

Log 1399

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 9, 1982

Forwarded to:

Honorable J. Lynn Helms
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-82-48 through -50

On June 10, 1981, a Brantly B2B helicopter, N2276U, crashed and burned near Chesterton, Indiana. The two occupants were killed. The Safety Board's investigation revealed that a tail rotor blade, PN 111-11, had separated in flight. Metallurgical examination of the blade's fractured surface indicated that a fatigue crack had originated on the inner surface of the blade spar just outboard of the bearing location and had progressed across 32 percent of the blade's cross-sectional area before it completely separated. The helicopter had accumulated 1,341 operating hours at the time of the accident, and the maintenance records showed that the tail rotor blades had been inspected in accordance with Airworthiness Directive (AD) 68-04-04 about 35 operating hours before the accident. Total operating time on the failed tail rotor blade could not be established.

AD 68-04-04 requires that, at 100-hour intervals, the PN 111-11 tail rotor blades be removed from the hub, the paint stripped from the spar in the root areas, and a dye-penetrant inspection performed on the external and internal surfaces in this area for evidence of cracks. Based on the findings of the investigations of this accident and two other Brantly B2B accidents since 1979 involving tail rotor blade failures, the Safety Board is concerned that the periodic inspection instructions contained in the AD are not specific enough in describing the method of inspecting the inner diameter of the blade spar; consequently, existing spar fatigue cracks originating on the internal surface under or near the bearing of the blades may have been missed.

The Safety Board is also aware of confusion among owners and operators of Brantly B2 helicopters concerning the identity of the tail rotor blades currently installed. Since 1976, the manufacturer has offered the PN 111-11A blade, which was originally designed for the larger Brantly 305 model, as an alternative blade on the Brantly B2 models. This blade has a strengthened spar with improved fatigue characteristics. Evidently, part numbers stenciled on the blades during manufacture are destroyed during service making it difficult to identify the blade. The PN 111-11A blade must also be inspected in accordance with AD 68-04-04, but the prescribed inspection interval is 300 hours. The Safety Board believes that proper identification of the blades is important to safe operation since the PN 111-11A blade inspection interval is three times that of the PN 111-11 blade. A close visual inspection will distinguish the two blades since the PN 111-11 blade has a decrease in the spar's outer diameter about 1.5 inches outboard of the blade's root while the PN 111-11A blade has a constant diameter in the same area.

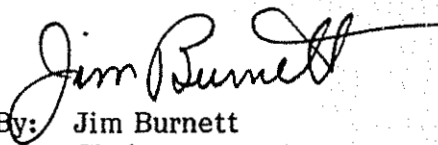
Accordingly, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Revise AD 68-04-04 pertaining to the Brantly B2 model helicopter (1) to emphasize that the tail rotor bearing set must be removed from the rotor blade spar's inner diameter and that both exterior and interior surfaces of the blade must be cleaned thoroughly before the dye penetrant inspection is performed; and (2) to require that the inspection area of the blade's exterior surface be left unpainted to facilitate daily visual inspections by pilots and maintenance personnel. (Class II, Priority Action) (A-82-48)

Require a one-time visual inspection of the tail rotor blades installed on the Brantly B2 model helicopters to verify, for the benefit of the operator, whether the PN 111-11 or the PN 111-11A blades are installed, and require that this information be recorded in the appropriate maintenance log. (Class II, Priority Action) (A-82-49)

Require the manufacturer to revise the Brantly B2 Illustrated Parts Catalog to include the PN 111-11A tail rotor blade as an acceptable replacement blade for the PN 111-11 blade. (Class III, Longer Term Action) (A-82-50)

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


By: Jim Burnett
Chairman