

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

Log 1609

ISSUED: July 29, 1983

-----  
Forwarded to:

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

} SAFETY RECOMMENDATION(S)

A-83-52 and -53

-----  
On July 22, 1983, a Robinson R-22 helicopter, N9066P, crashed and burned on a farm field near Canton, Pennsylvania; the pilot and passenger were killed. The Safety Board's preliminary investigation of the accident has revealed that one of the main rotor blades separated in flight. Further, preliminary metallurgical examination of the blade has revealed a fatigue failure in the root area of the blade where the blade spar attaches to the rib root fitting. Fatigue had progressed across 75 percent of the fitting's cross sectional area. The root area of the spar and fitting is completely enclosed by the external blade skin and cannot be inspected visually. Service time on the main blade, PNA016-1, Revision W, was about 950 hours.

As a result of a Robinson R-22 accident which occurred in Granby, Connecticut, on September 1, 1981, the Safety Board issued Safety Recommendations A-81-101 and -102. The recommendations concerned a fatigue failure of a rib root fitting of original design. In response to the recommendations, the Federal Aviation Administration issued an Airworthiness Directive on September 4, 1981, which removed all main rotor blades, PNA016-1, Revisions A through V, from service and which assigned a service life of 1,000 hours to the Revision W blades; the latter blades incorporated a newly designed rib root fitting. Subsequently, main rotor blades Revisions Y and Z have been introduced into service. An external doubler was added to the root end of the Revision Y blade and a tip weight to improve inertia was added to the Revision Z blade. These blades were assigned a service life of 2,000 hours.

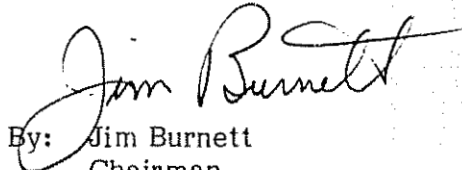
Discussions with the manufacturer have revealed that about 25 of over 350 Robinson R-22 helicopters are still operating with the Revision W blades. The Safety Board is concerned that other Revision W main rotor blades on these R-22 helicopters may be in the same condition as the blade involved in this accident. Therefore, we believe that immediate action is warranted to prevent similar accidents.

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

Issue a telegraphic Airworthiness Directive to require the immediate retirement from service of all Robinson R-22 main rotor blades, PNA016-1, Revision W, (SNs 600 through 810) and to require the installation of main rotor blades with a service life of 2,000 hours. (Class I, Urgent Action) (A-83-52)

Review and evaluate the main rotor blade fatigue substantiation data for the Robinson R-22 main rotor blades Revisions Y and Z, to verify that adequate margins of safety exist for the presently assigned service life of 2,000 hours; if adequate margins do not exist, revise the service life limit accordingly. (Class II, Priority Action) (A-83-53)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, and ENGEN, Members, concurred in these recommendations. BURSLEY, Member, did not participate.

  
By: Jim Burnett  
Chairman