

AI2018-6

**AIRCRAFT SERIOUS INCIDENT
INVESTIGATION REPORT**

**NAKANIHON AIR SERVICE CO., LTD.
JA6717**

September 27, 2018

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

DROPPING OF OBJECT
DURING EXTERNAL CARGO SLING OPERATION
KITAGAWA-VILLAGE, AKI-GUN, KOCHI PREFECTURE, JAPAN
AT AROUND 15:32 JST, SEPTMBER 23, 2017

NAKANIHON AIR SERVICE CO., LTD.
AÉROSPATIALE AS332L1 (ROTORCRAFT), JA6717

September 7, 2018

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 Saturday, September 23, 2017, an Aérospatiale AS332L1, registered JA6717 and operated by Nakanihon Air Service Co., Ltd., dropped stones being carried in a bucket that was slung external to the aircraft immediately after taking off from a cargo sling point of the Kojima temporary helipad in Kitagawa-village, Aki-gun, Kochi Prefecture.
1.2 Outline of the Serious Incident Investigation	<p>This event fell under the category of “Case where suspended object dropped unintentionally” as stipulated in Item (XV), Article 166-4 of the Ordinance for Enforcement of the Civil Aeronautics Act (Ordinance of the Ministry of Transport No. 56 of 1952), which is classified as an aircraft serious incident.</p> <p>The Japan Transport Safety Board was notified of this serious incident’s occurrence and designated an investigator-in-charge and an investigator on September 24, 2017 to investigate this serious incident.</p> <p>An accredited representative and an adviser of the French Republic, as the State of Design and Manufacture of the Aircraft involved in the serious incident, participated in this investigation.</p> <p>Comments were invited from parties relevant to the cause of the serious incident. Comments on the draft report were invited from the Relevant State.</p>

2. FACTUAL INFORMATION

2.1 History of the Flight

The history of the flight was summarized as below based on the statements of the captain, the onboard mechanic, and ground workers.

On September 23, 2017, an Aérospatiale AS332L1, registered JA6717 and operated by Nakanihon Air Service Co., Ltd., was repeatedly

engaging in cargo transport between the cargo sling point of the Kojima temporary helipad in Kitagawa-village, Aki-gun, Kochi Prefecture, and a cargo unloading point approximately 1.3 km from the cargo sling point from around 15:00. On this day, three ground workers were at the cargo sling point, of whom one was a trainee who was undergoing ground work training.

The captain was seated in the right pilot seat and the onboard mechanic in charge of outside monitoring, guidance, and the sling equipment operation was seated on the forward left seat of the cabin.

The onboard mechanic, who was monitoring bucket exchange work at the cargo sling point from the Aircraft as it hovered in order to make a tenth flight, thought to warn concerning the trainee's slinging work while holding a radio in one hand, and he reached to operate the transmit switch of the communication radio of the control box (to be described in 2.7) immediately after the Aircraft took off from the cargo sling point. At this time, he mistakenly operated the open/close switch for the bucket instead of the transmit switch, and as a result the bucket opened and the stones (approximately 2.7 tons) fell.

The captain, having been told that the onboard mechanic had dropped stones by the onboard mechanic, terminated the flight and returned to the Temporary Helipad.

On the date that this serious incident occurred, the Aircraft conducted cargo transport 48 times at other temporary helipads prior to beginning transport at the Temporary Helipad, and this serious incident occurred on the 58th time in total. Neither the number of times conducting transport nor the content of the transport was much greater than normal, and the onboard mechanic was not feeling fatigued. In addition, at the time that he attempted to operate the send switch, the onboard mechanic was thinking about how to warn the trainee and was not looking at his hand.

This serious incident occurred at approximately 80 m southeast from the Temporary Helipad (N 33° 29' 55", E 134° 05' 27") and at around



Photo 1 The Aircraft and Bucket of the Serious Incident

15:32 on September 23, 2017.

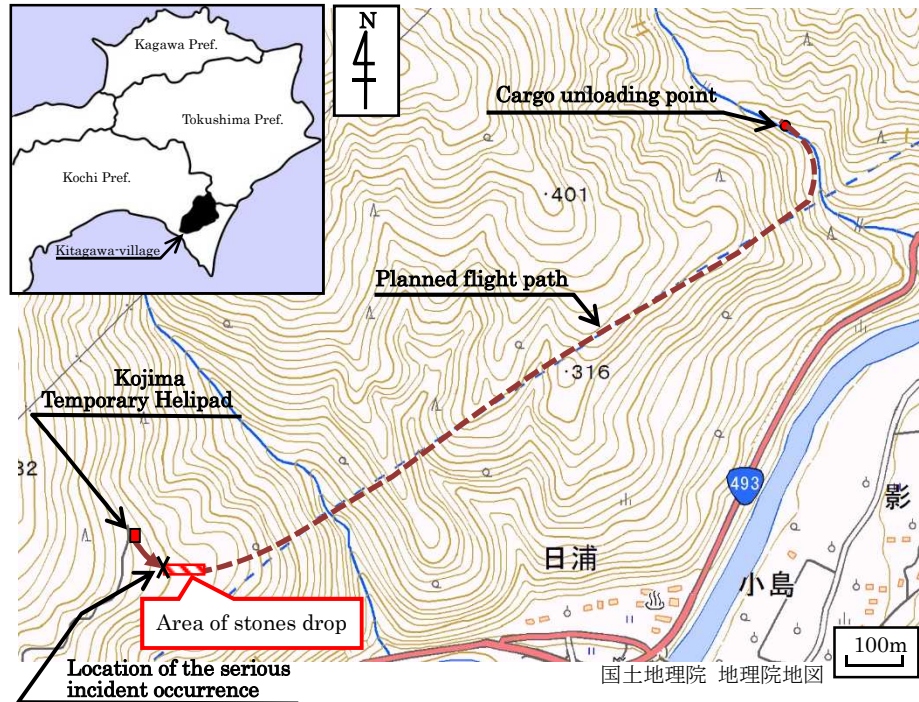


Figure 1 Estimated Flight Route and Area of Stones Drop

<p>2.2 Injuries to Persons</p>	<p>None</p>
<p>2.3 Damage to the Aircraft</p>	<p>None</p>
<p>2.4 Personnel Information</p>	<p>Captain: Male, age 58 Commercial pilot certificate (Rotorcraft) June 2, 1981 Specific pilot competence Expiry of practicable period for flight April 24, 2019 Type rating for Aérospatiale SA330 April 28, 2006 Class 1 aviation medical certificate Validity: September 30, 2018 Total flight time 10,945 hours 35 minutes Total flight time on the type of aircraft 2,097 hours 31 minutes</p>
<p>2.5 Aircraft Information</p>	<p>Aircraft type: Aérospatiale AS332L1, Serial number: 2394, Date of manufacture: January 3, 1993 Certificate of airworthiness: No. Dai-2017-168, Validity: June 18, 2018 Total flight time 10,686 hours 42 minutes</p>
<p>2.6 Meteorological Information</p>	<p>According to the statement of the captain, the weather during the cargo transport was cloudy, the wind was weak, and the airflow was calm.</p>
<p>2.7 Additional Information</p>	<p>(1) Control box The control box used to operate the external sling system including opening and closing of the bucket and to operate the radio was installed on the forward left side of the cabin behind the cockpit seats. The onboard mechanic was in charge of operating it.</p>

A switch box was installed on the right side of the control box, and the bucket open/close switch was installed on the bottom of the switch box. This switch box can be removed from the control box and can be operated by placing it on a desk or holding it with a hand; however, at the time of this serious incident, the switch box was being used while attached to the control box.

The bucket open/close switch is a push button. The bucket opens during the time the button is pushed.

The transmit switch of the communication radio is installed on the lower front side of the control box. Moving the switch down (to the “RAD” position shown in Photo 2) puts the radio in the transmit mode.

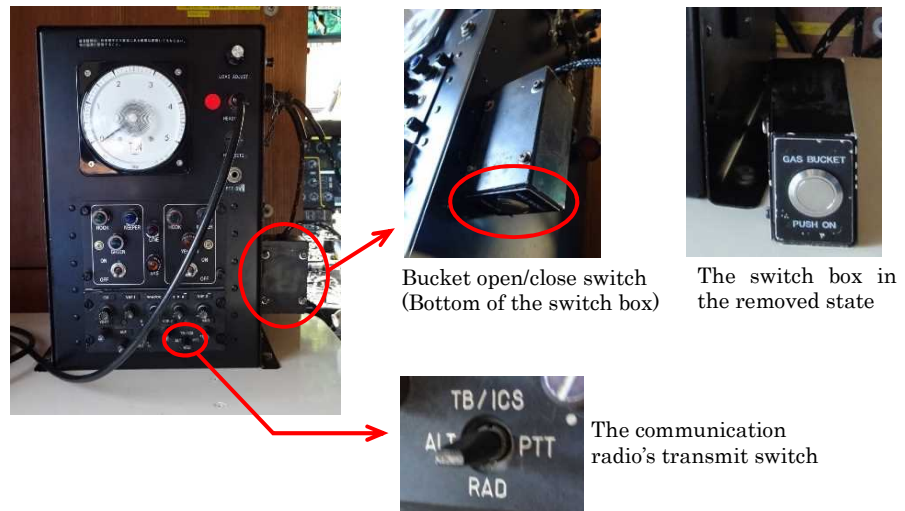


Photo 2 The Control Box

(2) Functional test of the bucket system

In the aircraft investigation, the Aircraft and bucket system were connected on the ground in the same situation as when this serious incident occurred and given a functional test, and it was confirmed that the system was operating normally.

(3) Experience of the onboard mechanic and circumstances of education and training

The onboard mechanic has approximately 23 years of experience in cargo transport and approximately two years and three months of experience working as an onboard mechanic in the Company.

Education and training was being implemented appropriately for the onboard mechanic by the Company in accordance with the Company's in-house regulations for education and training.

(4) Injury to persons and Damage to objects on the ground

There was no injury to persons or damage to objects on the ground as a result of the dropping of the stones.

(5) Flight route for cargo transport

The operator conducting cargo transport by cargo sling was

	conducting transport by setting a flight route that would not cause safety issues for persons and objects on the ground, the Aircraft was flying with consideration for the configuration of transport, weather conditions, and other matters on that day based on a flight route that the Company had set in advance with consideration for safety on the ground.
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3. ANALYSIS

3.1 Involvement of Weather	None
3.2 Involvement of Pilots	None
3.3 Involvement of the Equipment	None
3.4 Analysis of Findings	<p>(1) Dropping of the stones</p> <p>It is certain that this serious incident occurred because the bucket opened and the stones dropped immediately after the Aircraft took off from the cargo sling point carrying stones in the bucket, in the reason why the onboard mechanic mistakenly operated the bucket's open/close switch instead of the transmit switch of the communication radio when he intended to communicate a warning to the trainee.</p> <p>(2) The onboard mechanic</p> <p>It is certain that the onboard mechanic had received the necessary education and training.</p> <p>Regarding the onboard mechanic operated the bucket's open/close switch by mistake instead of the communication radio's transmit switch, it is probable that this occurred when, while in a state in which his attention was focused on thinking about how to communicate a warning to the trainee and his attentiveness to the bucket's operation was faded, the onboard mechanic unintentionally operated the bucket's opening, which was an action that he had been conducting repeatedly until that time.</p> <p>Additionally, it is somewhat likely that the onboard mechanic did not notice the mistake in the switch he was about to operate because he was not looking at his hand when operating the switch.</p> <p>(3) Design of the control box</p> <p>The bucket's open/close switch had a design that opened the bucket simply by pressing the open/close switch and did not have a mechanism to prevent wrong operation. Because of this, the bucket opened when the onboard mechanic mistakenly pressed the bucket's open/close switch. It is probable that using a mechanism that requires the operation of multiple switches to open/close the bucket or a switch fitted with a guard, etc., would be effective measures for preventing wrong operation.</p>

4. PROBABLE CAUSES

It is certain that this serious incident occurred because the bucket opened and the stones dropped immediately after the Aircraft took off from the cargo sling point carrying stones in the bucket, in the reason why the onboard mechanic mistakenly operated the bucket's open/close switch instead of the transmit switch of the communication radio.

5. SAFETY ACTIONS

The Company took the following safety actions after the occurrence of this serious incident.

- (1) The Company carried out individual re-education on preventing human errors for the onboard mechanic.
- (2) The Company carried out education on preventing human errors for all employees involved in operations and executive-led safety education at cargo transport sites. Additionally, the Company issued a notification concerning the prevention of human errors by the safety supervisor and disseminated it within the company.
- (3) For the Aircraft and other aircrafts in the Company that use a bucket's open/close switch of the same type as that used on the Aircraft, by installing an additional toggle switch in order to prevent wrong operation, the Company improved the switch function so that open/close operation for the bucket cannot be performed without a simultaneous operation with the existing switch.