AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT

October 09, 2025
Adopted by the Japan Transport Safety Board
Chairperson RINOIE Kenichi
Member TAKANO Shigeru
Member MARUI Yuichi
Member SODA Hisako
Member TSUDA Hiroka
Member MATSUI Yuko

Company	Shin Nihon Helicopter Co., Ltd.
Type, Registration Mark	Aerospatiale AS332L1 (Rotorcraft), JA6686
Incident Class	Case where a slung load carried external to the aircraft was released unintentionally Item (xvi), Article 166-4 of the Regulation for Enforcement of the Civil Aeronautics Act of Japan.
Date and Time of the Occurrence	At about 12:21 Japan Standard Time (JST: UTC+9 hours), July 2, 2025
Site of the Incident	At about 150mt above the ground over Hamamatsu City, Shizuoka Prefecture (35° 02' 32" N, 137° 55' 45" E).

1. PROCESS AND PROGRESS OF THE SERIOUS INCIDENT INVESTIGATION

Summary of the Serious Incident	On Wednesday, July 2, 2025, the helicopter unintentionally dropped the cargo lashing material, which had been attached to prevent the cargo from shifting, into a mountain forest, while flying from a loading site in the vicinity of a steel tower in Haruno Town, Tenryu Ward, Hamamatsu City, Shizuoka Prefecture to Haruno Operation Site with underslung external cargo. There were three people on board, consisting of the captain and two mechanics, and none of them were injured.
Outline of the Serious Incident Investigation	On July 2, 2025, the Japan Transport Safety Board (JTSB) designated an investigator-in charge and an investigators. Comments on the draft Final Report were invited from the parties relevant to the cause of the serious incident and the Relevant State.

2. FACTUAL INFORMATION

Aircraft Information

Aircraft type: Aerospatiale AS332L1
Serial number: 2350 Date of manufacture: October 4, 1991
Airworthiness certificate: No. Tou-2024-453 Validity: February 27, 2026

Personnel Information

Captain: Age 45
Commercial pilot certificate (Rotorcraft) August 4, 2003

Type rating for Aerospatiale SA330	February 5, 2018
Specific Pilot Competence	
Expiry of practicable period for flight	February 21, 2027
Class 1 aviation medical certificate	Validity: May 17, 2026
Total flight time	5,313 hours 10 minutes
Total flight time on the type of aircraft	972 hours 27 minutes
Flight time in the last 30 days	13 hours 43 minutes

Meteorological Information

According to the statement of the pilot, the weather conditions in the vicinity of the loading site around the time of the serious incident were as follows:

Weather: Cloudy, Visibility: 10 km or more, Wind: Calm

Event Occurred and Relevant Information

(1) History of the Flight

At about 12:20, with the captain sitting in the right pilot seat, a mechanic (trainee) in OJT sitting in the cockpit rear left seat, and a mechanic (instructor) sitting near the left cabin door, the helicopter lifted the total cargo weight of about 800 kg (Cargo A and Cargo B) from a load site near a steel tower in Haruno Town, Tenryu Ward, Hamamatsu City, Shizuoka Prefecture (hereinafter referred to as "the load site") for material transport involving steal tower construction, and started to fly towards Haruno Operation Site (see Figure 1 and Figure 2).

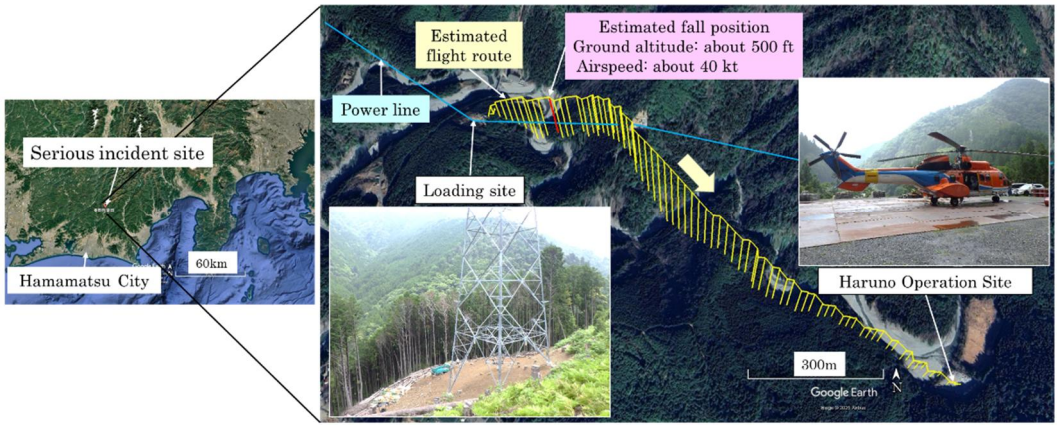

Figure 1: Estimated Flight Route (FDR)

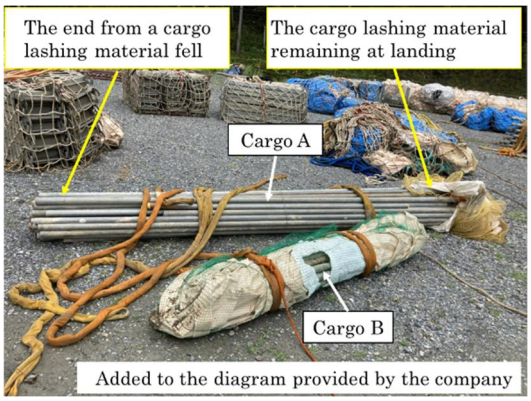

Figure 2: The Status of Underslung Cargo
(This photograph was taken after landing at the operation site)

At about 12:21, while flying at about 500 ft above the ground and at an airspeed of about 40 kt, the captain confirmed via the cargo mirror that either one of the cargo lashing materials, which

had been attached to both ends of Cargo A to prevent it from shifting, was flying off and falling, and informed the two mechanics of this during a conversation in the cockpit, saying, “The ton pack*1 fell”.

Upon hearing from the captain that the ton pack had fallen, the mechanic (instructor) opened the left cabin door and checked the underslung cargo, confirming that one end of the two cargo lashing materials covering both ends of Cargo A was missing. In addition, the mechanic (instructor) reported to the captain that the other end of the cargo lashing material remaining on Cargo A, was flapping in the wind and on the verge of falling off.

Upon receiving the report from the mechanic (instructor), the captain continued to fly the helicopter toward the operation site, slowing the helicopter down until it was almost hovering.

At about 12:23, the helicopter landed at the operation site, and the captain reported to the company that the subsequent transport operations would be cancelled. After the flight, upon inspecting the slung cargo, it was confirmed that approximately 4 kg of lashing materials attached to Cargo A (a ton bag, a net covering the ton bag, and a binding wire) was missing.

(2) Education Provided by the Company to Workers Engaged in Helicopter Transport Operations, (hereinafter referred to as the “Safety Education”)

On April 17, 2024, the company provided the Safety Education to the prime contractor and the construction company engaged in the helicopter transport operations of this tower construction project. The company's Safety Education text for helicopter material transport (Rev. 6.1, revised on July 14, 2023) (hereinafter referred to as the “Safety Text”) was used in the educational training.

When checking the names of the participants in the Safety Education listed in the "Helicopter Slinging Operation Workers Checklist" submitted by the company, of the eight workers from construction company (Company A) engaged in the packing of cargos, the names of two could not be confirmed.

The opening of the Safety Text describes as follows (excerpt):

The gist of the document: According to the education operational regulations provided to ground operators which were developed by the Cargo Transport Business Committee of the Helicopter Division in the All Japan Air Transport and Service Association, education shall be provided to ensure the safety of ground operators engaged in helicopter cargo transport and to prevent underslung cargoes from falling.

Trainees of the education: Those engaged in operations such as cargo packing, signaling, and slinging loads onto a hook, as well as the those who manage such operations, should have received the relevant education. Those who have not received such education are not permitted to participate in helicopter transport operations.

*1 “Ton Pack” is a colloquial term for a flexible container bag, which refers to a large sack capable of holding heavy materials, typically around one metric ton.

(3) Cargo Packing Operations

Company A conducted cargo packing with eight workers on June 16, 2025, and with four workers on June 17, 2025. A total of 25 cargoes were packed over the two days, each weighing between around 50 and 800 kg (see Figure 3).

Figure 3: Packing Condition of Cargos at the Loading Site

The Safety Text lists five examples of packaging methods for long items similar to those involved in this serious incident. Regarding the procedure for packaging when using ton packs at both ends, the following (summary) is provided. For reference, a schematic diagram is shown in Figure 4

a. Cover both ends of the long cargo with a ton pack (hereinafter referred to as "Procedure a.")
b. Ensure to tie the ton packs at both ends together to prevent them from flying away due to wind pressure during flight (hereinafter referred to as "Procedure b.").
c. Further wind the cargo sling around the ton packs using the Adamaki*2 slinging method to prevent them from flying off (hereinafter referred to as "Procedure c.").

The site supervisor of Company A understood the Procedure a. through c.

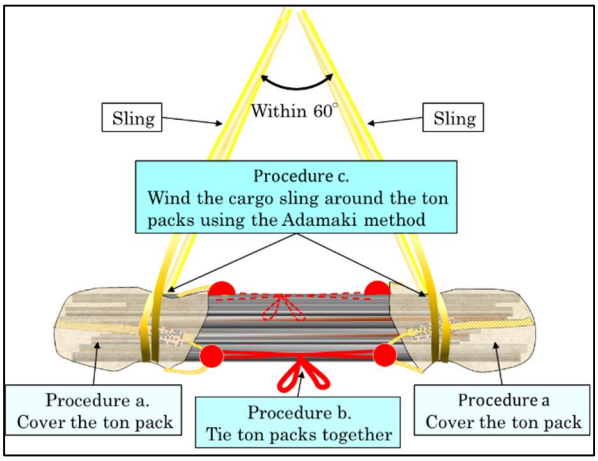

Figure 4: Packing Procedures for Using ton Packs at Both Ends of the Cargo

According to the site supervisor of Company A who checked Cargo A following the serious incident, the condition of the cargo lashing material remained at one end of Cargo A, rather than flying away, led the site supervisor to conclude that Procedure b. and Procedure c. as shown in the Safety Text, had not been performed at the time of the serious incident. Besides, as there were not enough ropes available to tie the ton packs together when the cargo was packed, it was decided that Procedure b. was scheduled for completion at a later stage. However, the site supervisor of Company A did not perform Procedure b. Furthermore, Procedure c. was not performed, instead the sling wire was wound directly around Cargo A and the ton packs were covered with nets around which binding wire was wound to tie them together (see Figure 5).

The prime contractor's site manager was the final verifier for packaging operations in this project. However, during this serious incident, the site manager delegated the packaging work to Company A's site supervisor, who was skilled in such operations.

* 2 'Adamaki' is an abbreviation for 'Adamakikake', meaning 'one-round-turn slinging', which is a method of winding a sling (wire) around a cargo once. It is most effective for slinging long objects. After making an 'Adamaki', the method of threading one end of the rope through the eye (loop) of the rope is called 'Adamaki Medoosi'. This prevents the sling (wire) from slipping. The 'Adamaki Medoosi' method was applied at the time of the serious incident.

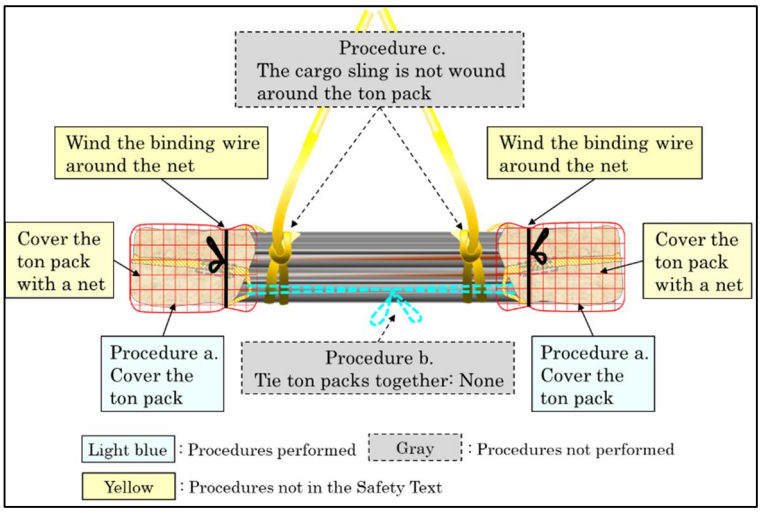

Figure 5: Packing Condition of Cargos at the Time of the Serious Incident

The following conditions of Cargo A were confirmed in this investigation (see Figure 6).

- Cargo A consists of approximately 50 steel pipes of various lengths, ranging from about 2.5 to 4.2 m, which were bundled together with their centers aligned.
- The sling attached to Cargo A was placed in a position well inside both ends of the shortest steel pipe so that all steel pipes could be wrapped and secured.

Figure 6: Condition of cargo A

(4) Wind Pressure

Wind pressure refers to the pressure exerted upon an object when wind is blowing. Wind pressure increases in proportion to the square of wind speed; therefore, when airspeed doubles, wind pressure quadruples.

3. ANALYSIS

(1) The Fall of the Cargo Lashing Material

The JTSB concludes that based on the statements of the captain and the mechanic (instructor), it is certain that, during forward flight after the aircraft had lifted the cargo, one of the cargo lashing materials attached to both ends of Cargo A (including the ton packs, the net covering the ton packs, and the binding wire) fell off unintentionally because the bag-shaped ton pack was subjected to wind pressure.

(2) Packing of Cargo A

The JTSB concludes that it is highly probable that based on the statement of Company A's site supervisor, Procedure b. and Procedure c. of those procedures shown in the Safety Text, had not been performed. Therefore, it was most likely unable to prevent Cargo A's ton pack from falling off due to wind pressure during the flight.

Procedure b. was not performed when the cargo was packed because it was decided that Procedure b. would be performed on a later day, as there were not enough ropes available at the time to tie the ton packs together. However, it is most likely that Company A's site supervisor forgot about it. In addition, Procedure c. was not performed probably because, to securely fasten the cargo A with

varying lengths using a sling, priority was given to ensuring the sling was securely attached to the shorter steel pipe rather than placing it over the ton pack.

If an underslung cargo falls during helicopter transport, it could cause damage to ground operators, third parties, houses and others. Therefore, the company should ensure that the cargo is packed appropriately.

(3) Safety Education

The JTSB concludes that, some workers at the loading site, those who had not received the Safety Education were probably engaged in helicopter transport operations. Therefore, the company should confirm that all workers involved in cargo sling operations have received the Safety Education before work begins.

(4) Actions after the Fall of the Cargo Lashing Material

After one end of the cargo lashing materials attached to both ends of Cargo A fell off at the time of the incident, the mechanic (instructor), who had confirmed that the other end of the cargo lashing material remaining on Cargo A was flapping in the wind and on the verge of falling off, reported this to the captain. Upon receiving this report, the captain slowed the helicopter down until it was almost hovering. This would reduce the wind pressure against the cargo, which was probably an appropriate response to prevent the cargo lashing materials left at the other end of Cargo A from falling off.

4. PROBABLE CAUSES

The JTSB concludes that it was certain that the probable cause of this serious incident was that, during forward flight after the aircraft had lifted the cargo, the cargo lashing materials attached to both ends of Cargo A were subjected to wind pressure, causing one end of the cargo lashing materials attached at both ends of Cargo A, to fall off unintentionally.

One end of the cargo lashing materials attached at the cargo fell off due to wind pressure, most likely because some of the packing procedures were not performed when the cargo was packed.

5. SAFETY ACTIONS

(1) Safety Actions Required

As shown in the analysis, the company should confirm the following before commencing work.

a. To ensure that the cargo is packed appropriately.
b. To confirm that all workers involved in cargo sling operations have received the Safety Education.

(2) The Company's Safety Actions Taken after the Serious Incident

The company took the following actions after the serious incident.

a. All personnel involved in cargo transport operations, both internal and external, received education on this serious incident and the immediate safety actions that should be taken.
b. Long cargo can be secured tightly because the weight of the cargo is loaded on the sling (wire) that has been wound by using Adamaki method. Therefore, it was decided that packing using ton packs shall be prohibited in principle, instead the packing methods (such as packing using soft sling) exemplified in the Safety Text shall be used. It was also decided that, if there was no choice but to use ton packs for packing, the company's sales representative should check the packing conditions with pictures and others before the sling work begins, or during a meeting with the prime contractor on the day.
c. About Education

(a) The “Safety Education Regulations for Cargo Transport Operations (provisional title)” were established to reorganize the general safety education system for cargo transport operations.

(b) The “Cargo Transport Operations Education Manual for Instructors”, which clearly states important matters to contribute to education, was newly created to provide education to those engaged in cargo transport operations in the company (pilots, mechanics, and sales representatives), prime contractor and construction company, using this manual.

(c) The flight mechanics were reminded again that they should confirm that the cargo is packed in accordance with the rules set out in the Safety Text before lifting it, and if they find that the cargo is not packed in accordance with these rules, they must not lift it.

(d) A sticker indicating completion of safety education will be distributed to participants, who will affix it to their helmet for clear identification.