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UNITED STATES OF AMERICA
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: May 24, 1971

Adopted by the NATIONAL TRANSPORTATION SAFETY BOARD
at its office in Washington, D. C.
on the 12th day of May, 1971

FORWARDED TO:)
Honorable John H. Shaffer)
Administrator)
Federal Aviation Administration)
Washington, D. C. 20590)

SAFETY RECOMMENDATIONS A-71-31 & 32

The National Transportation Safety Board's investigation of the Airaine Airlines, Inc., accident near Coolidge, Arizona, May 6, 1971, involving a Carstedt de Havilland Dove, Model CJ-60, N4922V, has revealed a fatigue fracture which requires immediate corrective action.

Our examination of the right wing lower main spar to fuselage root fitting P/N CPD2004, which was installed during modification under STC No. SA1747WE, revealed the presence of a fatigue fracture on one side of the attachment bolt hole. The fatigued region was in excess of 45 percent of the total fractured area.

We are aware of the Airworthiness Directive 70-15-6 which had been issued previously pertaining to the wing lower main spar root fittings.

The aircraft's records disclosed the subject fitting had accumulated a total service time of 5,593 hours and had been inspected in accordance with AD 70-15-6, 1,651 hours prior to the accident.

Our preliminary metallurgical examination of the fitting disclosed that the hardness of the material averaged Rockwell "C" 35, indicating that the fitting was treated to a strength level well below the drawing requirements. Microstructural examination disclosed banding due to chemical segregation predominant in the material. Tukon Hardness measurements in the banded zones showed hardness variance from Rc 31 to Rc 42. Such hardness measurements indicate tensile strength variance of 140 KSI to 194 KSI. The examination is continuing.


Based on the findings in the accident investigation to date, the Safety Board recommends the following actions:

1. Conduct a one-time metallurgical inspection on an expedited basis by approved methods of all lower main wing spar root fittings P/N CPD2004 on all de Havilland Model DH.104 "Dove" airplanes that have been modified under STC No. SA1747WE.
2. Review the adequacy of Airworthiness Directive 70-15-6 and revise as necessary to assure adequate service limits on this fitting.

We have been advised of the airworthiness certificate suspension you have ordered as a result of this investigation. If we can provide further information as this investigation continues, please feel free to contact us.

These recommendations will be released to the public on the issue date shown above. No public dissemination of the contents of this document should be made prior to that date.

Reed, Chairman; Laurel, McAdams, Thayer and Burgess, Members, concurred in the above recommendations.


By: John H. Reed
Chairman