

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: March 3, 1976

Forwarded to:

Honorable John L. McLucas
Administrator
Federal Aviation Administration
Washington, D. C. 20591

SAFETY RECOMMENDATION(S)

A-76-4

On March 2, 1975, at Newton, New Jersey, two persons were killed in the crash of a Bellanca Model 17-30 airplane, N4723V, after the right wing separated from the aircraft. The National Transportation Safety Board determined that the probable cause of this accident was related to inadequate inspection of the aircraft. Our investigation also disclosed a potential wing maintenance problem which requires corrective action by the Federal Aviation Administration.

Structural examination of this airplane's all-wood wing disclosed significant decay of the right front spar. It was obvious from the rusty fasteners, drying checks, and surface stains that water had leaked inside the wing. Consequently, sections of the failed right wing were sent to the United States Department of Agriculture's Forest Products Laboratory at Madison, Wisconsin, for further examination. The laboratory's technical staff substantiated the fact that the front spar was moderately to heavily decayed as a result of fungus infection; they believed, after considering the conditions associated with the accident airplane, that this decay would have required 2 years or longer to develop. The airplane was manufactured in 1967 and had been parked outside for several years.

The deterioration, according to the Forest Products Laboratory, would have required standing water in the wing spar area. Since the design of the wing would normally prevent entrapment of water, even under adverse environmental storage conditions, water probably leaked into the wing's interior as a result of a maintenance-related mechanical impairment, e.g., cracked paint, fabric or plywood wing covers. Cracked fabric near the mahogany plywood wing cover over the inboard main fuel tank, and especially along the seam of the cover, is particularly suspect

since such fabric cracks are often caused by cracks or other faults in the mahogany cover itself. Usually, the cover must be removed so that the wing spars can be inspected more thoroughly. Water may also leak through deteriorated or improperly installed seals around the neck of the fuel filler pipe. A relatively large recess surrounds the pipe, which could hold a significant amount of water.

One certificated repair station, which has extensive Bellanca maintenance experience, disclosed that 6 of the approximately 300 Bellanca airplanes it inspected during the last 2 years had substantially decayed wing interior structures. In each of these six cases, the fabric was cracked; the impaired structure was confirmed only after the mahogany plywood fuel tank cover was removed. These cases demonstrate that a thorough external inspection is important, and that an occasional more detailed examination of the wing interior is necessary.

As a result of the above accident, the Bellanca Aircraft Corporation prepared Service Letter No. 87 to emphasize the importance of proper wing maintenance to prevent wood decay and to provide a detailed procedure for inspecting the exterior and interior surfaces of the Bellanca wing. In addition, the service letter provides for additional inspection holes and drain holes. The service letter indicates that if moisture is prevented from entering the wood fibers there is virtually no limit to the structural life expectancy.

In view of the decay found in the right front wing spar of the accident airplane; the fact that similar deterioration was evidenced during inspection in 6 of approximately 300 airplanes; and the potential for decay in other Bellanca airplanes, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Airworthiness Directive requiring mandatory compliance with Bellanca Aircraft Corporation's Service Letter No. 87, applicable to all Bellanca airplanes having wings similar to those on Bellanca Model 17-30. (Class II--Priority Followup.)

TODD, Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendation.



By: Webster B. Todd, Jr.
Chairman