



**Aviation Safety Council
Taipei, Taiwan**

**NATIONAL AIRBORNE SERVICE
CORPS, MINISTRY OF INTERIOR
AIRCRAFT TYPE UH-1H
REGISTRATION NO.NA-520 CABLE
WIRE FRACTURED DURING HOIST
RESCUE IN ZHONGLING MOUNTAIN
AREA WULAI**

Executive Summary

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On December 28, 2007, at around 0845am Taipei time, a UH-1H helicopter of National Airborne Service Corps, Ministry of the Interior (hereinafter called National Airborne Service Corps), registration no. NA-520, departed from Songshan Airport to Zhongling Mountain area, Wulai to conduct a search and rescue mission for astray civilians, the aircraft carried one Captain, one First Officer, one crew chief and two special search and rescue team members of National Fire Agency (hereinafter called special rescuer), total 5 people on board, the Captain was the pilot flying and the First Officer was the pilot monitoring.

At around 1003, the aircraft discovered 3 civilians waiting for rescue at E121°33'34.0", N24°43'1.9" during the rescue, the cable wire fractured during the hoist process operated by the special rescuers and the crew chief aboard, one special rescuer conducting hoist rescue operation and one civilian fell and injured, NA-520 crew gave up the mission and returned to Songshan Airport and landed at 1034. Besides the breakage of the cable wire, NA-520 remained intact, and the rest 4 crewmembers were not injured.

Findings related to the probable causes

1. The aircraft should conduct OGE hovering under irregular tumbling air environment, since it was not easy to find a obvious operating reference point in the operation zone, the exact hovering location was not easy to be identified, which might cause the possibility of the delaying correction

phenomenon, and affected the timing of the hovering correcting operation, therefore the executors could not maintain a stable hovering condition during the period of hoisting operation.

2. During the hoist operation, displacement appeared to the aircraft, causing Fleet Angle to exceed the defined limitations; Meanwhile the cable wire got hooked on a tree branch and was pulled and dragged instantly, the Fleet Angle was over 35 degrees which created a stress concentration, eventually the cable wire was instantaneously overloaded and fractured, causing the hoisting paramedics and the civilian waiting to be rescued fell and injured.

Findings Related to the Risks

1. The Standard Operating Procedures of the life-saving hoisting equipments of National Airborne Service Corps did not provide the complete operating procedures which covered all common service units, besides, the duty segregation of safety operations, operating limitations, notes, restriction factors of whether a mission could be conducted in each kind of environment, and risk identification standards and detailed guidelines were absence, which could not satisfy the safety needs of conducting a life-saving hoisting duty.
2. The content of the mutual support agreement of National Fire Agency, Ministry of Interior and National Airborne Service Corps did not integrate for joint implementation from different common service operations, overlapping operations and items decided after joint evaluations, and establish standards of common operating norms, responsibilities and procedures.

3. Hoist line operation and important operation limitations and notes of the Aircraft Maintenance Manual were not included in the education and training manuals or operation procedures of relevant units.

Other Findings

1. No evidence showed that the accident was related to the personnel physically, mentally or by medication or alcohol.
2. The weight and balance was within limits.
3. The civilian waiting for rescue did not wear protective helmet leading to serious head injuries after the accident.
4. The flight crew did not carry out preflight preparation and duty briefing before the duty.
5. According to the factual data, the investigation team thinks that the functionalities of the life-saving hoist system of helicopter NA-520 was normal during the accident.
6. The nonscheduled inspections by National Airborne Service Corps did not discover the integrity deficiencies of maintenance line operation the life-saving hoist and the maintenance records.
7. Crew chief should maintain visual on the ground hoist personnel, the contingency measures when losing visual contact and the clear and complete guidelines and execution measures of determining a fractured cable wire situation were not listed in the relevant hoist SOP of National Airborne Service Corps.

8. The flight crew of the aircraft did not use CRM management skills well to keep situation awareness during flight.
9. The aircraft conducted only one scouting course and did not conduct second scouting course according to the regulations when arrived at the accident scene, and did not inspect in detail of the effects that wind direction and the environment could do to the mission, the training of takeoff/landing at high altitude (mountain areas) was not implemented indeed .
10. Relevant procedures of emergency disposals were not included in the SOP from both sides of the common services of National Airborne Service Corps and the Special Rescue Team, such as the connection and communication of interphones.
11. The SOP of the Special Rescue Team did not include the guidelines of deciding rescue measures, the evaluation standards of whether a hoist mission could be performed in each kind of environment, the preparation before leaving the aircraft.
12. The timing to conduct inspections of the life-saving hoist system before/after flights of Air Asia was the same with the manufacturer. The Operation Sheet Master before/after flights was almost the same with the manufacturer standards.
13. The preflight operation check and inspection of the extended length of cable wire after flight of Air Asia had some differences with the regulations of the manufacturer.
14. There was no dedicated signature column in the Transportation insurance table 14-003 for the life-saving hoist system of Air

Asia before flight, meanwhile the before/after flight inspections did not use/sign the Operation Sheet Master of hoist system inspections.

15. After the safety management manual of the National Airborne Service Corps has completed and executed, through the systematic safety management, will the safety of duty operating units or individuals be protected in the future; If National Fire Agency, Ministry of Interior could , according to the safety management concept, responsibilities of each unit and operation executions, integrate into a systematic safety operation will also do.

Safety Recommendations

To National Airborne Service Corps, Ministry of Interior

1. Require flight crew to conduct preflight preparation and duty briefing according to regulations the Flight Operation Manual, Flight Duty Guidelines, Operation Standard Manual and Inspection Manual. (ASC-ASR-08-10-001)
2. Review and implement CRM training. (ASC-ASR-08-10-002)
3. Failure to implement trainings for takeoff/landing at high altitude (mountain areas) and hovering operation trainings should be corrected as soon as possible. (ASC-ASR-08-10-003)
4. View the integrity and appropriateness of relevant life-saving procedures, including segregation of duties, operating limitation factors, risk evaluations, teamwork and emergency procedures etc.. (ASC-ASR-08-10-004)
5. View the training standards and execution measures for

life-saving hoist or other similar combinations of trainings, and increase the system training for life-saving hoist system operators. (ASC-ASR-08-10-005)

6. Strengthen the inspection of line maintenance operation of Air Asia. (ASC-ASR-08-10-006)
7. View the safety operation related responsibilities in the mutual support agreement of National Fire Agency, Ministry of Interior and National Airborne Service Corps in the near future as soon as possible, and integrate joint implementation from different common service operations, overlapping operations and items decided after joint evaluations and include common service operations and duty briefing items. (ASC-ASR-08-10-007)
8. Implement and carry out Safety Management Manual. (ASC-ASR-08-10-008)

To AIR AISA

1. Practice before/after flight inspection of life-saving hoist system according to manufacturer regulations or approved work order and indeed sign/record the examination results. (ASC-ASR-08-10-009)

To National Airborne Service Corps, Ministry of the Interior

1. Strengthen SOP including relevant hoist contents, such as : guiding principles of deciding rescue measures, the evaluation standards of whether a hoist duty could be conducted in each kind of environment, the preparation before leaving the aircraft and emergency procedures etc.. (ASC-ASR-08-10-010)
2. View the contents of the mutual support agreement of National

Fire Agency, Ministry of Interior and National Airborne Service Corps, integrate joint implementation from different common service operations, overlapping operations or items decided after joint evaluations and establish standards of common operating norms, responsibilities and procedures. (ASC-ASR-08-10-011)

3. Establish risk management squad according to safety management concept and actively research and develop the promotion affairs of risk management. (ASC-ASR-08-10-012)
4. When conducting hoist rescues, consider the feasibility of having the rescued civilians to wear helmets. (ASC-ASR-08-10-013)

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