

Log 1578

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 13, 1984

Forwarded to:

Honorable Donald D. Engen
Administrator
Federal Aviation Administration
Washington, D. C. 20591

SAFETY RECOMMENDATION(S)

A-84-67 and -68

On August 2, 1982, a Bell 206B helicopter, N33TA, crashed near Lynch, Kentucky, while being flown on an inspection of transmission power lines. The pilot reported a loss of directional control during a climb at low speed (20-25 knots) and low altitude (75 feet above ground level) while he was attempting to clear a 3,500-foot ridge line. He lowered the collective control and applied left rudder pedal, but these actions did not stop the rapid rotation of the fuselage to the right. The helicopter failed to clear the ridge and was substantially damaged at impact; the pilot, the lone occupant, was not injured. Subsequent detailed examination of the tail rotor mechanical control system and drivetrain revealed no evidence of pre-impact failure or malfunction. The pilot, when interviewed, believed that he had encountered a loss of tail rotor effectiveness.

The U.S. Army Safety Center investigated 21 accidents within a 3-1/2 year period (1979-1983) involving the OH-58, the military version of the Bell 206 model. The Army Safety Center defined the conditions that lent themselves to the reduction or loss of tail rotor effectiveness and directional control as follows:

- (1) The helicopter operated within the limits of the approved flight manual and was relatively heavy, about 2,600 pounds.
- (2) The helicopter was maneuvering out of ground effect at low airspeed (below translational lift).
- (3) Wind speeds were 6 knots or greater.
- (4) The engine was developing the maximum or nearly the maximum torque attainable, and main rotor RPM dropped by 2 percent or more.

The Safety Center cited insufficient information in the operator's manual and inadequate pilot transition training as contributing factors in the accidents. Consequently, the U.S. Army has requested that the manufacturer design and develop a more efficient tail rotor system for installation on the OH-58. In the interim, detailed information on loss of tail rotor effectiveness has been added to the operator's manual including corrective actions to be taken by the pilot to alleviate the phenomenon when encountered.

On October 31, 1983, the manufacturer issued Operations Safety Notice 206-83-10 "Supplemental Operating and Emergency Procedures" to the operators of all civil Bell 206 model helicopters as a result of the U.S. Army's experience with the OH-58. The notice identifies the conditions that cause or lead to loss of tail rotor effectiveness, recommends recovery techniques, and presents a relative wind chart that identifies critical wind speeds and directions.

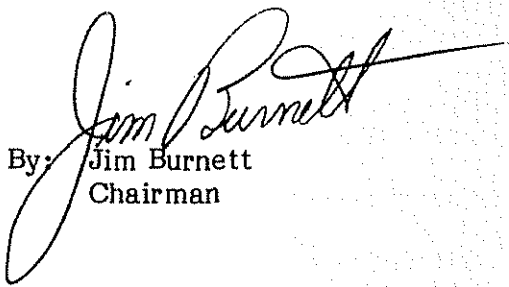
The civil Bell 206 model does not normally operate in the flight identified by the U.S. Army as leading loss of tail rotor effectiveness. However, in addition to the subject accident, there have been several occurrences over the past 2 years in which the operator of a civil Bell 206 may have encountered conditions that resulted in loss of tail rotor effectiveness. Moreover, the use of the Bell 206 model helicopter in the utility role is increasing, and the Safety Board is concerned that the number of incidents of loss of tail rotor effectiveness may increase.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Require the manufacturer to revise the FAA-approved flight manual for the Bell 206 model helicopter to include the information on loss of tail rotor effectiveness provided in Operations Safety Notice 206-83-10. (Class II, Priority Action) (A-84-67).

Review and evaluate the substantiation data for the Bell 206 model helicopter, collected in flight testing, to show compliance with 14 CFR 27.143 - Controllability and Maneuverability, to verify that the rotorcraft is safely controllable and maneuverable during steady-state flight and during any maneuver appropriate to the type; if compliance is not verified, require appropriate modifications or limitations of the helicopters' flight envelope. (Class II, Priority Action) (A-84-68).

BURNETT, Chairman, GOLDMAN, Vice Chairman, BURSLEY and GROSE, Members, concurred in these recommendations.


By: Jim Burnett
Chairman