out the operations of ATC services. Each control position at ATC tower uses one strip for one aircraft, the controllers carry out the operations of the ATC services while recording the contents of the issued instructions and clearances, and the issued time on the strips. The information written on the strips shall be kept as records of the operations



Figure 6: Paper strips
(From the MLIT website)



of ATC services, in addition, they can be used in order to decide the sequence of the ATC handlings by changing the order of the strips, and used as a reminder during operations of the ATC services. The controllers used to write those records on the paper strips respectively set in a plastic folder with a pen, and hand-deliver those



Figure 7: Display screen of TAPS electronic strips

strips among control positions in order to carry out the operations of ATC services. In recent years, a new airport ATC processing system called Trajectory-based Airport traffic data Processing System (hereinafter referred to as “TAPS”) was introduced, and the controllers began to use the electronic strips

shown as an image on a display. According to Tokyo Aerodrome Control Facility, in comparison with the paper strips which can be physically moved, when operating the electronic strips, there is no sound generated; therefore,

without seeing how the trainee operates them, the supervisor will not be able to notice when done so.

(3) The Management of change

In case of making the changes which may affect the safety relating to aviation safety services, the Civil Aviation Bureau shall manage the safety-related risks that may arise from the said changes (hereinafter referred to as “the Management of change* 7”) When introducing TAPS, Tokyo Aerodrome Control Facility made the Management of change as follows.

- Made an evaluation by conducting the survey of the controllers by questionnaire about the layout of a display, etc. and installed TAPS in the installation position and angle so that there would not be any difference from the traditional system in respect of the visibility and operability.
- Prescribed the TAPS operation procedures in the Operation Processing Procedures.
- Exercised simulator training in order to familiarize the TAPS operations.

(4) Coordination with other control positions

Air traffic control services are the operations of services in order to prevent collisions between aircraft, and maintain and promote orderly air traffic flow. The controllers form orderly air traffic flow of aircraft leaving or entering their jurisdiction area by issuing instructions directly to the aircraft flying within the jurisdiction area of the control position where they are engaged in as well as coordinating with other control positions in adjacent areas.

(5) Safety actions in the past serious incidents

On July 8, 2012 at Fukuoka Airport, there occurred a serious incident, when the arrival aircraft, which was cleared for the second landing following the preceding arrival aircraft, was approaching, the controller forgot the existence of the aircraft and instructed the departure aircraft to enter the runway and wait there after the preceding arrival aircraft landed. On August 20, 2012, as safety actions following this serious incident, the Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism distributed an office circular to all air traffic control organizations in order to direct them to use strips as reminders for arrival aircraft including the confirmation of landing clearance at tower control positions.

(6) The regulations of the Civil Aviation Bureau

- ① The following is the phraseology specified in III Standards for Air Traffic Control Procedures, Fifth Air Traffic Control Services Procedure Handbook, Air Traffic Services Procedure Handbook.

*7 Regarding “the management of change”, ICAO Annex 19 Appendix 2 “Framework for a Safety Management System (SMS)” includes the following descriptions: *3.2 The management of change: The service provider shall develop and maintain a process to identify changes which may affect the level of safety risk associated with its aviation products or services and to identify and manage the safety risks that may arise from those changes.*

	<p style="text-align: center;"><i>After issuance of the landing clearance, take off, holding and taxiing on the runway and crossing the runway shall not be permitted to other aircraft using the same runway in front of the arriving aircraft concerned.</i></p> <p>② The following is the phraseology specified in VII Training Guidelines, Fifth Air Traffic Control Services Procedure Handbook, Air Traffic Services Procedure Handbook.</p> <p style="text-align: center;"><i>The supervisor should advise and instruct the trainee as appropriate. In addition, when the communication with aircraft, the coordination with relevant facilities or other control positions, the operation of system or other operations that have been made by the trainee are deemed inappropriate, the supervisor should correct those operations, take over and conduct those operations by himself or herself as necessary.</i></p> <p>③ The following is the phraseology described in the circular notice of the specific supervising procedures in training.</p> <p style="text-align: center;"><i>During the OJT, there may occur failures due to causes that would not be expected when the operations are conducted by one person. It is likely that those failures are caused by perception gap, which may be triggered from the traffic handling by two controllers, and supervisor's excessive intervention or confusion about the operations by the trainee. (omitted)</i></p>
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3. ANALYSIS

3.1 Involvement of Weather	None
3.2 Involvement of Pilots	None
3.3 Involvement of Aircraft	None
3.4 Analysis of Findings	<p>(1) Situation of clearance of crossing the runway</p> <p>The Aircraft A was approaching Runway A after being cleared to land from the Tower West Position, however, it is certain that the Trainee, who was carrying out the control operation at the Tower West Position, instructed the Aircraft B to cross Runway A. In addition, it is highly probable that the Supervisor A did not recognize that the Trainee had issued a landing clearance to the Aircraft A.</p> <p>(2) Judgement and operations by the Trainee</p> <p>It is highly probable that the Trainee issued a landing clearance to the Aircraft A after confirming that the Aircraft C had reached over the approach lights and judging that it would be possible to set the prescribed separation from the succeeding Aircraft A. In addition, it is highly probable that because the Trainee did not notice the existence of the Aircraft B when the landing clearance was issued, the positional relationship between the Aircraft A and the Aircraft B was not considered. It is probable that the Trainee noticed the</p>

existence of the Aircraft B when the Trainee received an initial call from the Aircraft B and was not able to determine with confidence the timing for the Aircraft B to cross the runway.

The Trainee had once decided to have the Aircraft B cross the runway after the landing of the Aircraft A and placed the strips accordingly, however, it is probable that because the Supervisor A urged the Trainee to issue a clearance of crossing the runway to the Aircraft B, the Trainee cleared the Aircraft B for cross the runway as instructed. At this time, it is probable that the Trainee temporarily forgot that the Trainee had issued a landing clearance to the Aircraft A, being directed to instruct the Aircraft C to vacate the runway via Taxiway A12 just before the clearance of crossing the runway.

(3) Coordination with other positions by the Supervisor A

The controllers instruct aircraft within the area under their own control through radio communication and carry out the operations of ATC service while coordinating with other relevant positions over the direct line or face-to-face communications regarding entering and leaving aircraft. When the serious incident occurred, the Tower West Position was carrying out the operations of ATC services while coordinating with the ground control position (West) to its left and the ground control position (North) to its right. While sometimes coordinating with other positions instead of the Trainee, the Supervisor A continued the OJT. For the towed aircraft which the Trainee concerned about, the Supervisor A also coordinated with the ground control position (North) instead of the Trainee, however, it is probable that during this time, the Supervisor A was not able to monitor the operations by the Trainee. Therefore, it is highly probable that the Supervisor A failed to listen to the communications between the Trainee and the Aircraft A, overlooked the Trainee's operation related to the strips, and failed to realize that the Trainee had given a landing clearance to the Aircraft A. Because the OJT is conducted while both of the supervisor and the trainee are carrying out the operations of ATC services at the same position, it is necessary to ensure that both parties communicate well with each other to prevent the perception gap between them, and share the situation awareness and intention.

(4) Using strips as reminders

The Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism instructed all air traffic control organizations to use the strips for arrival aircraft as reminders. According to Tokyo Aerodrome Control Facility, they use the stamp on the aircraft strip as a reminder by attaching it when an instruction is issued to the aircraft under its own control. It is probable that it is shown that the strip with the attached stamp did not function as a reminder since the Trainee had forgotten that the Trainee had already issued a landing clearance to the Aircraft A when the Trainee issued a clearance of crossing the runway to the Aircraft B, and the Supervisor A did not notice that the Trainee had issued a landing clearance to the Aircraft A. It is probable that the controllers are required to confirm

the strips when issuing clearances especially for take-off, landing, entering or crossing a runway, and make effective use of those strips as reminders.

(5) Environment to supervise training

The controllers at the aerodrome control facility carry out the operations of ATC services by scanning through the TAPS screen on the control console while widely scanning aircraft, runways and others seen outside the window of the ATC tower. In addition to these operations, the supervisor needs to monitor the operations by the trainee and usually stays behind the trainee so as not to come within sight of the trainee. As a result, it is probable that the supervisor will be a little away from the TAPS screen, which makes it difficult for the supervisor to grasp the situation of electronic strips and other information shown on the screen. Besides, it is somewhat likely that because changing from paper strips to electronic ones enabled the delivery of strips among control positions and all their strip-related operations to be electronically conducted, it might make difficult for the supervisor monitoring behind the trainee to grasp the trainee's behaviors.

When introducing TAPS, Tokyo Aerodrome Control Facility made the Management of change by conducting the survey of the controllers about the layout of a display, etc. and installed TAPS in the installation position and angle so that there would not be any difference from the traditional system in respect of the visibility and operability. However, it is desirable to newly perform the risk evaluation after identifying hazardous risks from a standpoint of the supervisor during OJT.

(6) Classification of Severity

It is highly probable that the distance between the Aircraft A and the Aircraft B, when the Aircraft B entered the runway, was approximately 8,400 m (about 4.5 nm).

It is certain that the serious incident falls under the severity classification of Category C (An incident characterized by ample time and/or distance to avoid a collision) of "the Manual on the Prevention of Runway Incursions" of ICAO with classification tools provided by ICAO. (See Attachment "Severity Classifications of Runway Incursions").

4. PROBABLE CAUSES

It is certain that this serious incident occurred because the Aircraft B crossed the runway after being cleared from the Tower West Position, when the Aircraft A was approaching Runway A after receiving a landing clearance from the Tower West Position.

It is highly probable that the Tower West Position issued a clearance of crossing Runway A to the Aircraft B, because the Supervisor A, not recognizing the landing clearance issued to the Aircraft A, urged the Trainee to issue a clearance of crossing the runway to the Aircraft B, and because the Trainee, who forgot issuing a landing clearance to the Aircraft A, issued a clearance of crossing the runway to the Aircraft B according to the instruction of the Supervisor A.

5. SAFETY ACTIONS

- (1) In the wake of this serious incident, Tokyo Aerodrome Control Facility, the Tokyo Airport Office, the Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism took following safety actions.
- Established the guideline to manage training environment appropriately so that the OJT shall be interrupted and the supervisor shall carry out the operations of ATC services in case where the supervisor needs to coordinate with other positions.
 - Improved the initial training curriculum before starting the OJT in order to include trainings related to the coordination with other positions and raise the level of OJT qualifying.
 - Provided retraining for supervisors.
- (2) In addition to the matters described above, the Air Traffic Control Division, Air Navigation Services Department of the Ministry of Land, Infrastructure, Transport and Tourism took the following measure.
- Conducted training for personnel in charge of training and the local TRM*⁸ from July 8 to 9, 2019 and considered new efforts in order to properly conduct the OJT based on the safety of air traffic. Besides, it is instructed to come up with and implement initiatives in each facility based on the training content.

*⁸ “TRM” stands for Team Resource Management, created by applying the concept of CRM (Crew Resource Management) of the aircraft operators to the team carrying out the operations of ATC services.

Severity Classifications of Runway Incursions

Severity classifications described in ICAO “the Manual on the Prevention of Runway Incursions” (Doc 9870) are as described in the table below.

Table 6-1 Severity classification scheme

<i>Severity classification</i>	<i>Description**1</i>
<i>A</i>	<i>A serious incident in which a collision is narrowly avoided.</i>
<i>B</i>	<i>An incident in which separation decreases and there is significant potential for collision, which may result in a time-critical corrective/evasive response to avoid a collision.</i>
<i>C**2</i>	<i>An incident characterized by ample time and/or distance to avoid a collision.</i>
<i>D</i>	<i>An incident that meets the definition of runway incursion such as the incorrect presence of a single vehicle, person or aircraft on the protected area of a surface designated for the landing and take-off of aircraft but with no immediate safety consequences.</i>
<i>E</i>	<i>Insufficient information or inconclusive or conflicting evidence precludes a severity assessment.</i>

**1 See the definition of “incident” of Annex 13.

**2 Shaded to show the pertinent classification of the serious incident.