

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA22FA344

MATERIALS LABORATORY

Factual Report 23-028

March 17, 2023

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A. ACCIDENT INFORMATION

Location: Melrose, FL
Date: 7/30/2022
Vehicle: Harvey J Brock TANGO 2, N8680G
Investigator: Todd Gunther

B. COMPONENTS EXAMINED

Rudder pedal push pull rod, teeter bar, rotor head with blade grips and portions of rotor blade attached and a separate portion of rotor blade (Figure 1).

C. EXAMINATION PARTICIPANTS

Specialist Joseph Panagiotou
National Transportation Safety Board
Washington, DC

D. DETAILS OF THE EXAMINATION

The separated portion of rotor blade was aligned with its corresponding portion of rotor blade still attached to the rotor head (Figure 2). The alignment followed the curvature of the deformed rotor blade across both sides of the fracture (Figure 3). This alignment exhibited that the rotor blade bent in an upward direction more than 45 degrees prior to separation.

The fracture surface on the separated portion of the rotor blade exhibited slant fractures consistent with overstress. The upper surface of the rotor blade in proximity to the fracture exhibited ridges consistent with deformation caused by compression (Figure 4). The lower surface of the rotor blade in proximity to the fracture exhibited cracking and stretcher strain marks consistent with deformation caused by tension (Figure 5).

The rudder push pull rod end exhibited a fracture in the threaded shank right above the nut at the end of the rod. The threaded shank exhibited bending deformation and slant fractures consistent with bending overstress (Figures 6, 7).

Submitted by:

Joseph Panagiotou
Engineer



Figure 1. Accident parts as received.

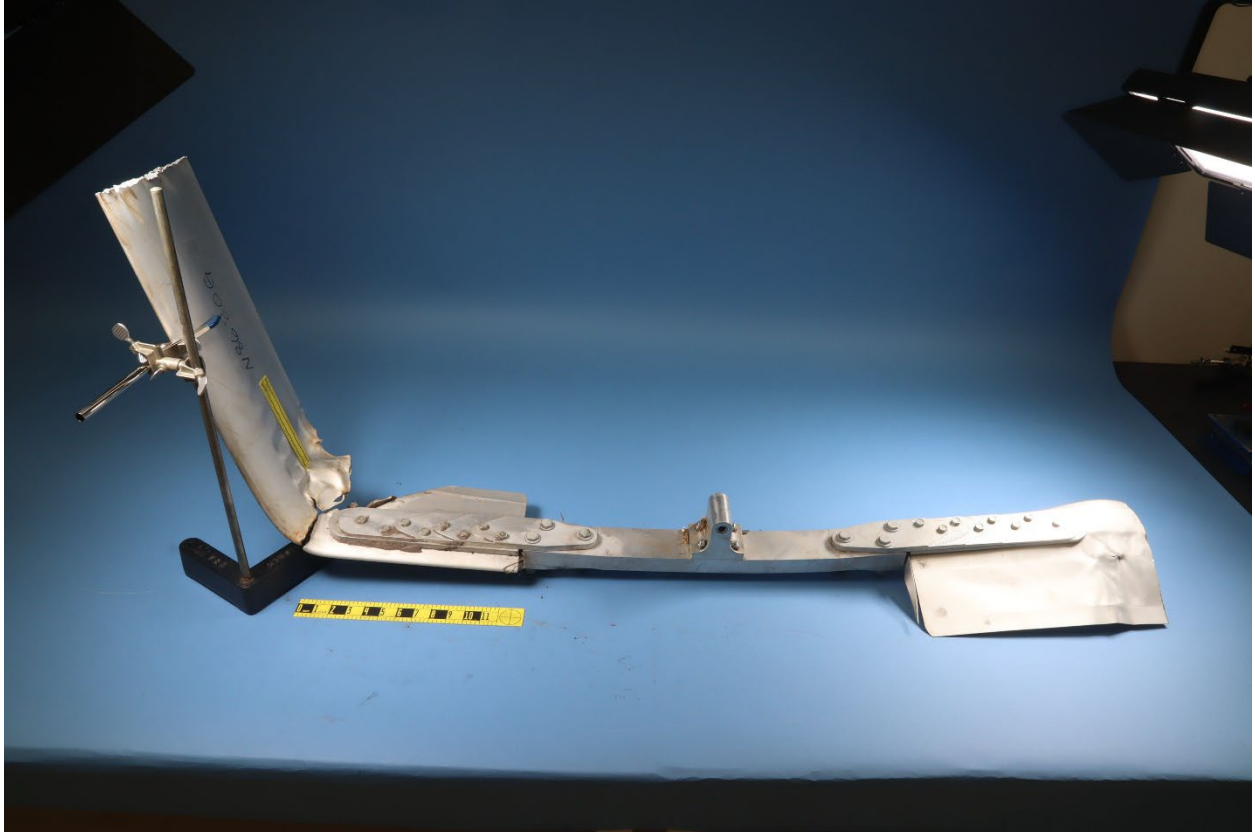


Figure 2. Alignment of the outboard portion of the rotor blade and the portion of rotor blade attached to the rotor head.



Figure 3. Close up of Rotor blade separation point.

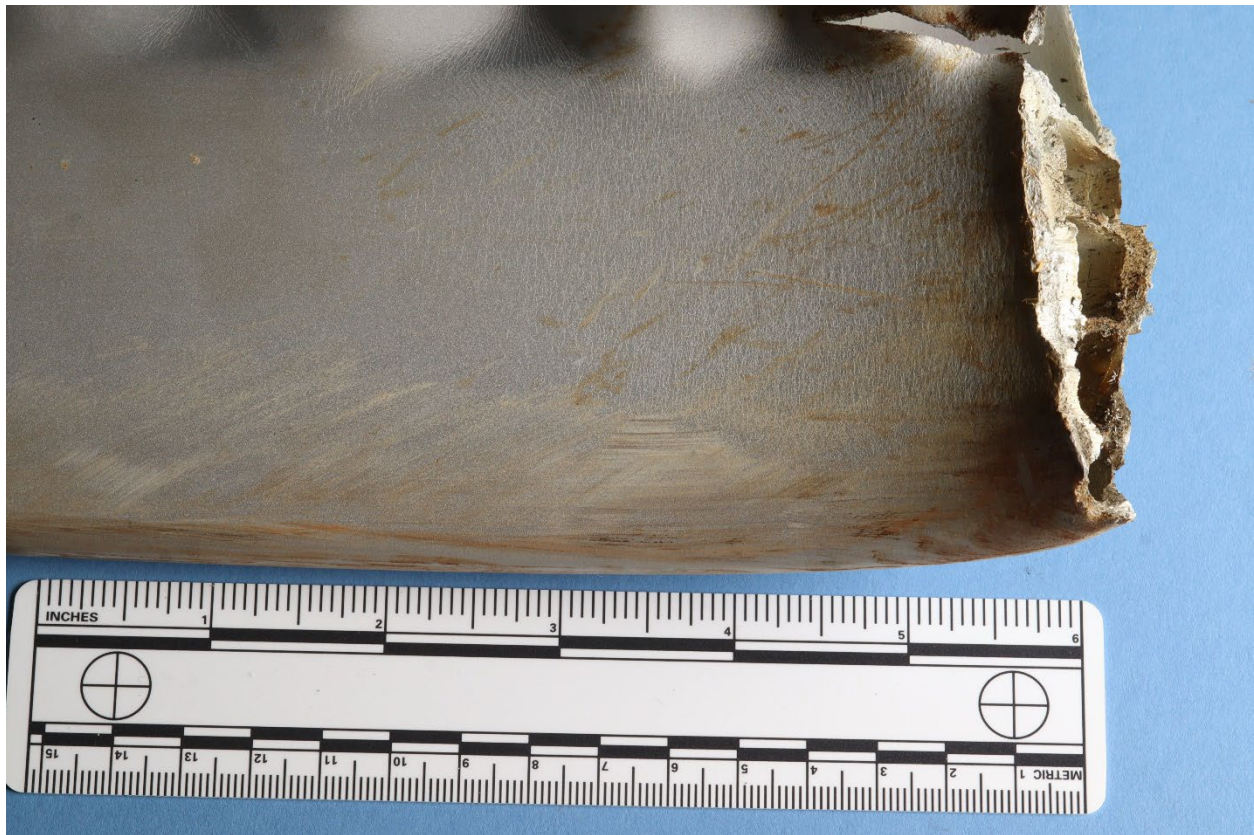


Figure 4. Outboard portion of rotor blade top surface near fracture.

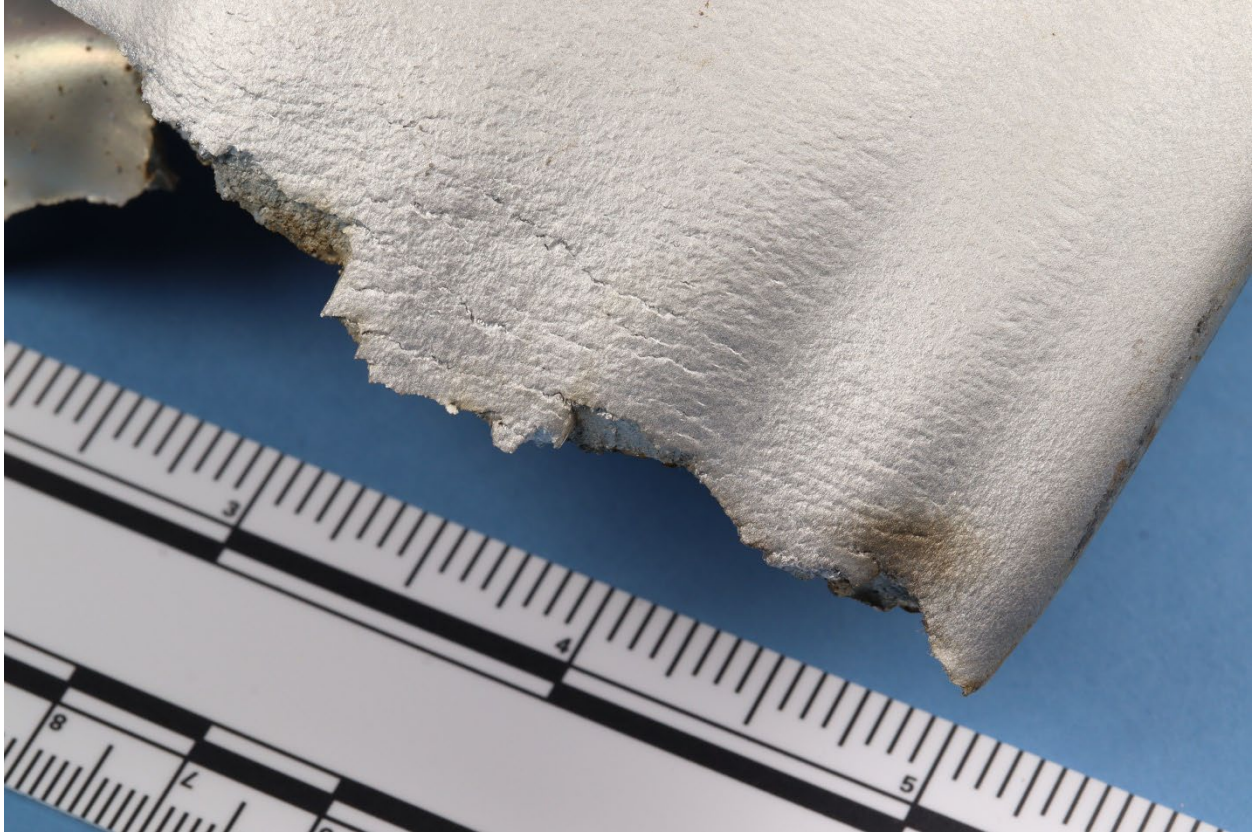


Figure 5. Outboard portion of rotor blade bottom surface near fracture.



Figure 6. Rudder push pull rod end exhibiting bending of the threaded shank.



Figure 7. Slant fractures on outer periphery of the threaded shank.