

Crash during hoisting down rescuers in the ravine downstream of waterfall plunge pool for rescue operation

Summary: On Sunday July 25, 2010, a Eurocopter AS365N, owned by Saitama Prefectural Government took off from a temporary helipad in Otaki, Chichibu City, Saitama Prefecture at 10:48 local time (UTC+9 hours) for a rescue operation and crashed, while hoisting down two rescuers (Air Rescuer A and Firefighter A) to a ravine upstream of Takigawa, around 11:03. Of seven persons on board, two hoisted-down rescuers survived, however, five persons (a pilot in command, a pilot, two rescuers from Saitama Disaster Prevention Aviation Unit and a firefighter from Fire Brigade Headquarters) sustained fatal injuries. The aircraft was destroyed, however, no fire broke out.

Events leading to the Accident

Causal Factors of the Accident

Around 09:18

The Disaster Prevention Aviation Center received an official rescue request from Fire Brigade Headquarters, in which one of the female member of the gorge climbing party (nine members) slipped into a waterfall plunge pool and was receiving resuscitation on site.

Around 09:42

The aircraft took off from the Center, with five persons on board—the PIC, the LST pilot with a license of land-use single turbine engine helicopter, and three Air Rescuers.

Around 10:20

The aircraft headed for Deai-no-oka temporary helipad (Deai-no-oka Helipad) to join firefighters.

Around 10:48

The aircraft took off from Deai-no-oka Helipad with two additional Firefighters. After reaching the would-be rescue area and a recon flight, it located the party and chose the hovering point for the hoist descent.

Around 11:00

The aircraft made a right circling flight to the accident area and occupied the hovering position downstream of the plunge pool for the preparation of the hoist descent.

Around 11:02

The two rescuers (the Air Rescuer A and the Firefighter A) began the hoist descent. The aircraft, during its hoist operation, lowered its AGL altitude above stream from about 60 m to about 51 m, and this means increased proximity to the obstacles considering the geographical features near the accident site and reducing the safe distance.

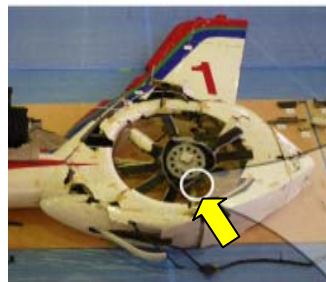
Tree branches were sucked into the Fenestron, and the aircraft lost its yaw control due to the damaged tail rotor, started to spin to the left, and its main rotors contacted with trees located left aft side of the aircraft.

Around 11:03

The aircraft lost horizontal stability due to spinning and moved to north-westward slashing tree branches and crashed into the left bank cliff from the nose.



Just After the Occurrence of the Accident
(This picture was taken by a member of the gorge climbing party)



Fenestron



Tree fragments viewed in the direction of the arrow

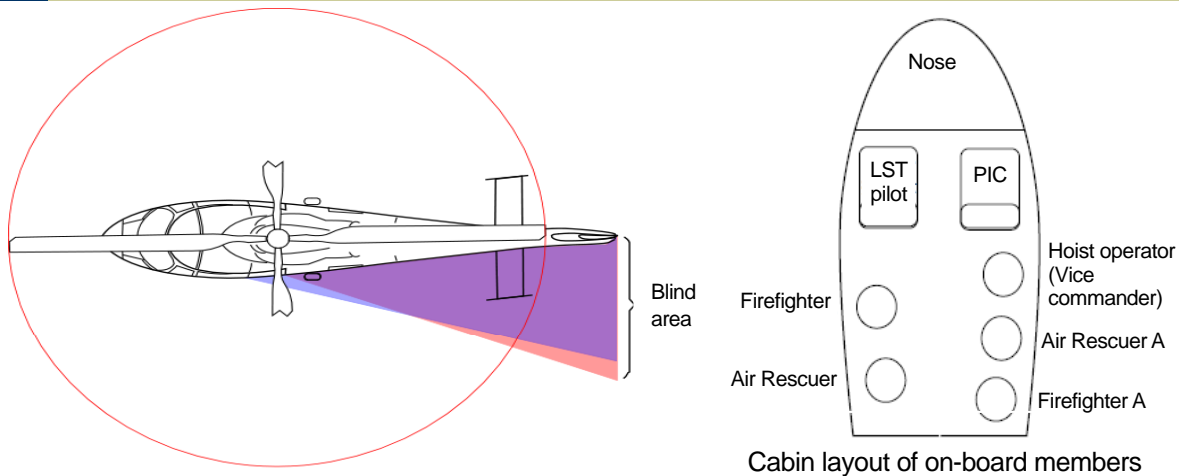
As the aircraft hovered to the left without changing its heading until it occupied the hoist descent position, it is probable that the PIC did not have the sufficient confirmation of the obstacles to the left and the LST pilot did the left-side watch.

For details, refer to “Looking Out During a Hovering Operation” (next page)

It is probable that PIC lowered the AGL hovering altitude to avoid the difficulties associated with long hoist cable operation at higher hovering altitude than the usual training altitude.



It is very likely that the aircraft crashed when it hovered to the left to adjust the position without appropriate looking out, the Fenestron’s tree contact developed into a loss of yaw control followed by main rotor tree strike.

Looking Out During a Hovering Operation



Blind Area in Aft Left Section of Aircraft

Legend

-  Blind area from the left pilot station seen through the cabin window
-  Blind area from the cabin rear seat

On-board member's assignment

- PIC: Aircraft control (steady hovering on target)
- Co-pilot: Looking out to the left, engine instrument monitoring and communication
- Hoist operator: Hoist operation, aircraft guidance and looking out to the right aft
- Standby rescuers: Preparation for their part of descent, confirmation of the target

The Aviation Unit maintains that they did looking out per duty assignment as described in the above figure when a helicopter hovers in a small confined area. However, usually the left cabin slide door is closed during hoist operation therefore blind area exists near the Fenestron as depicted in the above figure, unable to see from the aircraft interior.

It is not certain whether the PIC confirmed the left side of the aircraft or gave instructions to watch that section before moving to the left for the position adjustment, it is very likely that the looking out to the left aft was inappropriate.

Although the voice procedures (call-out procedures for rescue mission) did not include looking out, the JTSB considers it desirable to include the looking out in the voice procedure so that aircraft occupants do looking out properly per duty assignment.

In order to Prevent Recurrence

When a helicopter hovers in a small confined area it is imperative to keep close watch against obstacles for keeping safe distance for main rotor and Fenestron.

It is most likely that inappropriate looking out to the left aft lead to the aircraft's tree contact and consequently developed into accident. The JTSB believes that the necessary training should be repeated to train aircraft occupants to do proper looking out responding to the rescue site circumstances.

On the other hand, the hoist camera's AGL altitude just after the occupation of the hovering point for a hoist descent was about 60 m, the altitude gradually diminished as the time passed. It is very likely that the allowable length of hoist cable was about 90 m and the aircraft was able to hoist down rescuers without lowering its altitude; however, the aircraft chose to lower its altitude leading to the proximity with obstacles.

In general, a rescue hoist operation is carried out under difficult circumstances so that there are cases where hoist and other equipment capability has to be used to its maximum extent while all the aircraft occupants keep looking out in order to accomplish its mission safely. Whereas the difficulties of high AGL altitude hovering for the rescue mission by unwinding the cable long are understandable; however are commonly shared by pilots in general; however there may be situations where no other alternatives exist. Assuming tough situation where high AGL hovering is required, it is important to keep prepared by periodical rescue training under the high AGL hovering circumstance.

The investigation report of this case is published on the Board's website (issued on February 24, 2012).

http://www.mlit.go.jp/jtsb/eng-air_report/JA31TM.pdf

(This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.)