

AI2018-5

**AIRCRAFT SERIOUS INCIDENT
INVESTIGATION REPORT**

**AERO ASAHI CORPORATION
JA 6 5 1 2**

August 30, 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

August 10, 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

Company Name	Aero Asahi Corporation
Type, Registration Mark	Eurocopter AS350B3 (Rotorcraft) JA6512
Incident Class	Dropping of Object During External Cargo Sling Operation Close 15, Article 166-4 of the Ordinance for Enforcement of Civil Aeronautics Act of Japan
Date and Time of the Occurrence	At about 10:02 JST, August 3, 2017
Site of the Incident	Kurobe City, Toyama Prefecture (36°48' 59" N, 137°36' 12" E)

1. PROCESS AND PROGRESS OF THE INVESTIGATION

Summary of the Serious Incident	<p>On Thursday, August 3, 2017, the Aircraft took off from Otosawa Temporary Helipad in Kurobe City, Toyama Prefecture, slung the external cargo at the cargo loading site of the temporary helipad and flew to the cargo unloading site on the left bank of the Kuronagi-Kitamata Dam. At about 10:02 (JST: UTC + 9hrs, unless otherwise stated all times are indicated in JST on a 24-hour clock) during the flight, the suspended object dropped in the mountain forest.</p>
Outline of the Serious Incident Investigation	<p>The Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator on August 4, 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 rotorcraft involved in the serious incident, participated in this investigation.</p> <p>Comments were invited from parties relevant to the cause of the serious incident and were invited from the Relevant State.</p>

2. FACTUAL INFORMATION

Aircraft Information	
Aircraft type:	Eurocopter AS350B3

Serial number: 7691;
Certificate of airworthiness: No. DAI-2017-215;

Date of manufacture: July 17, 2013
Validity: August 9, 2018

Personnel Information

Captain:	Male, Age 40
Commercial pilot certificate (Rotorcraft)	June 2, 1998
Specific pilot competence certificate	
Expiration date of piloting capable period:	November 14, 2018
Type rating for single-turbine engine (land)	March 28, 1997
Class 1 aviation medical certificate	Validity: November 25, 2017
Total flight time	5,977 hours 12 minutes
Flight time on the same type of aircraft	2,185 hours 34 minutes

Meteorological Information

The weather was fine with a weak westerly wind, and there was no turbulence during the flight. (According to the statement of the captain)

Details of the Incident and Related Information

(1) History of the Flight

In order to transport an object (about 700 kg of tools and others) wrapped in a cargo net by the Aircraft, in the loading site of the temporary helipad, the ground worker hooked the cargo net's hanging ring on the sub-hook's (Maximum hanging load: 1,400 kg) load beam of the external cargo sling system and closed the load beam. In doing so, the ground worker pulled down the hanging ring of the cargo net and confirmed with the operation manager that the load beam on the tip of the sub-hook was closed and locked by the indicator showing the "Lock" status.

After takeoff, when the Aircraft was climbing slowly at about 70 kt at about 610 m AGL, the cargo dropped suddenly even though the unhooking switch of the slinging load had not been operated. At this time, the captain felt the Aircraft shaking up and down, and right away looked at the mirror to confirm the state of the slinging load, but could not find it in the mirror. Therefore, the captain decided to stop the cargo transportation and returned back to the departed helipad. The ground worker confirmed that at its landing approach, the Aircraft did not have the slinging load with its load beam closed. There was no damage found in the hanging ring of the cargo net that was collected.

(2) Detailed Examination of the External

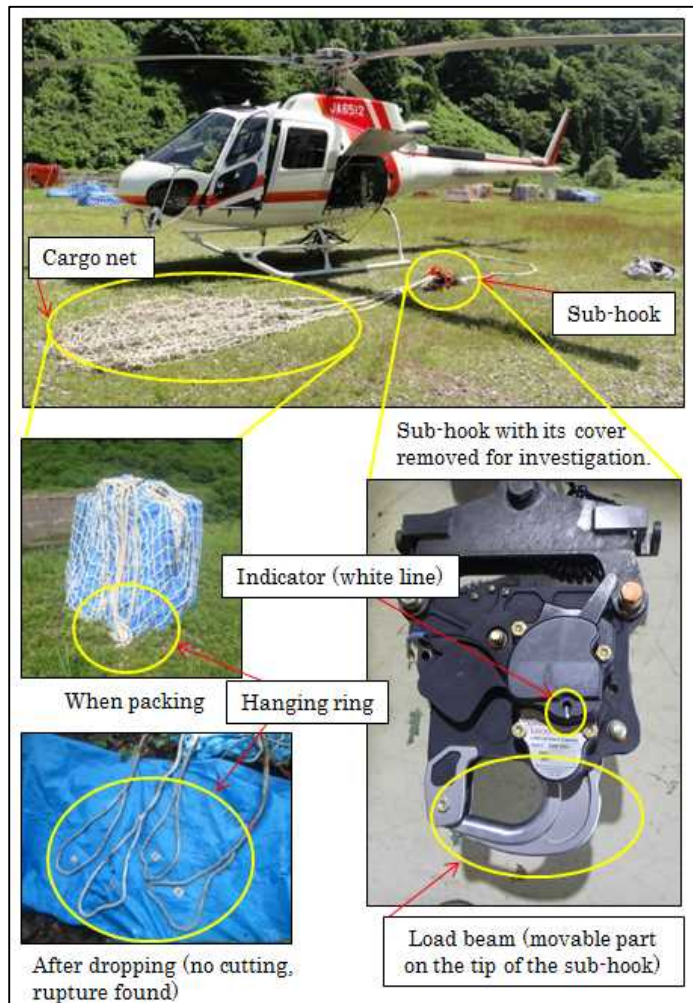


Photo: The Aircraft (hooking the cargo net on the sub-hook)

Cargo Slings System

In the teardown inspection of the sub-hook alone, it was confirmed that the lock was not unintentionally released or the structure which the hanging ring of the cargo net does not slip through. In addition, abnormal conditions could not be found though the detailed examination of the external cargo sling system was performed as follows:

- Function test and electric test on the conditions applied with impact and vibration
- Teardown inspection of wire bundles and equipment
- Electromagnetic interference test for confirmation of electromagnetic influence of the Aircraft systems
- Investigation to study the impact on the external cargo sling system, which was made by radio facilities, high-voltage electrical power lines and others located on the flight route
- Teardown inspection and load test (1,000 kg) of the sub-hook

(3) Usage Achievement of the external cargo sling System

The external cargo sling system was designed and manufactured by the Company, then the Aircraft passed the Inspection of Repair or Alteration by the Japan Civil Aviation Bureau (JCAB) on February 28, 2014. Besides, the same type of the external cargo sling systems were introduced into four aircraft of the company including the Aircraft, and did not experience the similar problems in the past.

3. ANALYSIS

It is somewhat likely that the reason why the slinging load dropped is that during the flight, the lock on the sub-hook was unintentionally released and its load beam was opened due to temporary malfunction of the electric circuit in the external cargo sling system caused by the Aircraft vibrations, temporary insulation failure of the electric circuit in the external cargo sling system, or temporary electromagnetic interference from the Aircraft equipment or external facilities. Therefore, the detailed examination of the external cargo sling system and the sub-hook was conducted, however abnormal conditions could not be found and the probable cause could not be determined.

In addition, regarding the fact that the load beam was closed at the landing approach, it is somewhat likely that the load beam came off from the hanging ring that generated a push-back, by force of which the sub-hook moved greatly up and down, and the load beam was closed and locked again.

4. PROBABLE CAUSES

In this serious incident, it is somewhat likely that the slinging load dropped, since the lock on the sub-hook of the external cargo sling system was unintentionally released and its load beam was opened during the external cargo sling operation. However, the probable cause of opening the load beam due to unlocking the sub-hook could not be determined.

5. SAFETY ACTION

The Company stopped using of the same type of the external cargo sling systems after the serious incident.