

Docket No. SA-533

Exhibit No. 15-D

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

Materials Laboratory Aileron Control Rod Factual Report

by

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(3 Pages)

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594



May 4, 2009

MATERIALS LABORATORY FACTUAL REPORT

Report No. 09-023

A. ACCIDENT

Place : Lubbock, Texas
Date : January 27, 2009
Vehicle : Aerospatiale Alenia ATR42-320
NTSB No. : CEN09MA142
Investigator : Kristi Dunks

B. COMPONENTS EXAMINED

Two pieces of the left aileron control rod (figure 1,2).

C. DETAILS OF THE EXAMINATION

The components submitted for examination were two portions of the left aileron control rod that were found separated. Based on technical drawings provided by the aircraft manufacturer, the aileron control rod was identified as having been manufactured by Technical Airborne Components. The overall length of the control rod as indicated by the drawing was intended to be 1025mm (40.35"). Length measurements made on both portions of the control rod, despite their deformation, suggest that there is no structural material missing from the overall assembly.

The examination of the two portions of the aileron control rod established that the control rod had been exposed to a high temperature environment. This high temperature exposure caused localized melting, causing the control rod to be severed into two portions. Both portions of the control rod had thermally damaged paint. Areas towards the ends of the control rod had cracks in the paint making a river line pattern¹. The paint at locations closer to the area of melting was flaking off. The area of melting where the tube was severed exhibited a black, flakey material consistent with charred paint adhering to the surface on both portions (figure 3). The melted ends of both portions of the control rod had flattened out, consistent with having softened and collapsed due to a high temperature exposure. No discernable fracture features were present on the severed ends of the two portions of the control rod.

On the portion of the control rod with the yoke, a tear was present (figure 4). The tear appears to have happened after or during the exposure to high temperature based on the

¹ A river line pattern is a pattern created by continuous lines with sharp bends and branch lines, resembling a river as viewed from a map. An example can be seen in figure 5.

discontinuity in the river line pattern of the thermally damaged paint. Additionally, the witness mark at the base of the tear was bright and shiny (figure 5), indicating that it did not precede the high temperature exposure.

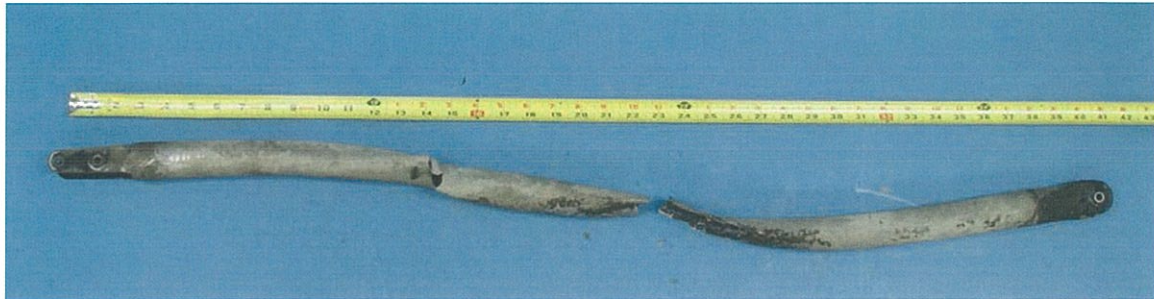


Figure 1: Left aileron control rod



Figure 2: Left aileron control rod



Figure 3: Severed ends of the aileron control rod



Figure 4: Tear on the portion of the aileron control rod with the yoke

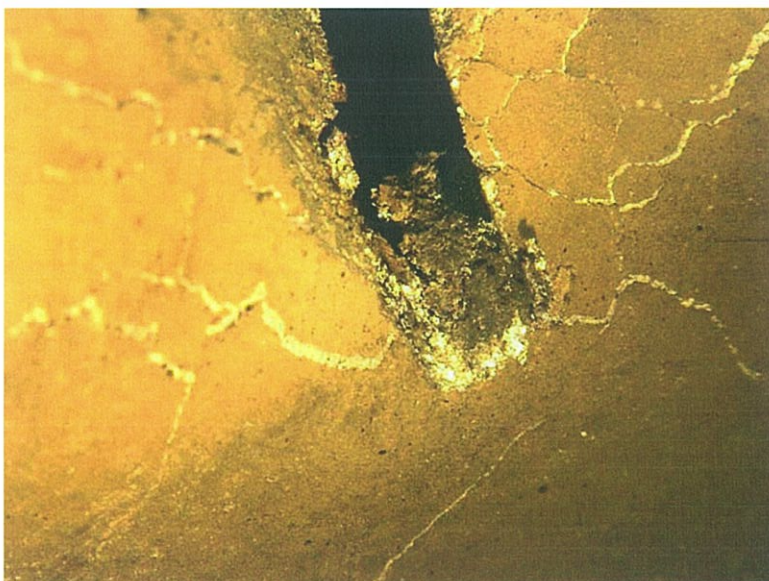


Figure 5: Close up view of witness mark

Joseph Panagiotou
Fire & Explosion Investigator