

AI2017-1

**AIRCRAFT SERIOUS INCIDENT
INVESTIGATION REPORT**

**TOHOKU AIR SERVICE, INC.
JA 6777**

April 27, 2017

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.

Kazuhiro Nakahashi
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

TOHOKU AIR SERVICE, INC.
AEROSPATIALE AS332L1 (ROTORCRAFT)
JA6777

DROPPING OF OBJECTS
DURING EXTERNAL CARGO SLING OPERATION
YURIHONJO CITY, AKITA PREFECTURE, JAPAN
AT AROUND 12: 30 JST, JULY 22, 2015

March 24, 2017

Adopted by the Japan Transport Safety Board

Chairman	Kazuhiro Nakahashi
Member	Toru Miyashita
Member	Toshiyuki Ishikawa
Member	Yuichi Marui
Member	Keiji Tanaka
Member	Miwa Nakanishi

1 PROCESS AND PROGRESS OF THE INVESTIGATION

1.1 Summary of the Serious Incident	On Wednesday, July 22, 2015, an Aerospatiale AS332L1, registered JA6777, operated by TOHOKU AIR SERVICE, Inc., 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 Iwaki-fukunomata-jinai, the sliding doors of the slung work hut dropped from the rotorcraft to a forest.
1.2 Outline of the Serious Incident	This event fell under the category of “Case where suspended object dropped unintentionally” as stipulated Item

Investigation	<p>(XV), Article 166-4 of Ordinance for Enforcement of Civil Aeronautics Act, which was classified as an aircraft serious incident.</p> <p>On July 22, 2015, the Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator to investigate this serious incident.</p> <p>An accredited representative and an advisor of French Republic as the State of Design and Manufacture of the aircraft involved in this serious incident, participated in this investigation.</p> <p>Comments were invited from the parties relevant to the cause of the serious incident. Comments on the draft Final Report were invited from the relevant State.</p>
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2 FACTUAL INFORMATION

2.1 History of the Flight	<p>According to the statements of the captain, the on-board worker and the ground workers of TOHOKU AIR SERVICE, Inc. (hereinafter referred to as “the subcontractor A”), the history of the flight is summarized as follows:</p> <p>At around 11:31 Japan Standard Time (JST, UTC+9 hours, unless otherwise stated all times are indicated in JST on a 24-hour clock) on July 22, 2015, Aerospatiale AS332L, registered JA6777, and operated by the subcontractor A took off from a temporary helipad in Iwaki-takinomata-jinai with the captain and an onboard worker and repeated several cargo transportations among multiple cargo loading sites within Iwaki-takinomata-jinai and Iwaki-fukumata-jinai and a cargo unloading site in Iwaki-fukumata-jinai.</p> <p>At around 12:28, the rotorcraft slung the work hut at a cargo loading site in Iwaki-fukumata-jinai in order to carry out the 13th cargo transportation and then it flew to south-east direction about 90 m above ground at speed of about 10 kt. At around 12:30, the captain asked the onboard worker to check the slung work hut because the captain saw something drop from it via monitoring mirror installed at front-right-lower of the rotorcraft. The onboard worker stopped the logging to see</p>
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outside, told the captain that he could not find anything and kept to monitor the work hut. When the rotorcraft continued the flight and was approaching the forest road in front of the unloading site in Iwaki-fukumata-jinai, the onboard worker saw something like sliding door drop and reported to the captain. At the time, the captain was concentrating the approach operation to the unloading site while hearing the report from the onboard worker and thinking about how to deal with the dropped objects. After unloading the work hut at the unloading site, the rotorcraft returned to the temporary helipad.

On the other hand, the ground workers of the subcontractor A found out three sliding doors missing from the work hut when the work hut was unloaded.

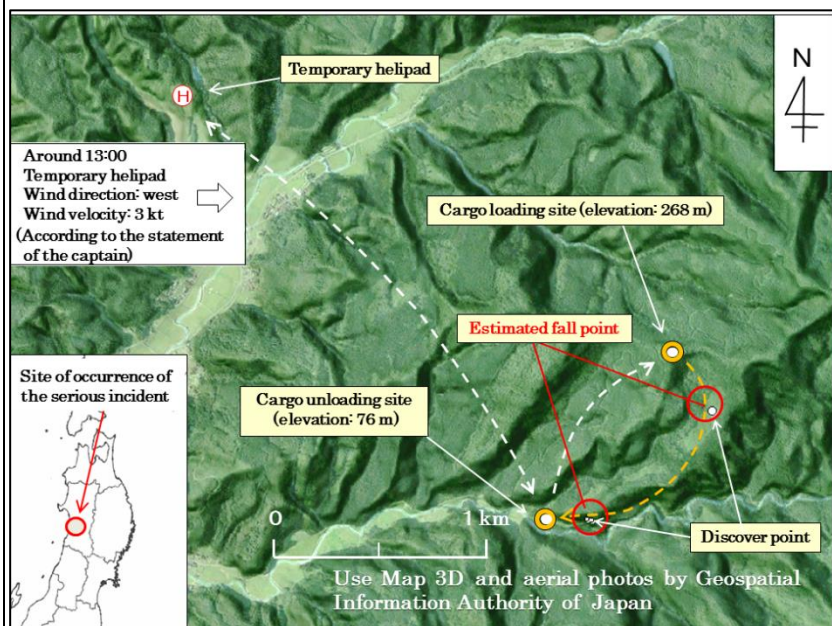


Figure 1 Estimated flight route and fall point

The serious incident occurred at around 12:30 on July 22, 2015 in a mountain forest on the flight route from the cargo loading site to unloading site at Iwaki-fukumata-jinai, Yurihonjo City (near 39° 31' 02" N, 140° 08' 35" E and near 39° 30' 45" N, 140° 08' 11" E).

2.2 Injuries to Persons	None
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2.3 Damage	None
2.4 Personnel Information	<p>Captain: Male, age 31</p> <p>Commercial pilot certificate (Rotorcraft) June 2, 2005</p> <p>Pilot competency Assessment</p> <p>Expiration date of piloting capable period August 7, 2016</p> <p>Type Rating for Aerospatiale SA330 May 19, 2014</p> <p>Class 1 aviation medical certificate Validity: July 9, 2016</p> <p>Total flight time 2,143 hours 47 minutes</p> <p>Flight time in the last 30 days 20 hours 40 minutes</p> <p>Total flight time on the type of aircraft 201 hours 50 minutes</p> <p>Flight time in the last 30 days 20 hours 40 minutes</p>
2.5 Aircraft Information	<p>Aircraft type: Aerospatiale AS332L1</p> <p>Serial Number: 2005</p> <p>Date of manufacture: January 25, 1996</p> <p>Certificate of airworthiness: No. Tou-27-044</p> <p>Validity: April 26, 2016</p> <p>Total Flight Hours: 6,835 hours 11 minutes</p>
2.6 Meteorological Information	<p>According to the statement of the captain, the weather at the time of his return flight to the temporary helipad at around 13:00 was cloudy, a clear visibility and westward wind, the wind velocity was 3 kt, and air currents was calm.</p>
2.7 Additional Information	<p>(1) Transportation System</p> <p>The subcontractor A used a helicopter to transport cargo by a contract with a main contractor, which had contracted to install new transmission lines for a power company as a Client. A subcontractor B worked packing and preparation work at ground by a contract with the main contractor.</p> <p>(2) Packing Education</p> <p>The main contractor stipulated the safety plan to prevent a disaster associated with construction, and provided a safety education to the subcontractor A and the subcontractor B at a pre-meeting two months before the transportation. The subcontractor A provided the education about a cargo transportation relating to characteristics of a helicopter, method of contact and signals, how to hook or unhook, and others based on a handbook (hereinafter referred to as “the</p>

handbook”) for how to carry out a safe cargo transportation to ground workers of subcontractor B, following a safe plan stipulated by the main contractor. However, the handbook describes only a packing method of common shaped cargos, but it did not describe a detailed packing method and checking procedures to transport the unique shaped cargo like this work hut, and any procedures to examine each cargo, separately.

Furthermore, some of ground workers worked for the subcontractor B said that they had no memory of receiving this education or distribution materials for this education. In the handbook, it describes that it shall require to have a prior consultation with the subcontractor A when they felt unsure about the cargo packing, it shall pack according to information provided in the education at the pre-meeting because the subcontractor A could not check the packing condition in advance, and it said to use a cargo net with wrapping a cargo in a blue sheet in order to prevent objects from dropping.

(3) Implementation status of packing

The ground worker of the subcontractor B said that he did not receive any specific instruction about packing the work hut from the subcontractor A and the main contractor after the education about a packing method of general cargos.

Furthermore, there were no study to prevent the drop from the slung work hut by the person who worked for the transportation of the work hut. The ground workers of the subcontractor B installed wires at four corner of the steel framed roof to sling a cargo, placed shatter-proof tapes on glasses and locked the sliding doors to make the packing looks like the one they did before, because they had a previous experience to pack and transport the work hut.

(4) Checking packing

According to the subcontractor A, at cargo transportation, the subcontractor A appointed the ground workers of the main contractor and the subcontractor B to do packing because the subcontractor A could not dispatch any ground worker to check a packing condition to all of loading sites due to the personnel

limitation.

On the day before the cargo transportation, the ground workers of the subcontractor B made the packing, and on the day the packing prepared in advance were again checked for the transportation and they found that the packing had no problem.

The captain with the ground workers of the subcontractor A, using the check list, received the oral report from the ground workers of the main contractor to confirm that packing condition of all cargo to be transported on that day had no problem, but it was not possible for the contents of the check list to confirm measures taken to prevent the object from dropping of each cargo.

(5) Status of the unloaded work hut

Two sliding doors from the left side and one sliding door from the right side was missing. The remaining sliding door at the right side derailed from the rail of the sliding door frame. The sliding door frame at the left side where lost two sliding doors was installed with to the hut by steel screws, but the screws were loosened and the frame was wobbled. A sliding door of the recovered three sliding doors was confirmed to be

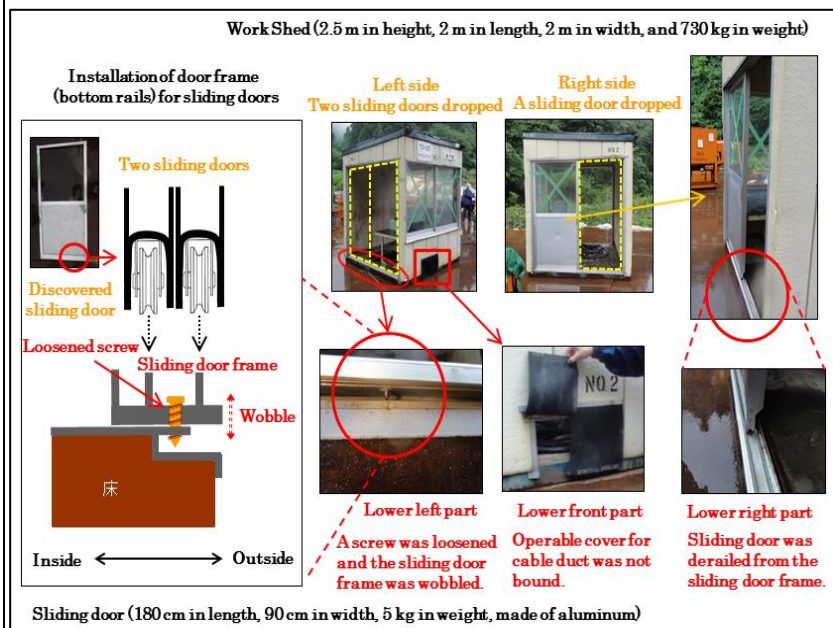


Figure 2 Work Hut

	<p>locked and the remaining two doors were not confirmed to be locked because the damages by the drop were too severe. The lower front part had a rubber cover for cable duct which can be opened and closed but it was not bound.</p> <p>(6) Flight route to transport cargo</p> <p>The operator to transport cargo by slinging usually selected the flight route to cause no effect to persons and objects on the ground as a safety measures. The rotorcraft was also flying with due consideration to the weather and the transport condition of the day based on the flight handbook that the subcontractor A set by considering the influences regarding the safety of the ground.</p> <p>(7) Discovery point of sliding doors</p> <p>One sliding door dropped from the work hut was found in a mountain forest and two doors were near forest road, but there were no damage to the ground.</p>
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3 ANALYSIS

3.1 Involvement of Weather	None
3.2 Involvement of Pilot	None
3.3 Involvement of Helicopter	None
3.4 Analysis of Findings	<p>(1) Education about the packing method</p> <p>It is somewhat likely that the safety education to transport cargos was not fully understood by the workers, because the subcontractor A provided the education for the ground workers of the subcontractor B at the pre-flight meeting, however, the handbook used for the education provides only the general packing method, not a specific packing method fit for a cargo like the work hut to have a unique shape for transportation; and parts of the ground workers of the subcontractor B said that they did not receive this education.</p> <p>The subcontractor A should include not only a packing</p>

	<p>method for common looking cargos, but also a packing method fit for a unique shaped cargo to transport and should have the parties relevant to fully understand this contents of the education.</p> <p>(2) Packing Method and Checks</p> <p>The ground worker of the subcontractor B did not receive any specific instruction about the packing of the work hut from the subcontractor A or the main contractor. It is somewhat likely that the person engaging the transportation thought the packing as no problem if he did make the packing looks like the one he did before, and there were no study to prevent the drop from the slung work hut.</p> <p>Therefore, it is probable that the fact that no detailed handbook for how to make packing or how to check packing no procedure to study or check each package and no detailed handbook for how to make a package or how to check a package meaning packing method using cargo net or binding methods using rope for when the subcontractor transport a unique shaped cargo.</p> <p>(3) Dropping of the sliding doors</p> <p>It is probable that the reason why the sliding doors derailed from the sliding door frames and dropped from the work hut was no effective measures taken to prevent the objects from dropping for the components which had a possibility of drop or being detached.</p> <p>It is probable that the sliding door derailed from the frames and dropped to the mountain forest when the rotorcraft flew with the work because of external factors like wind pressure and effects of a vibration of the airframe, wind pressures by the down wash from main rotors and likes caused a distortion to the component and the sliding door frames of the work hut. In addition, it is somewhat likely that the weight of the work hut itself acted on the lower parts and caused the distortion of the hut.</p>
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4 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.

5 SAFETY ACTIONS

After the occurrence of the serious incident, the subcontractor A and the main contractor took following safety action:

- (1) The subcontractor A stipulates the handbook to specify the binding with a rope and packing method by using cargo net in details in order to prevent sliding doors of the work hut as a unique shaped cargo from dropping.
- (2) The subcontractor A decides to provide a proper education about method of packaging with using new handbook to the personnel for how to pack or to check. Furthermore, execute to confirm the effects by measurement with the written test after an education.
- (3) The subcontractor A decides to transport only when it is safe to transport a unique shaped cargo after studying packing method and confirming capabilities to transport in advance.
- (4) Regarding the contents of the detailed action to prevent the objects from dropping of each cargo to sling, the ground workers executes a check based on a newly stipulated check list and a captain and a person of the main contractor in charge confirm with the ground workers while looking the check list.
- (5) The main contractor shall cope with a situation by revising the planning for the safety management, in addition to the action in (4) above, promoting an awareness of danger by illuminating the seriousness of cargo dropping incident to the relevant parties and executing a proper packing corresponding to each cargo to be slung.