

National Airborne Service Corps, Ministry Of The Interior, UH-1H Helicopter ,
NA 5 02 Occurrence Investigation Report

Executive Summary

On August 11, 2009, National Airborne Service Corps, Ministry of the Interior (NASC) an UH-1H helicopter registration NA-502 had a Typhoon Morakok disaster relief mission. The helicopter took off at 15:19 Taipei time from the sports field of National Neipu Senior Agricultural-Industrial Vocational High School in Neipu Township, Pingtung County (NAI) for northeastern Gu-chuan community (Yila village) to distribute relief. At 15:22, when the helicopter was above Ailiao North River valley 1 km west of Yila village, people nearby witnessed the helicopter flying eastbound with the rear part detached from the fuselage and its crash at the south bank of Ailiao North River at the west of Yila village (N22°44'44.5, E120°41'54.3, altitude of 380 m). The debris was scattered over the slope and partial debris fell into the river. The occurrence caused 3 fatalities of flight crew members.

Findings Related to Probable Causes

1. When flying eastbound along Ailiao River valley, the area near NA-502 helicopter's synchronized elevator had a contact with transport cage cables; which caused the rear part of the helicopter to detach from the fuselage structure and the cables to be torn. Then the helicopter lost control and crashed to the slope of the river valley towards the right front side.
2. Those disposed transport cage cables hidden in the valley area were not attended and no warning lights or signs were set up per regulations. Those cables were not easy to be spotted during the flight and affected flight safety.

Findings Related to Risks

1. NASC failed to collect enough detailed information about air obstacles in mountain area to be marked and updated on relevant maps, to avoid collision to obstacles during the flight in mountain area.

2. The existing maps NASC was using contained no information related to transport cages or cables; which did not meet the requirement to avoid the obstacles during the flight in mountain area.
3. NASC Flight Operation Management Manual Rev 6 dated August 07th 2009 did not fully cover the aviation regulations and operation procedures related to flight path in mountain area; for example, the procedure related to foreign flight path and checks on ground obstacles could not meet NASC's flight safety requirement when having missions in mountain area.
4. Flight crew had concept of alert, but did not conduct a sufficient survey of the topography and environment during the flight mission.
5. NASC's Flight Operation Management Manual defined flight crew's responsibilities in the cockpit but did not provide any inspections and procedures to avoid collision to obstacles during flight; which affected flight safety.
6. NASC's CRM training listed outline and hours of training but did not include detailed training regulations or procedures.
7. Flight crew in this mission might have had pressure from the mission and fatigue; which affected their concern to the outside environment and ability of alert awareness.
8. NASC's missions and operation were not fully equipped with monitoring management and improvement function.

Other Findings

1. No evidence showed that the maintenance and helicopter systems were related to the occurrence.
2. The flight crews in accordance with NASC's Flight Operation Management Manual Annex 7 have completed annual flight rating. Their medical check results met with NASC's aircrew medical check standard.

3. No evidence showed that the occurrence was related to medication and alcohol usage of the personnel.
4. The weather on the day of occurrence met with visual meteorological condition, no evidence showed that the occurrence was related to the weather factor.
5. If public aircraft may install flight data recorders with reference to the relevant regulations for the installation of the flight data recorders on civil aircraft, it would help to set up the managing system of the flight quality and may assist to access data required for occurrence investigation.
6. NASC's Flight Operation Management Manual Rev 6 Article 54 listed the item to operate flight planning but did not include the content of the planning.
7. NASC's 'aircrew personnel data' did not contain information of the date of reporting for duty, qualification of aircraft type, training record, rating record and audit record, so it could not grasp a complete record of aircrew's flight experience.
8. As it existed ambiguity in the regulation of 'setting standard of warning signs to air obstacles', local governments could not take it as grounds to make a judgment when the regulation being implemented. It did not cover an effective and feasible mechanism of operation management to prevent any obstacles in the flight environment without installation of warning signs / lights .

FLIGHT SAFETY RECOMMENDATIONS

To Council of Agriculture / Ministry of Economic Affairs / Ministry of the Interior / Council of Indigenous Peoples

1. If those wirings, cables, transport cages and steel cables that cross over rivers, valleys or highways are already disposed, they should be taken care of as per relevant regulations. When it becomes an obstacle to the flight, warning lights / signs should be set up and the related geography information of the obstacle should be published to the public to remind

aircraft nearby to have alert to prevent collision occurrence.
(ASC-ASR-11-02-013)

To Ministry of Transportation and Communications / Ministry of the Interior

1. Reinforce and promote the content of 'setting standard of warning signs to air obstacles' to relevant organizations and authorities, to improve their management of air obstacles to prevent similar collision occurrences.
(ASC-ASR-11-02-014)
2. Review the regulation of 'setting standard of warning signs to air obstacles' related to setting cables across rivers and valleys and reinforce the mechanism of operation management, to prevent any obstacles in the flight environment without installation of warning signs / lights.
(ASC-ASR-11-02-015)

To NASC, Ministry of the Interior

1. Use well marked and valid flight maps collect complete, detailed information of artificial obstacles in mountain area to mark on relevant maps and keep the information updated to effectively prevent collision to obstacles during the flight in mountain area. (ASC-ASR-11-02-016)
2. Set up the flight regulations and procedures concerning mountain area and flight path, procedures related to foreign flight path and inspections of ground obstacles, to improve flight safety. (ASC-ASR-11-02-017)
3. Reinforce flight crew training on their concern to the outside environment and ability of alert awareness. (ASC-ASR-11-02-018)
4. Set up solid CRM training regulations and procedures.
(ASC-ASR-11-02-019)
5. Study and set up a flight time limitation that can prevent flight crew from having fatigue, to improve flight safety. (ASC-ASR-11-02-020)
6. Review the existing aviation expertise of the management level and the managing mechanism of flight safety monitoring. (ASC-ASR-11-02-021)

7. Study the feasibility of installing flight data recorders on the fleet, to facilitate setting up the management system of flight quality and occurrence investigation. (ASC-ASR-11-02-022)
8. Review the suitability of the content in Flight Operation Management Manual Rev 6 Article 54. (ASC-ASR-11-02-023)
9. Fill up the content of 'aircrew personnel data'. (ASC-ASR-11-02-024)