

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA24FA104

MATERIALS LABORATORY

Factual Report 24-058

September 9, 2024

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A. ACCIDENT INFORMATION

Location: Clearwater, FL
Date: February 1, 2024
Vehicle: Beech V35B, N6659L
Investigator: Timothy Monville

B. COMPONENTS EXAMINED

Flexible metered fuel hose and associated 90-degree fitting (Figure 1)

C. EXAMINATION PARTICIPANTS

Group Chair	Joseph Panagiotou National Transportation Safety Board Washington, DC
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D. DETAILS OF THE EXAMINATION

The flexible metered fuel hose was approximately 33 inches long and had captive b-nuts on both ends. One end of the hose had been attached to the fuel manifold (Figure 2). The other end was attached to a 90-degree fitting (Figure 3) which would have been connected to the outlet of the fuel metering valve. The flexible fuel hose was covered with an orange/red colored fire sleeve that exhibited varying levels of soot adhering to its surface. On the fuel manifold end there were non sooted areas consistent with areas protected by clamps. Approximately the last 3 inches of fire sleeve on the fuel metering valve end of the hose exhibited thermal damage that consumed the rubberized coating of the fire sleeve (Figure 3).

The 90-degree fitting had a flare type end on the side that was attached to the b-nut on the fuel hose and a tapered pipe thread end on the side that was attached to the metering valve end (Figure 4). The attachment to the metering valve utilized a fitting that had a female pipe thread nut on the end attached to the 90-degree elbow and a male pipe thread end that had been threaded into the metering valve body. The male pipe thread end that had been threaded into the metering valve exhibited a fracture as indicated in figure 4. The female pipe thread nut on the fractured fitting exhibited deformations consistent with impact forces (Figure 5). The fracture surface on the male pipe thread portion of the fitting exhibited deformation and slant fractures consistent with bending overstress (Figure 6).

The threads on the flare end of the 90-degree fitting and the corresponding threads in the b-nut of the flexible fuel hose did not exhibit any evidence of cross threading or other anomalies. The mating surfaces of the flared connection also did not exhibit any anomalies. The b-nut and flared end of the 90-degree fitting could be

assembled and torqued to 136 in-lbs. After torquing the connection appeared solid and fully seated.

Submitted by:

Joseph Panagiotou
Engineer



Figure 1. Metered fuel hose and fittings as received.



Figure 2. Fuel manifold end of the flexible fuel hose.



Figure 3. Fuel metering valve end of the flexible fuel hose. Localized thermal damage to the fire sleeve.

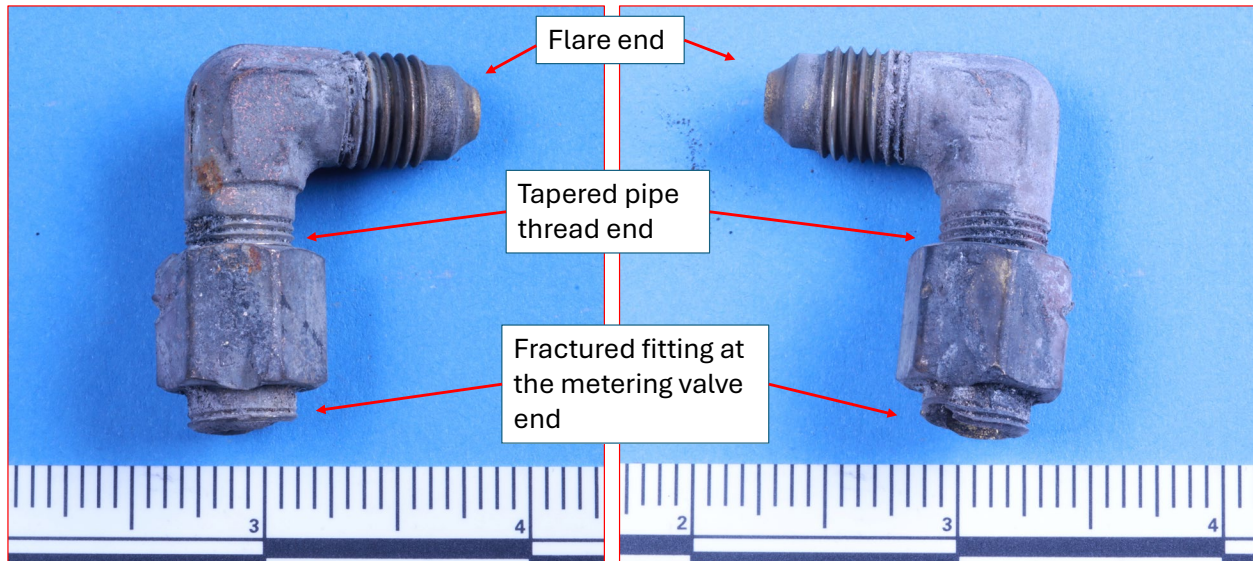


Figure 4. 90-degree elbow and portion of the fitting that would attach it to the fuel metering valve.



Figure 5. Deformation of female threaded nut consistent with impact forces.



Figure 6. Fracture surface on male threaded portion of the fitting.