

NA-106 Occurrence Investigation

Executive Summary

On December 5th 2018, the National Airborne Service Corps (NASC), Ministry of Interior, an Airbus AS365N3 helicopter registration number NA-106, carried out a sea search and rescue mission about 11 nautical miles west of the Peng-Jia Islet with two pilots, one chief engineer and two coast guards, totally 5 persons on board. During the operation of hoisting up, a coast guard suffered from shock and lapsed into unconscious following the dipping into water.

According to the Republic of China (ROC) Transportation Occurrence Investigation Act and the content of Annex 13 to the Convention on International Civil Aviation, the Taiwan Transportation Safety Board (TTSB), an independent transportation occurrence investigation agency, is responsible for conducting the investigation. The investigation team also included members from National Airborne Service Corps and Coast Guard Administration of Ocean Affairs Council.

The draft “Final Report” of the occurrence investigation was completed in July 2019. In accordance with the procedure, it was reviewed at 81st Board Meeting of Aviation Safety Council (ASC, the predecessor of TTSB) on 16th July, 2019 and sent to relevant organizations and authorities for comments. After comments were collected and integrated, the Final Report was reviewed and approved by TTSB’ s 4th Board Meeting on 4th October 2019. The Final Report was published on 19th November 2019.

There are a total of 8 findings from the Final Report and 4 safety recommendations issued to the related organizations.

Findings Related to Probable Causes

1. The helicopter started to climb and pick up speed after the rescuee was hooked. The hoist cable swayed, bound round the right landing gear and then stopped from reeling in during the operation of hoisting up. The flight crew decided to reduce speed and descend, tried to hover the helicopter over the sea and dipping the rescuee into the water to release the tension on the cable, for chief engineer to unbound and reel in the cable. (1.1, 1.11.5, 1.18.2, 2.2, 2.3.3)
2. As the rescuee was hooked and the helicopter flew away from the ship and went beyond the range of lighting facilities on board, it was already 20 minutes passed the end of evening twilight. The crew was unable to maintain visual contact with the hoist and sea surface due to a lack of ambient light. The helicopter descended but climbed immediately twice without noticeable hovering operations over the sea. It was determined that, the rescuee impacted the water twice during the period with the ground speed of 67 to 45 knots and 37 to 17 knots accordingly. It revealed that the Captain was unable to achieve a stable hover without visual reference. (1.11.4, 1.11.5, 2.3)
3. The rescuee suffered from shock and lapsed into a coma as being pulled into the cabin. In addition to the superficial bruises, organs injury and serious fractures were also observed indicating the presence of intense impact force when dipping into the water. (1.2, 1.13, 2.2.2)

Findings Related to Risk

1. As the occurrence flight crew realized that the hoist operation was delayed, attempts to abort the mission but not succeed since the crew did not effectively evaluate and communicate the approach of the end of evening twilight and the possible unexpected situation beforehand. In addition, the flight crew unable to contact the on-boarded coast guard

- by radio, thus continued the hoist operation after the end of evening twilight and increased the risks of mission. (1.11.5, 2.3.4)
2. There were neither written restriction served to limit the AS365N helicopter conducting sea rescue and hoist mission during the night, nor requirement to ask the flight crew abort sea hoist operation after the end of evening twilight in the National Airborne Service Corps. Due to lack of specific standards led to the flight crew' s attempts to keep on trying the sea hoist operation after the end of evening twilight because of sense of duty and commitment or unexpected situation, and increased the risks of mission. (1.17.2, 2.3.1)
 3. The National Airborne Service Corps did not specify reasonable operation time prior to the end of evening twilight for those aircrafts unfit for sea hoist mission at night in its dispatching rules, and did not develop a mechanism of risk control that authorizes its command center to deploy appropriate aircraft from other regions or hand over to the Taipei Rescue Coordination Center for reinforcement. (1.17.3, 2.3.5)
 4. As the helicopter arrived target area and the coast guard was lowered on deck, the preparations on board for hoist operation were not ready yet with the patient still inside the cabin, caused the delays and extended the operation time. (1.18.2, 2.3.6)

Other Findings

1. The occurrence flight crew were properly certificated and qualified in accordance with the National Airborne Service Corps requirements. No evidence indicated any pre-existing medical conditions or alcohol issue that might have adversely affected the flight crew's performance during the occurrence flight. The weather condition and weight & balance of the occurrence aircraft were within limits during the occurrence flight. The airworthiness and maintenance of occurrence aircraft were in

compliance with the National Airborne Service Corps standards. There were no aircraft system or engine malfunctions that would have prevented normal operation of the aircraft. (1.5, 1.6.2, 1.6.3, 1.7, 2.1)

Safety Recommendations

To National Airborne Service Corps, Ministry of the Interior

1. Review aircrafts dispatching related rules for explicitly defining written restriction served to limit the AS365N helicopter conducting sea rescue and hoist mission during the night, and specifying reasonable operation time prior to the end of evening twilight for those aircrafts unfit for sea hoist mission at night.
2. Enhance the task briefing and crew resource management to establish effective evaluation and communication of mission termination for possible scenarios when the task is close to the end of evening twilight.
3. Review and enhance the radio communication between crewmembers in the aircraft and rescue staff on the ground to assure steady and effective communication
4. Review and enhance communication and coordination between the command center and mission application units, and require application units conveying estimated arrival time and essential preparations to rescue demand unit when necessary.