

Log 1475  
AE-4

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: July 30, 1982

Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-82-68 and -69

On April 16, 1982, a Mooney M20J, N3201P, crashed near Bird Island, Minnesota, resulting in three fatalities. Investigation of the accident indicated that the engine separated from the aircraft, causing loss of control. One of the blades (McCauley model number 90 DHB-16E, S/N B122098) from the engine's propeller had fractured approximately 4 inches from the butt end of the blade. The outboard portion of the blade was found more than a quarter of a mile from the accident site. The inboard portion of the blade remained with the propeller and engine. Records indicate that the blade had a total time of 340 hours at the time of the accident.

Metallurgical examination of the separated propeller blade revealed that fatigue cracking had progressed through a large portion of the blade cross section before final separation. The fatigue initiated from multiple points at the bottom of a forging defect which measured over 2 inches circumferentially, and which extended to a depth of approximately one-sixteenth of an inch below the surface of the blade. The forging defect was located approximately 0.375 inch outboard of the end of the machined blend radius between the butt and shank, on the thrust (aft) side of the blade.

The Safety Board is not aware of any other McCauley propeller blade failures similar to the subject failure. However, the Safety Board is concerned that the imperfection may be common to other blades, particularly those in the same forging lot. Blades having similar defects may be subject to premature fatigue failure.

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

Issue an airworthiness directive to require an immediate one-time inspection by an FAA-approved method of all McCauley model number 90-DHB type propeller blades and to remove from service any blades found to be cracked, with emphasis on early completion of inspections of blades in the same forging lot as blade S/N B122098 which experienced fatigue failure in service. (Class I, Urgent Action) (A-82-68)

Review the quality control procedures of the forging vendor and fabricator of McCauley model number 90-DHB propeller blades to insure that proper inspection procedures are performed to detect blades having forging defects to prevent their being placed in service. (Class II, Priority Action) (A-82-69)

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

  
By: Jim Burnett  
Chairman