

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: March 21, 1978

Forwarded to:

Honorable Langhorne M. Bond
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-78-15, 16, and 17

On October 8, 1977, the leading edge slat system failed on a DC-10-10 near the Los Angeles area, and slat system parts fell to the ground. On January 28, 1978, near Seattle-Takoma International Airport, the leading edge slat system failed on another DC-10-10. The National Transportation Safety Board believes that these system failures present a hazard to persons on the ground and that mandatory corrective action should be required by your Administration.

Both failures were caused by the cracking of cable drum drive arm (P/N ARH0171-505). The part is a steel forging which requires quenching during the heat treatment process; the part will crack if improperly quenched. After the first failure, Douglas Aircraft Company issued Alert Service Bulletin No. A27-160, which recommends that operators accomplish a visual inspection within 300 flight-hours and an ultrasonic inspection within 1,500 flight-hours. The Safety Board believes that the visual inspection is not reliable and that the ultrasonic technique may require review because the failed part in the second incident had been ultrasonically inspected about 1,000 flight-hours before the incident. While the damage due to quenching may be limited to certain lots, the lot serial numbers were not recorded and therefore the inspection of the entire fleet is necessary. Five parts have been found cracked through ultrasonic inspection. Cycles to failure range from 4,803 to 5,827. The failure begins with a quenching crack and grows due to corrosion. Evidence of fatigue has not been found according to Douglas Aircraft Company metallurgical analysis.

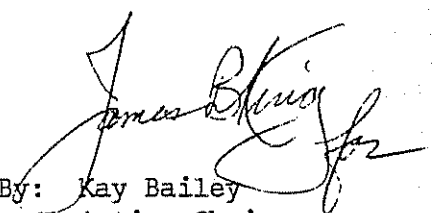
In view of the above, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Review the nondestructive test technique specified by the Douglas Aircraft Company for the inspection of the cable drum arm and modify as necessary to insure that cracks will be detected. (Class I--Urgent Action)(A 78-15)

Issue an Airworthiness Directive to require mandatory non-destructive inspection of cable drum arms. (Class I--Urgent Action) (A 78-16)

Review the nature of the failure mode and require a periodic inspection if necessary. (Class I--Urgent Action) (A 78-17)

BAILEY, Acting Chairman, McADAMS, HOGUE, KING, Members concurred in the above recommendations.


By: Kay Bailey
Acting Chairman