

NATIONAL TRANSPORTATION SAFETY BOARD

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



December 30, 2016

MATERIALS LABORATORY FACTUAL REPORT

Report No. 16-111

A. ACCIDENT INFORMATION

Place : Dallas, Texas
Date : October 29, 2016
Vehicle : North American TB-25N, N25YR
NTSB No. : CEN17LA033
Investigator : Joshua Lindberg, ASI-CEN

B. COMPONENTS EXAMINED

1. Landing gear door connecting rod assembly, fractured into two pieces.

C. DETAILS OF THE EXAMINATION

A connecting rod assembly, fracture into two pieces, from a left inboard landing gear door was submitted to the NTSB Materials Laboratory for examination. The connecting rod assembly, as it was received, is shown in figure 1a. One end of the connecting rod was outfitted with a spherical bearing rod end and the other end was outfitted with a clevis rod end.

The clevis end was bent along the shank. For convenience one side of the bend is referred to as the inner bend and the opposite side is referred to as the outer bend, as indicated in figure 1a. The bend axis was perpendicular to the clevis hinge.

The spherical bearing rod end was fractured in the threaded portion of the shank in the same plane as a drill hole for safety wire, as shown in figure 1b. The fracture surface was examined and exhibited a rough appearance consistent with an overstress fracture. There were no features indicative of a preexisting crack. Microscopic examination of the fracture surface revealed tear lines radiating away from the safety wire drill hole on the outer bend side of the fracture. Near the inner bend side, the fracture progressed longitudinally across one of the threads, consistent with a point of final separation. Taken as a whole the features observed on the connecting rod assembly were consistent with an overstress failure in bending.

Donald Kramer, Ph.D.
Sr. Materials Engineer



Figure 1: a) Image of the fractured connecting rod assembly showing the fractured spherical bearing rod end and bend along the shank of the clevis rod end; b) image of the fracture surface. The fracture surface exhibited rough features consistent with overstress.