AI2015-3

# AIRCRAFT SERIOUS INCIDENT

# INVESTIGATION REPORT

**KUMAMOTO PREFFECTURE DISASTER PREVENTION FIRE FIGHTING AVIATION UNIT**
**J A 1 5 K M**
**PRIVATELY OWNED**
**J A 3 4 4 T**

**April 23, 2015**

JTSB Japan Transport Safety Board

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.

Norihiro Goto
Chairman,
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

## AIR PROXIMITY
## 1. KUMAMOTO PREFFECTURE DISASTER PREVENTION FIRE FIGHTING AVIATION UNIT, EUROCOPTER AS365N3, JA15KM (ROTORCRAFT)
## 2. PRIVATELY OWNED, ROBINSON R44 II, JA344T (ROTORCRAFT)
## NEAR THE TEMPORARY HELIPAD ADJACENT TO THE KUMAMOTO AIRPORT, KUMAMOTO PREFECTURE, JAPAN
## AROUND 11:01 JST, OCTOBER 14, 2013

April 10, 2015

Adopted by the Japan Transport Safety Board

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| Chairman | Norihiro Goto |
| Member | Shinsuke Endoh |
| Member | Toshiyuki Ishikawa |
| Member | Sadao Tamura |
| Member | Yuki Shuto |
| Member | Keiji Tanaka |

## 1. PROCESS AND PROGRESS OF THE INVESTIGATION

On October 15, 2013, a Near Collision Report was submitted to the Minister of the Land, Infrastructure, Transport and Tourism under the provisions of Article 76-2 of Civil Aeronautics Act and Article 166-5 of Ordinance for Enforcement of the Civil Aeronautics Act. Consequently, it is classified as a serious incident.

On October 15, 2013, the Japan Transport Safety Board designated an investigator-in-charge and another investigator to investigate this serious incident.

Accredited representatives from France and United States of America, as the States of Design and Manufacture of the aircraft involved, participated in the investigation.

Comments from parties relevant to the cause of the serious incident were invited. Comments from the relevant States were invited.

## 2. FACTUAL INFORMATION

### 2.1 History of the Flight

(1) The following is an outline of the Near Collision report submitted by the captain of the Eurocopter AS365N3, registration JA15KM (hereinafter referred to as "the Helicopter-A") belonging the Kumamoto Prefectural Disaster Prevention Fire Fighting Aviation Unit.

Date and Time of the incident: October 14, 2013, at about 11:01 (Japan Standard Time)

Position of the incident: Near the temporary helipad adjacent to the Kumamoto Airport

Phase of flight: Hovering about 18 m above ground level

Other aircraft: JA344T, Robinson R44 II

Position of other aircraft and distance to the aircraft at first sighting: At one o'clock, about 500 m, same altitude

Position of the other aircraft and distance between aircraft at closest proximity: Approximately 15 m just above

Respective flight paths: Almost head on

Avoiding actions: Aircraft making report : none

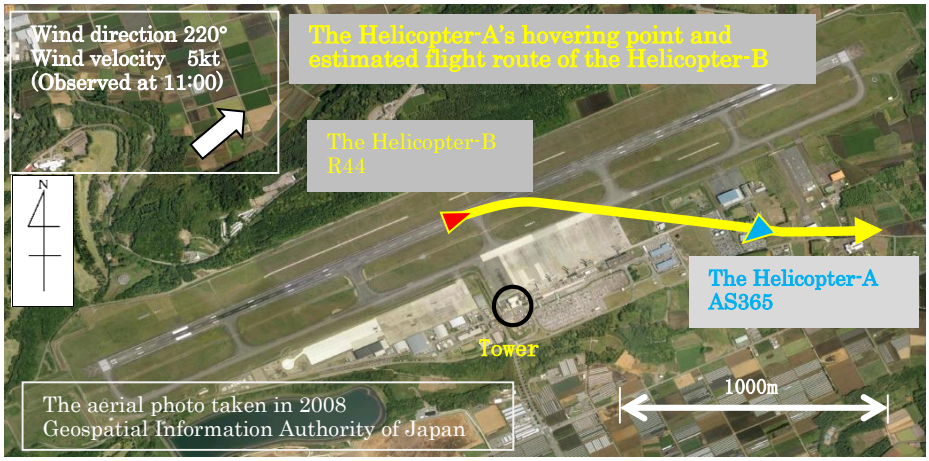
Other aircraft: none

(2) According to the statements of the both captains and an air traffic controller, the histories of the flights of both aircraft are summarized below:

Helicopter-A during rescue training
(It was not hanging a person at the time of this incident)

On October 14, 2013, the Helicopter-A was hovering at 60 ft (about 18 m) above ground level near the temporary helipad adjacent to Kumamoto airport with four persons on board for rescue training under the control of the ground controller at the airport (hereinafter referred to as "the Ground"). On the other hand, Robinson R44 II, registered JA344T (hereinafter referred to as "the Helicopter-B") which had arrived at the airport earlier for a familiarization flight, told the Tower controller (hereinafter referred to as "the Tower") that it would make a straight out departure after takeoff. It got approval of this from the Tower, then took off from runway 07 of the airport at about 11:00 and flew to a temporary helipad (hereinafter referred to as "the Helipad-B") about 5 nm east of the airport.

According to the captain of the Helicopter-B, in case of straight out departure, he usually flew straight until just before the end of runway, then turned right about 15 degrees, to which the Tower mentioned nothing particular. On the day the incident occurred, having thought it would be better to vacate the runway early for other arriving and departing aircraft, the Helicopter-B's captain turned right immediately after takeoff without communicating his intention to the Tower.




Subsequently, the Helicopter-B flew just above the hovering Helicopter-A.

The Helicopter-A's captain had seen the Helicopter-B from soon after the Helicopter-B took off. The Helicopter-A's captain felt danger when he saw the Helicopter-B turned and headed to the Helicopter-A at low altitude. However, he finally convinced that the Helicopter-B would fly over his helicopter. Accordingly, he did not take any evasive actions considering rescue members on the ground. He felt the vertical distance between both helicopters was smaller than his helicopter's height above ground level, 18 m. Hence, he reported to JCAB (Japan Civil Aviation Bureau) that the distance between them was 15 m. At that time, the Helicopter-A was hanging a cable down to the ground with none on it.

The Helicopter-B's captain identified the Helicopter-A at about 45 degrees downward and 60 m ahead on the way to the Helipad-B. At that time, he didn't take any evasive actions, assuming that the helicopter-A would not climb because it looked like conducting rescue training. In addition to that, he felt no risk of collision considering the vertical distance between them. The Helicopter-B's captain insisted that the Helicopter-B's height above ground level when he flew just above the Helicopter-A was more than 200 ft (about 61m) by eye measurement and that if he had flown less than this height, he would have felt the risk of going too close to the nearby buildings of the site where the Helicopter-A was hovering. He also mentioned if he had known the existence of the Helicopter-A, he wouldn't have flown in the direction.

The Tower visually perceived that the Helicopter-B deviated to the south (right) soon after takeoff. However, he neither confirmed to the captain of the Helicopter-B of the flying direction nor provided traffic information of Helicopter-A to Helicoptor-B. The Tower mentioned following four points as the reasons. (i) The straight out departure was approved ("approval" by ATC is one of "instructions." The same hereinafter.) in response to the Helicopter-B's request. Hence, the

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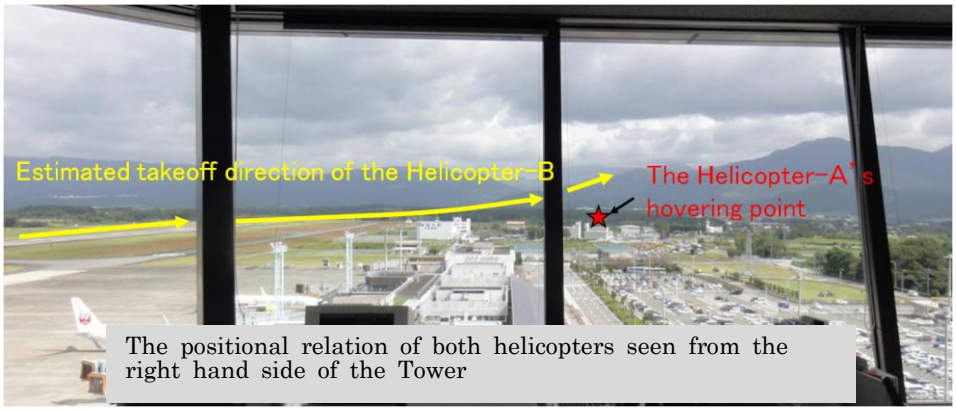
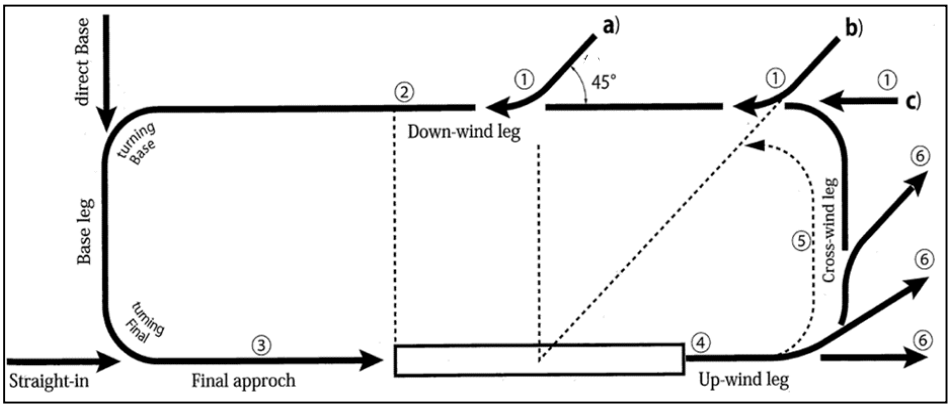
| |  <br>The positional relation of both helicopters seen from the right hand side of the Tower<br><br>Helicopter-B should fly almost in the direction of the runway extension and not fly in the direction of the Helicopter-A's training area. (ii) The altitude the Helicopter-A hovers is lower that the nearby buildings. Therefore, the Tower thought landing and takeoff aircraft at/from the airport would never get close to the Helicopter-A. (iii) At the time of the incident, the Tower was controlling three other aircraft's takeoff and landing and so on. (iv) The Tower had experiences that Helicopter-B's long transmission influenced other communications in the past and concerned a similar situation might happen. |
| 2.2 Injuries to Persons | None |
| 2.3 Damage | None |
| 2.4 Meteorological Information | Aeronautical weather information at Kumamoto airport at 11:00 was as listed below.<br>Wind direction 220° , wind velocity 5 kt, prevailing visibility 30 km<br>Cloud SKC (sky clear: no cloud)<br>Temperature 25°C Dew point 13°C<br>Altimeter setting (QNH) 30.08 inHg |
| 2.5 Additional Information | (1) Straight out departure in the visual flight rules<br>There is phraseology "STRAIGHT OUT DEPARTURE APPROVED" to instruct the pilot in response to his or her request in Fifth Air Traffic Service Procedure Handbook of Air Traffic Service Procedure Handbook. However, the flight procedure of straight out departure in the visual flight rules is not specified in the Service Procedure Handbook. It is not specified in the International Civil Aviation Organization (ICAO), Standards and Recommended Practices (SARPS) and Procedure for Air Navigation Services, Air Traffic Management (PANS-ATM) either. There are following descriptions and an explanatory drawing for procedures of breaking from a traffic pattern in the visual flight rules in Chapter 3 "345. TRAFFIC PATTERN" in Aeronautical Information Manual Japan (AIM-J) supervised by JCAB, complied by NPO AIM-JAPAN Editorial Association and published by Japan Aircraft Pilot Association.<br>*Entry and breaking procedures of the traffic pattern may be* |

*specified at some airports. However, a pilot should exercise the following procedures if any specific procedures are not established.*

(omit ① through ⑤)

⑥ *If breaking the traffic pattern, continue straight-out, or exit with a 45 degree turn to the left. Also, exit with a 45 degree turn to the outside from the cross wind leg.*




The Helicopter-B's captain has an understanding that a range within 15 degrees each leftward and rightward of the runway centerline at the starting point of takeoff roll in case when full length of the runway is used is permissible for straight out departure.

The Air Traffic Control Division, Air Navigation Service Department of CAB commented that although concrete flight procedures and range are not specified for straight out departure, air traffic control is conducted under the recognition in general that aircraft do not make turns at least soon after takeoff, and that there is no discrimination between fix wing and rotor wing for that.

(2) Case of foreign country regarding straight out departure in visual flight rules

There are following descriptions for breaking procedures from a traffic pattern in AIM as official Guide to Basic Flight Information and ATC Procedures by Federal Aviation Administration of United States of America (FAA). (excerption)

4. *Continue straight ahead until beyond departure end of runway.*

(omit)

*6. If departing the traffic pattern, continue straight out, or exit with a 45 degree turn (to the left when in a left-hand traffic pattern; to the right when in a right-hand traffic pattern) beyond the departure end of the runway, after reaching pattern altitude*.*

(3) The relation between the flight procedures and air traffic instructions

Article 96, Clause 1 of the Civil Aeronautics Act stipulates as follows:

*Any aircraft shall, in an air traffic control area or an air traffic control zone, be navigated in accordance with instructions which are given by the Minister of Land, Infrastructure, Transport and Tourism, in consideration of ensuring safe and smooth air traffic,*

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| | *with regard to the order, time or method of takeoff or landing, or the flight method.* |

* "Pattern altitude" is an altitude at which aircraft should fly on the downwind-leg.

## 3. ANALYSIS

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| 3.1 Involvement of Weather | No |
| 3.2 Involvement of Pilot | Yes |
| 3.3 Involvement of Air Traffic Controller | Yes |
| 3.4 Analysis of Findings | (1) Identification of the other Helicopter<br>According to the statements of both captains of the Helicopter-A and the Helicopter-B, and the records of takeoff and landing aircraft at Kumamoto airport around the time the serious incident occurred, it is certain that the other helicopter that flew just above the Helicopter-A at low altitude was the Helicopter-B.<br>(2) The Helicopter-B's maneuver of turning right immediately after takeoff<br>Despite that based on its own request, the Helicopter-B was instructed straight out departure by the Tower, it turned right immediately after takeoff. With regard to the Helicopter-B's maneuver of turning right immediately after takeoff, it is probable that the Helicopter-B's captain intended to vacate the runway early for other taking off and landing aircraft. However, he didn't communicate the intention of the right turn to the Tower. It is somewhat likely that the following two points contributed to his failure of communicating it to the Tower:<br>(i) The captain had an interpretation that a range within15 degrees each leftward and rightward of runway centerline at the starting point of takeoff roll when full length of the runway is used is permissible range of straight out departure.<br>(ii) He repeatedly turned to the right just before the end of the runway without communicating it to the Tower before the occurrence of the serious incident.<br>Concrete flight procedures and range for straight out departure are not specified. However, air traffic control is conducted under the recognition in general that aircraft do not turn immediately after takeoff. The Helicopter-B's captain also usually go straight until near the end of runway in case of straight out departure. It is probable that when pilots, who are instructed to make straight out departure, want to make turns at least as early as before the runway end, they need to report it to Tower and follow further instructions. |

(3) The decision of the Helicopter-B's captain after identifying the Helicopter-A

Despite that the Helicopter-B's captain didn't have information on the Helicopter-A's contents of the operation, he assumed it was on the rescue training when he found the Helicopter-A. Having speculated it would not climb higher, he flew just above the Helicopter-A. Eventually this maneuver made Helicopter-A's captain feel dangerous. If the Helicopter-A's captain catches sight of the Helicopter-B, he won't climb. However, depending on the heading direction, he may not spot the Helicopter-B and climb. The Helicopter-B needed to change the direction at the time of finding the Helicopter-A.

(4) The Tower's reaction

According to the statements of the captain of the Helicopter-B, it was not until about 60 m ahead that he noticed the Helicopter A, and if he knew its presence, he would not fly in the direction to the Helicopter-A.

Although the Tower had visually recognized that the Helicopter-B deviated to the south (right) soon after the take off, the Tower neither confirmed the captain of the Helicopter-B about the flying direction nor provided the Helicopter-B with traffic information of Helicopter-A. It is probable that following four points are the reasons with regard to the fact mentioned above.

(i) The straight out departure having been instructed in response to the Helicopter-B's request, the Tower assumed the Helicopter-B should fly almost in the direction of the runway extension and would not fly in the direction of the Helicopter-A's training area.

(ii) The altitude the Helicopter-A hovered was lower than that of the nearby buildings. Therefore, the Tower thought landing and takeoff aircraft at/from the airport would never get close to the Helicopter-A.

(iii) At the time of the incident, the Tower was controlling three other departing and arriving aircraft as well. It is probable the Tower was unable to continuously monitor the movement of the Helicopter-B because he had to give instructions and so on to the other three aircraft.

(iv) The Tower had experiences that Helicopter-B's long transmission influenced other communications in the past and concerned about the recurrence of a similar situation.

Air traffic controllers need to keep in mind the possibility of occurring cases that aircraft do not fly in conformity with ATC instructions for some reason or other, and also need to pay heed to maneuvers of aircraft under their control and give appropriate instructions or advices again when they recognize such flights against the instructions.

(5) Communication establishment during training in the area adjacent

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| | to the airport<br>At Kumamoto airport, the Helicopter-A establishes communication with Ground, reports the commencement and completion of training and monitor the frequency during the training. This information is transferred from the Ground to the Tower. Accordingly, the Helicopter-A could not obtain traffic information of other aircraft on the Tower frequency at the time of this incident. If the Helicopter-A contacts with the Tower, not only the Helicopter-A would be able to gain other aircraft's information on the Tower frequency, but also other aircraft would be able to do the same. Therefore, it is desirable that consideration will be given about the Helicopter-A's establishment of radio communication with Tower for the rescue training.<br>(6) Straight out departure in the visual flight rules<br>There are descriptions of procedure with regard to breaking from or entering to traffic pattern in the visual flight rules in AIM-J supervised by JCAB; however, it is not specified clearly in Japan.<br>Any aircraft shall, in a designated air traffic control area or an air traffic control zone, navigate following air traffic controllers' instructions. Therefore, a large disparity in understanding of an instruction between a pilot and a controller could undermine safety operation. It is assumed that the JCAB needs to consider specifying the procedure of straight out departure in visual flight rules.<br>(7) Classification of the Degree of Risk<br>The Helicopter-A's captain had continuously recognized the Helicopter-B visually from right after takeoff and felt danger at first. However, finally, he didn't take any evasive actions, taking into account of adverse effect on the rescue members on the ground and determining that vertical separation would be secured. In the meanwhile, although the Helicopter-B's captain found the Helicopter-A about 60m ahead, he did not take any evasive actions, determining that there was no risk of collision. These are not applicable to conditions of near collision as either "a case of air proximity at the risk of air contact or midair collision with no time to take any evasive actions" or "air proximity in which midair collision or air contact was avoided by unusual avoidance actions". Hence, it is probable that this incident is not near collision and that this incident is classified as "No risk of collision" under the classification of degree of risk stipulated in the ICAO classification. (see Attachment) |

## 4. PROBABLE CAUSES

It is highly probable that this serious incident occurred because the Helicopter-B instructed to make straight out departure turned right immediately after takeoff without communicating it to the Tower and went close to the training Helicopter-A.

In addition, it is probable that this serious incident was not near collision because both captains did not take any evasive actions with having insight each other.

Attachment

# Classification of an aircraft proximity

| ICAO<br>PANS-ATM CHAPTER 1. DEFINITIONS | |
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| Classification | Description |
| Risk of collision: | The risk classification of an aircraft proximity in which;<br>serious risk of collision has existed. |
| Safety not assured: | The risk classification of an aircraft proximity in which;<br>the safety of the aircraft may have been compromised. |
| No risk of collision: | The risk classification of an aircraft proximity in which;<br>no risk of collision has existed. |
| Risk not determined: | The risk classification of an aircraft proximity in which;<br>insufficient information was available to determine the risk involved, or<br>inconclusive or conflicting evidence precluded such determination. |

* There is a statement of "*The degree of risk involved in an aircraft proximity should be determined in the incident investigation and classified as "risk of collision", "safety not assured", "no risk of collision" or "risk not determined".*" at 16.3.2 in PANS-ATM.