

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR22LA302

MATERIALS LABORATORY

Factual Report 23-002

1/9/2023

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A. ACCIDENT INFORMATION

Location: Corona, CA
Date: August 13, 2022
Vehicle: Goddard Dick SIM BENSEN B-8M, N532KB
Investigator: Michael Hicks

B. COMPONENTS EXAMINED

Engine mount and hardware (Figure 1)

C. EXAMINATION PARTICIPANTS

Specialist Joseph Panagiotou
National Transportation Safety Board
Washington, DC

D. DETAILS OF THE EXAMINATION

The engine mount submitted for examination consisted of a steel tube weldment exhibiting two fractures (Figure 1). The fractures were perpendicular to the length of the tube and were located near washers that had been welded onto the exterior of the tube. The two fracture surfaces contained in the center section (Figure 2) of the engine mount tube were cleaned using a mild detergent and a soft bristle brush. The fracture surfaces were labeled 1 & 2 as shown in the figure.

Fracture surface 1 exhibited a thumbnail¹ shaped fatigue crack originating at the toe of the weld fillet that attached the washer to the tube (Figure 3). The fatigue crack exhibited ratchet marks indicating multiple origins. The rest of the fracture surface outside of the fatigue crack exhibited fracture features consistent with overstress.

Fracture surface 2 exhibited a thumbnail shaped fatigue crack originating at the toe of the weld fillet that attached the washer to the tube (Figure 4). The fatigue crack exhibited ratchet marks indicating multiple origins. The rest of the fracture surface outside of the fatigue crack exhibited fracture features consistent with overstress.

¹ A thumbnail-shaped crack is an industry-specific term to describe a semi-elliptical crack or pre-crack in a solid.

Submitted by:

Joseph Panagiotou
Engineer



Figure 1. Engine mount as received.

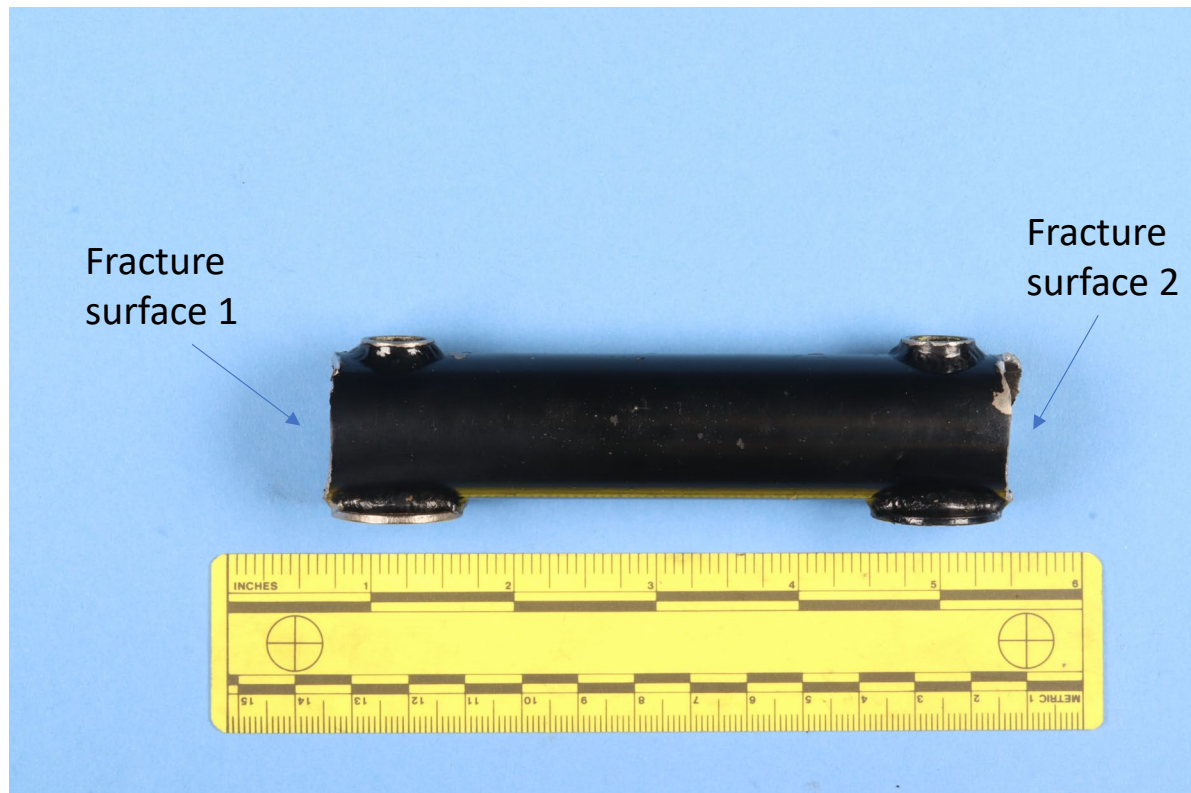


Figure 2. Center section of engine mount containing fracture surfaces 1 & 2.



Figure 3. Fracture surface 1 exhibiting a thumbnail shaped fatigue crack and ratchet marks.



Figure 4. Fracture surface 2 exhibiting a thumbnail shaped fatigue crack and ratchet marks.