

Log 1637

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: January 6, 1984

Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-84-1 through -3

On October 28, 1983, a Bellanca Model 17-31 ATC Turbo Super Viking, N6586V, crashed at Littleton, Massachusetts, after the right wing separated in flight; both occupants were killed. The National Transportation Safety Board's investigation of the accident disclosed extensive deterioration (wood decay) of the inboard lower portion of the airplane's right wing front spar. Normally, wing strap fittings are bolted to the wood spar in this area and at the top of the spar, connecting the spar to the fuselage. However, the Safety Board believes that because of the decay, this portion of the spar was disconnected from the wing straps. The straps themselves, with the wing through bolts in place, remained attached to the fuselage. The bolts were corroded.

A similar accident occurred at Newton, New Jersey, on March 2, 1975. That accident involving Bellanca N4723V, Model 17-30, was also caused by undetected wing spar deterioration and prompted the Federal Aviation Administration (FAA) to issue Airworthiness Directive (AD) 76-08-04 requiring compliance with Bellanca Service Letter No. 87A, "Wing Inspection." The wing structure of N6586V had been inspected on October 3 in accordance with AD 76-08-04 as part of an overall annual inspection of the airplane only weeks before the accident. (Older Bellanca airplanes including models 14-9 and 14-13 are subject to a similar wing inspection in accordance with AD 76-20-07.) Moreover, this same wing inspection had been performed as required on N6586V during previous annual and 100-hour inspections. Although the Safety Board estimates that the decay found in N6586V developed over a relatively long period of time, perhaps 2 to 3 years, its development remained undetected throughout these inspections. The decay was obscured visually because it was behind the wing straps and was covered by the straps and the spar's forward face plate. Additionally, since the wing strap-to-fuselage attaching bolt is located in this area, a probe inspection of the lower root end of the spar cannot be performed.

The Safety Board is concerned that wood spar decay similar to that found in N6586V and N4723V may also exist undetected in other Bellanca airplanes, particularly older ones. Because areas of the spar vulnerable to decay are hidden by wing straps and face plates, currently prescribed inspection procedures have proven to be inadequate. Therefore, the Safety Board believes that the FAA should issue an Emergency Airworthiness Directive applicable to the Bellanca 17-30, 17-31 ATC, and models of similar construction to assure their structural integrity. In order to provide for an immediate, reliable inspection of the Bellanca wing structure, required remedial actions should include measures beyond the scope of AD-76-08-04, AD-76-20-07, and Bellanca Service Letter No. 87A, such as wing removal/disassembly and/or removal of lower wing straps and bolts.

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In order to provide inspection procedures which may be conducted routinely in the future, the Safety Board believes, since current procedures have proven inadequate, that the FAA, in conjunction with the manufacturer, should reevaluate AD 76-08-04, AD-76-20-07, and Bellanca Service Letter No. 87A. The degree of visual accessibility to the spar, the potential for obscuration of wood decay by the spar plywood gusset plates or wing straps, and the scope and adequacy of current probe-inspection requirements should be considered in this reevaluation. Additional inspection methods, procedures, and/or details should be incorporated in these requirements in order to assure routine detection of any wood decay which may exist in the Bellanca wing. The inspection should be able to be performed reliably even by maintenance personnel who do not service or inspect airplanes with wooden components on a regular basis. Further, because the number of wooden airplanes in the general aviation fleet is comparatively small, related maintenance technology may not be adequately emphasized. Therefore, the Safety Board believes that information regarding wood deterioration, including appropriate inspection methods and techniques, should be provided periodically to airplane owners/operators, mechanics, and inspectors in Advisory Circular No. 43-16, General Aviation Airworthiness Alerts.

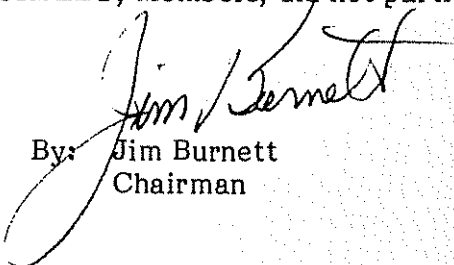
Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an Emergency Airworthiness Directive applicable to Bellanca Aircraft Models 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC, 17-30A, 17-31A, 17-31 ATC, CH, CH-300 Pacemaker, 300-W Pacemaker, CH-400 Skyrocket, E Pacemaker, F. Skyrocket, 14-9, 14-9L, 14-12F-3, 14-13, 14-13-2, 14-3-3, 14-13-3W and 31-42 Pacemaker requiring an immediate inspection of the wing structure; this inspection should include wing removal/disassembly and/or removal of lower wing straps and bolts as necessary to assure prompt, positive detection of decay in the wing spars of these airplanes. (Class I, Urgent Action) (A-84-1)

Reevaluate AD 76-08-04, AD-76-20-07, and Bellanca Service Letter No. 87A in conjunction with the manufacturer. Supplemental inspection methods or techniques should be incorporated in these requirements as necessary to provide for a routine inspection of the Bellanca airplanes' wing structure. The inspection should be able to be performed reliably even by maintenance personnel who do not specialize in wood construction. (Class II, Priority Action) (A-84-2)

Emphasize on a recurrent basis in Advisory Circular No. 43-16, General Aviation Airworthiness Alerts, inspection methods, techniques, and information to assist in detecting deterioration of wooden components in aircraft. (Class II, Priority Action) (A-84-3)

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

By: 
Jim Burnett
Chairman