

**NATIONAL TRANSPORTATION SAFETY BOARD****Public Meeting of February 13, 2007****(Information subject to editing)****Report of Aviation Accident****Weather Encounter and Subsequent Collision into Terrain,****Bali Hai Helicopter Tours, Inc., Bell 206B, N16849****Kalaheo, Hawaii,****September 24, 2004****NTSB/AAR-07/03**

This is a synopsis from the Safety Board's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. Safety Board staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing.

**EXECUTIVE SUMMARY**

On September 24, 2004, about 1642 Hawaiian standard time, a Bell 206B helicopter, N16849, registered to and operated by Bali Hai Helicopter Tours, Inc., of Hanapepe, Hawaii, impacted mountainous terrain in Kalaheo, Hawaii, on the island of Kauai, 8.4 miles northeast of Port Allen Airport, Hanapepe. The commercial pilot and the four passengers were killed, and the helicopter was destroyed by impact forces and postimpact fire. The nonstop sightseeing air tour flight was operated under the provisions of 14 Code of Federal Regulations Part 91 and visual flight rules with no flight plan filed. Instrument meteorological conditions prevailed near the accident site..

The National Transportation Safety Board determines that the probable cause of this accident was the pilot's decision to continue flight under visual flight rules into an area of turbulent, reduced visibility weather conditions, which resulted in the pilot's spatial disorientation and loss of control of the helicopter. Contributing to this accident was the pilot's inexperience in assessing local weather conditions, inadequate Federal Aviation Administration (FAA) surveillance of Special Federal Aviation Regulation (SFAR) 71 operating restrictions, and the operator's pilot-scheduling practices that likely had an adverse impact on pilot decision-making and performance.

The safety issues discussed in this report include the influence of pilot experience and operator scheduling on in-flight decision-making; the lack of FAA oversight of Part 91 air tour operators;

the need for national air tour safety standards; and the lack of direct FAA surveillance of commercial air tour operators in Hawaii.

Nine safety recommendations are addressed to the FAA regarding local weather-training programs for newly hired Hawaii air tour pilots; evaluation of operational practices for commercial air tour helicopter pilots; Honolulu Flight Standards District Office control of the annual safety meetings, as required under approved certificates of waiver or authorization; evaluation of the safety impact of the altitude restrictions in the State of Hawaii; national air tour safety standards; and the potential benefits of automatic dependent surveillance-broadcast technology for Hawaii air tour operators.

## CONCLUSIONS

1. The pilot was properly certificated and qualified under Federal regulations to conduct the Part 91 nonstop sightseeing air tour flight. No evidence indicated any preexisting medical condition that might have adversely affected his performance during the flight.
2. There was no evidence that powerplant, system, or structural failures of the helicopter contributed to the accident. The helicopter's weight and balance were within limits for the duration of the flight.
3. The accident was not survivable for any of the occupants because they were subjected to impact forces that exceeded the limits of human tolerance.
4. The helicopter's descending spiral flightpath, which became increasingly erratic in the final seconds of the flight, was consistent with pilot spatial disorientation.
5. The pilot's inexperience with Hawaii weather conditions affected his ability to make appropriate in-flight decisions when faced with deteriorating weather.
6. Other pilots who are inexperienced with Hawaii weather conditions may also be hindered in their ability to make appropriate in-flight decisions when faced with deteriorating weather.
7. Cue-based training, tailored to the dynamic local island climate conditions of Hawaii, could provide an important safety benefit to pilots who are new to flying in the state.
8. Bali Hai's pilot-scheduling practices, although permitted under Federal aviation regulations, likely had an adverse impact on pilot decision-making and performance.
9. Existing Federal aviation regulations do not adequately address the pilot fatigue issues associated with the continuous, repetitive, high-frequency flight operations that are unique to commercial air tour helicopter operations.
10. Although there is evidence that Bali Hai managers had inappropriately pressured some pilots to fly in poor weather conditions and to avoid late returns, the extent to which management pressure might have influenced the pilot's decision-making during the accident flight could not be determined.
11. Because the Honolulu Flight Standards District Office is not providing direct surveillance and enforcement of Special Federal Aviation Regulation (SFAR) 71, pilots continue to violate SFAR 71 and the certificate of waiver or authorization requirements, either intentionally or unintentionally, thus, placing themselves and their passengers at unnecessary risk for accidents,

- particularly in marginal weather conditions.
12. The Federal Aviation Administration (FAA) has not provided sufficient resources for the Honolulu Flight Standards District Office to implement air tour surveillance. Such surveillance, in the months before the accident, may have detected and corrected the accident pilot's risky flying practices, such as low-altitude, off-route ridge crossings, and flight into clouds, and reduced visibility.
  13. The annual SFAR 71 safety meetings have not been effective because the Honolulu Flight Standards District Office has not ensured that the meetings are focused on safety trends and SFAR 71 procedures.
  14. The safety impact of SFAR 71, in terms of a potential decrease in the Hawaii air tour accident rate or a potential increase in the rate of weather-related accidents, cannot be established with the current data.
  15. The public would benefit from air tour regulations that provide increased oversight and additional safety requirements for Part 91 air tour operators that carry large numbers of passengers annually, such as Bali Hai.
  16. A regulation specific to commercial air tour operations would be more appropriate than an air taxi regulation, and it would allow the FAA inspectors responsible for air tour operators to focus on the daily safety requirements unique to those operations.
  17. The National Automatic Dependent Surveillance-Broadcast Program technology could help Hawaii air tour operators reduce operational risks.
  18. Under the FAA's current plan for installing the National Automatic Dependent Surveillance-Broadcast Program infrastructure in Hawaii, only limited services would be provided to Hawaii air tour operators that could achieve significant safety benefits from the technology.
  19. Commercial air tour operators operating under visual flight rules may not be required to install automatic dependent surveillance-broadcast (ADS-B)-compatible avionics, even after ADS-B infrastructure is installed, which could lessen the safety-related benefit of these new services on Hawaii air tour flight operations.

## **PROBABLE CAUSE**

The National Transportation Safety Board determines that the probable cause of this accident was the pilot's decision to continue flight under visual flight rules into an area of turbulent, reduced visibility weather conditions, which resulted in the pilot's spatial disorientation and loss of control of the helicopter. Contributing to this accident was the pilot's inexperience in assessing local weather conditions, inadequate Federal Aviation Administration surveillance of SFAR 71 operating restrictions, and the operator's pilot-scheduling practices that likely had an adverse impact on pilot decision-making and performance.

## **SAFETY RECOMMENDATIONS**

As a result of the investigation of this accident, the National Transportation Safety Board makes the following new recommendations:

**To the Federal Aviation Administration:**

1. In cooperation with Hawaii commercial air tour operators, aviation psychologists, and meteorologists, among others, develop a cue-based training program for commercial air tour pilots in Hawaii that specifically addresses hazardous aspects of local weather phenomena and in-flight decision-making. (A-07-XX)
2. Once a cue-based training program that specifically addresses hazardous aspects of local weather phenomena and weather-related, decision-making issues is developed, as requested in Safety Recommendation 1, require all commercial air tour operators in Hawaii to provide this training to newly hired pilots. (A-07-XX)
3. Establish operational practices for commercial air tour helicopter pilots that include rest breaks and that will ensure acceptable pilot performance and safety; and require commercial air tour helicopter operators to adhere to these practices. (A-07-XX)
4. Develop a permanent mechanism to provide direct surveillance of commercial air tour operations in the State of Hawaii and to enforce commercial air tour regulations. (A-07-XX)
5. Direct the Honolulu Flight Standards District Office to ensure that the annual safety meetings, as required under approved certificates of waiver or authorization, focus on pertinent and timely commercial air tour safety issues, including, but not limited to, reviews of Hawaii air tour accidents, local weather phenomena, and SFAR 71 procedures. (A-07-XX)
6. Reevaluate the altitude restrictions in the State of Hawaii to determine if they may have resulted in any unintended degradation of safety with regard to weather-related accidents and fatalities. (A-07-XX)
7. Develop and enforce safety standards for all commercial air tour operations that include, at a minimum: initial and recurrent pilot training programs that address local geography and meteorological hazards and special airspace restrictions; maintenance policies and procedures; flight scheduling that fosters adequate breaks and flight periods, as established by the implementation of Safety Recommendation 3; and operations specifications that address management, procedures, route specifications, and altitude restrictions, as necessary. (A-07-XX)
8. Accelerate the implementation of automatic dependent surveillance-broadcast (ADS-B) infrastructure in the State of Hawaii to include high-quality ADS-B services to low-flying aircraft along heavily traveled commercial air tour routes. (A-07-XX)
9. Require that Hawaii air tour operators equip tour aircraft with compatible automatic dependent surveillance-broadcast (ADS-B) technology within 1 year of the installation of a functional national ADS-B program infrastructure in Hawaii. (A-07-XX)