# AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT



December 6, 2024 Adopted by the Japan Transport Safety Board Chairperson 7AKEDA Nobuo Member SHIMAMURA Atsushi Member MARUI Yuichi Member SODA Hisako Member TSUDA Hiroka

Company	Shin Nihon Helicopter Co., Ltd.	
Туре,	Aerospatiale AS332L1, JA6686	
Registration		
Mark		
Incident Class	Case where a slung load, any other load carried external to the aircraft, was	
	released unintentionally	
	Article 166-4, Item (xvi), of the Regulation for Enforcement of the Civil	
	Aeronautics Act of Japan.	
Date and Time of	At about 10:36 Japan Standard Time (JST: UTC+9 hours), July 3, 2023	
the Occurrence		
Site of the	At an altitude of about 150 m over the Kamiochiai area, Aoi Ward, Shizuoka	
Incident	City, Shizuoka Prefecture	
	(35° 10' 30" N, 138° 18' 36" E).	

## 1. PROCESS AND PROGRESS OF THE SERIOUS INCIDENT INVESTIGATION

Summary of the	On Monday, July 3, 2023, the helicopter left from a loading site adjacent to
Serious Incident	Nakagochi Operation Site in Aoi Ward, Shizuoka City, Shizuoka Prefecture, and
	while it was transporting a slung cargo, a sleeper attached to the slung cargo fell
	into a mountain forest.
Outline of the	The Japan Transport Safety Board (JTSB) designated an investigator-in
Serious Incident	charge and three other investigators on July 3 and July 4, 2023, to investigate
moongation	this serious incident.
	Comments on the draft Final Report 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.

#### 2. FACTUAL INFORMATION

Aircraft Information			
Aircraft type:	Aerospatiale AS332L1		
Serial number: 2350	Date of manufacture: October 4, 1991		
Airworthiness certificate: No. Tou-2022-445	Validity: February 27, 2024		
Personnel Information			
(1) Captain: Age 43			
Commercial pilot certificate (Rotorcraft)	August 4, 2003		
Specific Pilot Competence			
Expiry of practicable period for flight	February 15, 2025		
Type rating for Aerospatiale SA330	February 5,2018		
Class 1 aviation medical certificate	Validity: May 17, 2024		
Total flight time	4,703 hours 37 minutes		

Flight time in the last 30 days	14 hours 47 minutes
Total flight time on the type of aircraft	619 hours 06 minutes
Flight time in the last 30 days	11 hours 03 minutes
(2) Onboard Mechanic A (Onboard Mechanic Trainee)	Age 31
Training years for onboard mechanic	About 2 years
(3) Onboard Mechanic B (Onboard Mechanic Examiner)	Age $50$
Years of experience as an onboard mechanics	About 20 years
(4) Ground Operator C	Age $22$
Years of experience in cargo transport operation	About 1 year and 2 months

#### Meteorological Information

According to the statement of the Captain, the weather conditions during the cargo transportation, were fine with a southernly wind of 2.0 m/s, a temperature of  $28.5^{\circ}$ C and a visibility of 10 km or more.

#### **Event Occurred and Relevant Information**

#### (1) History of the Flight

On the day of the serious incident, the helicopter was scheduled to transport cargo for the construction of transmission line pylons 16 times from a loading site adjacent to the operation site (see Figure 1) to an unloading site approximately 560 m from the loading site. On board the helicopter, the Captain sat in the right seat in the cockpit, and two of Onboard Mechanic A and B in charge of monitoring sat on the left side of the cabin. Onboard Mechanic A was in the training for onboard mechanic operations and undergoing an assessment review by Onboard Mechanic B on the day of the serious incident. Three ground operators were deployed at the loading site, including Ground Operator C who was responsible for hooking external cargo onto the cargo hook.

About 10:30, the helicopter hooked up the cargo at the loading site and began its climb to make

its 7th transport with the underslung external cargo. Having visually confirming that one of the two sleepers used to support cargo had been lifted as attached to the cargo, therefore, Onboard Mechanic B reported this to the Captain and Onboard Mechanic A. In general, sleepers are not the goods to be transported but are laid down under a cargo to be used, but there are several cases where sleepers are attached to the cargo with wires and others to protect the cargo being



Figure 1: Estimated Flight Route

transported. This time, however, the cargo was not planned to be transported with the cargo fastened to the sleeper, but assuming that the sleeper were fastened with wires, because they were securely attached to the cargo as if they were fastened to the cargo, Onboard Mechanic A replied to the Captain and Onboard Mechanic B: "Yes, OK. No problem".

A little anxious about the sleepers being lifted with the load, the Captain radioed to confirm that the sleepers were attached to the cargo with wires by asking, "Ki ("Ki" means both "wood" and "tree" in Japanese) is OK, isn't it?" And then Ground Operator C, who had a radio, with the headset slightly removed from the ears, heard a radio call saying something like "Is there anything hitting?", so Ground Operator C assumed that the Captain was confirming whether the lifted cargo was hitting its surrounding object at the loading site, and replied "Yes, it's OK". The Captain started

the transport operation for the cargo after this communication with Ground Operator C. At about 10:36, as the helicopter flew along the mountainside at an altitude of about 500 ft (150 m) over the Kamiochiai area, Aoi Ward, the Captain saw the sleeper falling through the cargo mirror and the two onboard mechanics visually confirmed it (see Figure 2). The helicopter returned to the loading site, unloaded the cargo, and then landed at the Operation Site.



Figure 2: Image of Falling Sleeper and Others

(2) Packing for Cargo Transport and Pre-transportation Checks

The cargo had been packed by the construction company for the transmission line pylons and placed on the sleepers since about one month ago before the serious incident. On the day of the serious incident, the captain, two onboard mechanics, three ground operators, an employee of Shin Nihon Helicopter Co., Ltd. (hereinafter referred to as "the company"), a construction site supervisor of the construction company jointly confirmed the transport order and packing style (to check that the cargo would not shift) while checking the prepared cargos with the transport cargo list. However, as there were no regulations to confirm the securing status between the sleepers and the cargo, or to check that the sleepers were include in the cargo, no confirmation had been not made for those. The cargo was packed by workers who had been trained according to the company's training manual, which did not describe how to secure the sleepers.

(3) Investigation on the Sleeper and the Cargo

The cargo was a steel truss construction and weighed approximately 800 kg. The sleepers were newly purchased for this construction, with a length of approximately 2 m and a weight of

approximately 15 kg. The fallen sleeper was found in the mountain below the helicopter's flight route and there were no casualties and the other damages from the fallen sleeper. There was paint from the same color as the cargo in part of the sleeper to which the cargo appeared to be attached. In addition, the paint of the cargo being transported at the time of the serious incident was partially peeled off where it appeared to be in contact with the sleeper.

### **3. ANALYSIS**

#### (1) Attachment and Fall of Sleeper

The JTSB concludes that it was probable that the cargo, weighing approximately 800 kg, was placed on the top of the sleepers for a lengthy period, which caused by the large load on the contact surface, therefore the sleeper was pressed against and crimped to the cargo. When the helicopter lifted the cargo, the sleeper was lifted with it, and the crimping to the cargo was removed by vibration, wind pressure and the weight of the sleeper itself during the flight, most likely causing the sleeper to fall.

(2) Confirmation at the Start of the Helicopter's Climb

The JTSB concludes that, as the sleeper appeared to be firmly attached to the cargo, and as cargo is sometimes transported with sleepers attached to the cargo, despite of being advised by Boarding Mechanic B that the sleeper had been lifted with the cargo as it began to climb, it is most likely that Onboard Mechanic A assumed that the sleeper was probably secured to the cargo and judged that there would be no problem. In addition, Onboard Mechanic B probably accepted the answer from Onboard Mechanic A, who said "Yes, OK. No problem". On the other hand, the captain used the radio to confirm to Ground Operator C about the attached sleeper but did not mention the word 'sleeper' on the radio. Unable to clearly hear the voice on the radio, Ground Operator C probably misinterpreted the captain's intentions and failed to notice that the sleeper was attached to the cargo.

(3) Confirmation of the Range for the Underslung Cargo

The JTSB concludes as follows:

On the day of the serious incident, the captain the onboard mechanics and the ground operators checked the transport cargo list with the prepared cargos to confirm the transport order and the packing style to ensure that the cargo would not shift, but, they did not share clear information on the correct packing style, such as whether or not sleepers were to be transported with the cargo. When transporting cargo, it is important that a clear picture of the state of the cargo should be shared among the parties concerned, and that they mutually make risk predictions about possible events. In addition, if sleepers are to be included in the underslung cargo, it is important to check that they are properly secured with wires and others.

#### 4. PROBABLE CAUSES

The JTSB concludes that the probable cause of this serious incident was that the sleeper, which had been pressed against and crimped to the cargo own weight, lifted with the cargo, when the helicopter went to fly, and then the vibrations and other factors during the flight most likely cause the sleeper to fall.

It is more likely that that the reason the helicopter went into climb as the sleeper was being lifted with the cargo was because the parties involved did not share information about whether the sleeper was to be transported in attached to the cargo or not.

# **5. SAFETY ACTIONS**

#### (1) Safety Actions Required

It is necessary that the captain, onboard mechanics and ground operators should make sure of the items relevant to the underslung cargo and record it in the transport cargo list to make sure of it before the flight, as well as when the cargo is lifted, they should communicate well among themselves to confirm the state of the cargo and stop the transport operation if there is anything abnormal.

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

- a. The company's training text stipulated that it shall be written in the transport cargo list if sleepers are to be included in the cargo, which was made known to all. (September 21, 2023)
- b. The company regulation was revised as follows: Confirm with ground operators if there is anything abnormal during cargo transport; stop the operations once if unable to confirm with ground operators and unload the cargo on the ground to confirm. (September 21, 2023)
- c. Training has been provided all those involved in the company's cargo transport operations education on the overview of serious incidents and the correct use of headsets when communicating by radio during cargo transport. (July 21, 2023)