



**Aviation Safety Council
Taipei, Taiwan**

**SUNRISE AIRLINES HELICOPTER
BK-117 NATIONALITY MARK
REGISTRATION NO.B77088, CRASHED
DURING AERIAL SURVEY IN
MOUNTAIN AREAS OF WULING FARM**

Executive Summary

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On October 7 , 2002 , a Sunrise Airlines Co., LTD (hereinafter called Sunrise Air) helicopter , aircraft type BK-117 , with registration no.B-77088 , rented by some construction company , nine people were on board , including one captain , one first officer , one mechanic and six passengers , conducting aerial survey work in the ridgeline mountain areas of Wuling Farm and Shin-Da and Tao-Shan camping areas etc..

The aircraft visual contacted of Wuling Farm at 0947, the altitude was about 10,000 feet, thereafter conducting aerial survey work in the airspace between Wuling Tao-Shan and PinTianShan. At around 0955, the captain once climbed to altitude and checked the available power. Thereafter the aircraft maintained at around 10,500 feet, at around 10:00, the aircraft crashed near ShinDa Lake.

The Safety Council presents the findings derived from the factual information gathered during the investigation and the analysis of the occurrence. The findings are presented in three categories: findings related to probable causes, findings related to the risk, and other findings.

Findings related to the probable causes identify elements that have been shown to have operated in the accident, or almost certainly to have operated in the accident. These findings are associated with unsafe acts and conditions, or safety deficiencies that are associated with safety significant events that played a

major role in the circumstances leading to the accident.

Findings related to the risk identify elements of risk that have the potential to degrade aviation safety. Some of the findings in this category identify unsafe acts and conditions, or safety deficiencies that made this accident more likely; however, they can not be clearly shown to have operated in the accident. They also identify risks that increase the possibility of property damage and personnel injury and death. Further, some of the findings in this category identify risks that are unrelated to the accident, but nonetheless were safety deficiencies that may warrant the future safety actions.

Other findings identify elements that have the potential to enhance aviation safety, resolve an issue of controversy, or clarify an issue of unresolved ambiguity. Some of these findings are of general interest and are not necessarily analytical, but they are often included in ICAO format accident reports for informational, safety awareness, education, and improvement purposes.

Findings related to the probable causes

1. The flight crew did not operate the aircraft within performance limitations, vigilance was not being maintained under the condition of insufficient horsepower, and still descended and decelerated, eventually lost control and crashed due to insufficient horsepower at high altitude.

Findings related to the risk

1. The communication and information exchange between the businessmen and the flight crew of Sunrise Air were insufficient. It caused the flight crew even did not completely control the

detailed flight plan before this mission.

2. The flight duty, the flight crew did not maintaining 500 feet above ground according to the regulations of CAA and Sunrise Air , and the captain ,first officer did not remind each other with the altitude restrictions of VFR flight , which was not meet the crew resource management requirement.
3. The flight crew did not completely understand the aircraft performance listed in the flight manual of the aircraft.
4. The duty, the flight crew did not fulfill the responsibilities such as leading passengers to board, get off, check luggage and calculate weight and balance and horsepower etc. according to the Flight Operation Manual.
5. The dispatcher did not totally control and calculate weight and balance and the weather information of that specific flight.
6. The businessmen and the flight crew of Sunrise Air did not clearly refuse customers' requests due to the gaining of business and maintaining the operation of the company, causing the flight crew to change the flight plan during the flight under the stress from the customers.
7. The Flight Operation Manual of Sunrise Air did not stipulate the relevant restrictions and regulations of flights at high altitude.
8. The regulations of duty briefing procedures of Sunrise Air Flight Operation Manual, did not stipulate briefing regulations of aircraft performance related calculations, and there was not any column for noting aircraft performance in the duty briefing records.

9. CAA's annual examining items for Sunrise Air from January to September 2002 did not include relevant items for flights at high altitude.

Other findings

1. The flight duty, the captain and the first officer of the flight possessed qualified, valid licenses according to current Civil Aviation Laws.
2. The captain and the first officer of the flight duty worked and rested normally 72 hours before the accident; No evidence showed that before the accident, they were affected physically, mentally or by drugs or alcohol.
3. The aircraft of the accident had completed all airworthiness directives and in an airworthiness condition.
4. The flight duty, the weight and balance was within limits at the departed airport.
5. In the Flight Operation Manual of Sunrise Air did not stipulate the seats for captain/first officer.
6. The dispatcher did not inquire the local weather of the aerial survey area.
7. The flight duty, the flight crew did not perform preflight safety briefing to the passengers.
8. After the flight accident, the captain did not shutdown the engines immediately, causing incremented damages to the transmission shaft of the tail rotors.
9. The company did not provide complete crew resource

management and special operation training data before the factual data of the investigation reports were confirmed (including two annual recurrent trainings of hoist operation and takeoff/landing on high altitude).

Safety Recommendations

To Sunrise Air

1. Enhance flight crew with the understanding of helicopter performances at high mountains, the situation awareness of flight safety and determination of disposal, and follow maneuvering limitations and flight safety regulations in the flight manual. (ASC-ASR-03-11-001)
2. When conducting business planning, strengthen the communications and information exchanges among businessmen and flight operation personnel (flight crew). (ASC-ASR-03-11-002)
3. Enhance the accuracy of flight duty weight calculation data, and establish a reexamining mechanism to ensure aircraft weight is within limits. (ASC-ASR-03-11-003)
4. Amend relevant contents in the Flight Operation Manual, such as cockpit seats assignment, duty briefing contents, aircraft performance calculation, notes and relevant regulations of flights at high altitude etc... (ASC-ASR-03-11-004)
5. According to the regulations of Flight Operation Manual and personnel training, carry out all annual and recurrent trainings for flight crew. (ASC-ASR-03-11-005)
6. Strengthen trainings of crew resource management for flight

crew and the recurrent trainings. (ASC-ASR-03-11-006)

7. Review the special operation training items (such as hoisting operation and takeoff/landing on high mountains etc.) and recurrent training regulations.(ASC-ASR-03-11-007)
8. Follow CAA-approved flight plans to conduct flight duties. (ASC-ASR-03-11-008)

To Civil Aeronautics Administration, CAA

1. Strengthen the examination of general aviation flight operations, in-flight regulations, aircraft performance and operation limitations, flight crew trainings etc. according to the regulations of Aircraft Flight Operation Regulations. (ASC-ASR-03-11-009)
2. Review the trainings, examinations and relevant safety regulations of flight operations at high altitude for helicopter aviation enterprises (such as takeoff/landing, aerial survey, hoisting ... etc...). (ASC-ASR-03-11-010)

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