

NATIONAL TRANSPORTATION SAFETY BOARD

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



April 8, 2019

MATERIALS LABORATORY FACTUAL REPORT

Report No. 19-018

A. ACCIDENT INFORMATION

Place : Quincy, FL
Date : 8/24/2018
Vehicle : Beech A36, N773CB
NTSB No. : ERA18LA229
Investigator : Timothy W. Monville

B. COMPONENTS EXAMINED

Metered fuel assembly (p/n: FT-B8.5/1-442, s/n: A02BA084R) with mixture control lever (p/n: 646265) and securing nut (figure 1).

C. DETAILS OF THE EXAMINATION

The metered fuel assembly had a stem onto which the control lever would have been attached. The stem was threaded on its end for the securing nut and had a section of tapered splines at the base for engagement with the control lever. This stem had been plastically deformed (figure 2). The threads on the stem were intact with no evidence of deformation. The tapered splines on the stem were also intact.

The control lever exhibited plastic deformation. The direction of the deformation is indicated by the arrow in figure 3. The through hole where the metered fuel assembly's stem would pass through the control lever is shown in figures 4 and 5. On the side of the through hole nearest the lever's dog leg (figure 4) indentations from the stem's splines were observed. On the side of the through hole opposite the lever's dog leg (figure 5) there was a smeared contact pattern without distinguishable indentations from the stem's splines. Since the smeared contact pattern did not extend along the entire periphery of the through hole and there was a portion of the periphery with spline indentations that were not smeared it is likely that the control lever and splined shaft were not rotating in relation to each other. Based on the direction of deformation of both the stem and the control lever their relative alignment is shown in figure 6.

The metered fuel assembly's stem was fitted with a collar and stop pin at the base (figure 7). This stop pin would contact stop pins fixed to the metered fuel assembly's housing. A circular contact pattern was observed between stem's stop pin and one of the stop pins on the assembly housing. Due to the plastic deformation of the stem, this contact pattern between the pins was no longer in alignment.

Joseph Panagiotou
Fire Protection Engineer

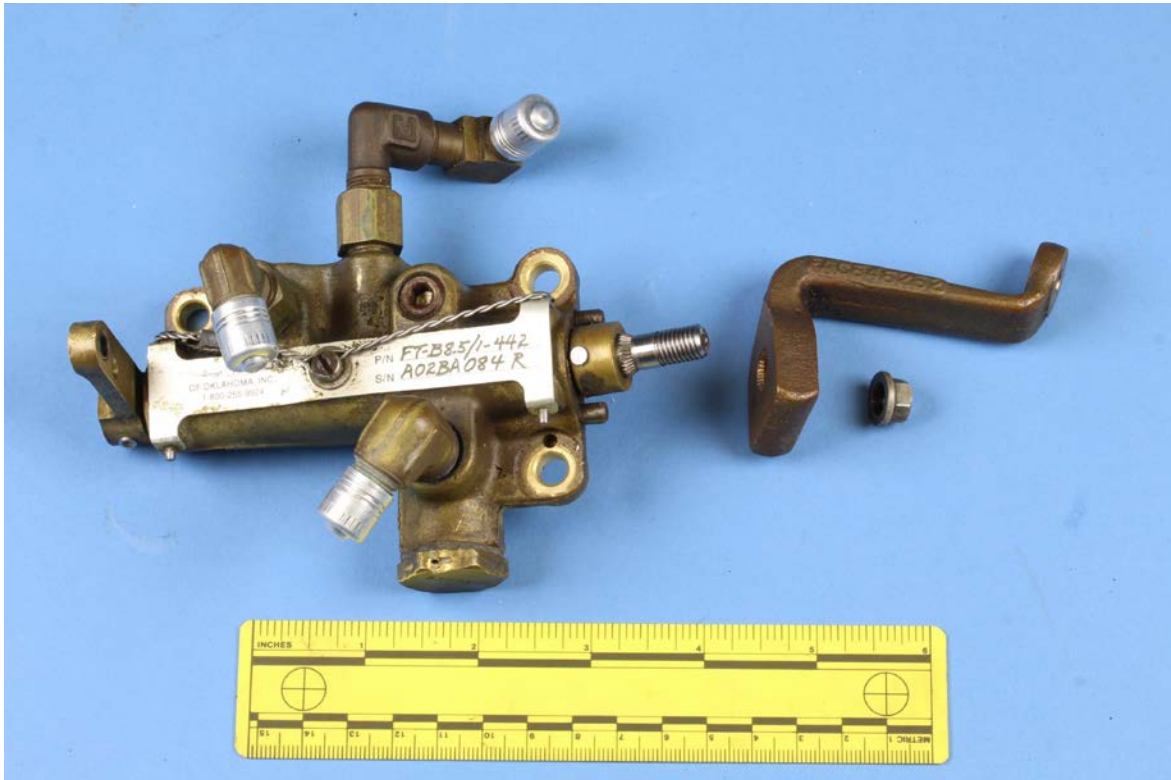


Figure 1: Metered fuel assembly with control lever and securing nut as received.



Figure 2: Bent control stem on metered fuel assembly.



Figure 3: Control lever exhibiting plastic deformation. Red arrow shows direction of deformation.

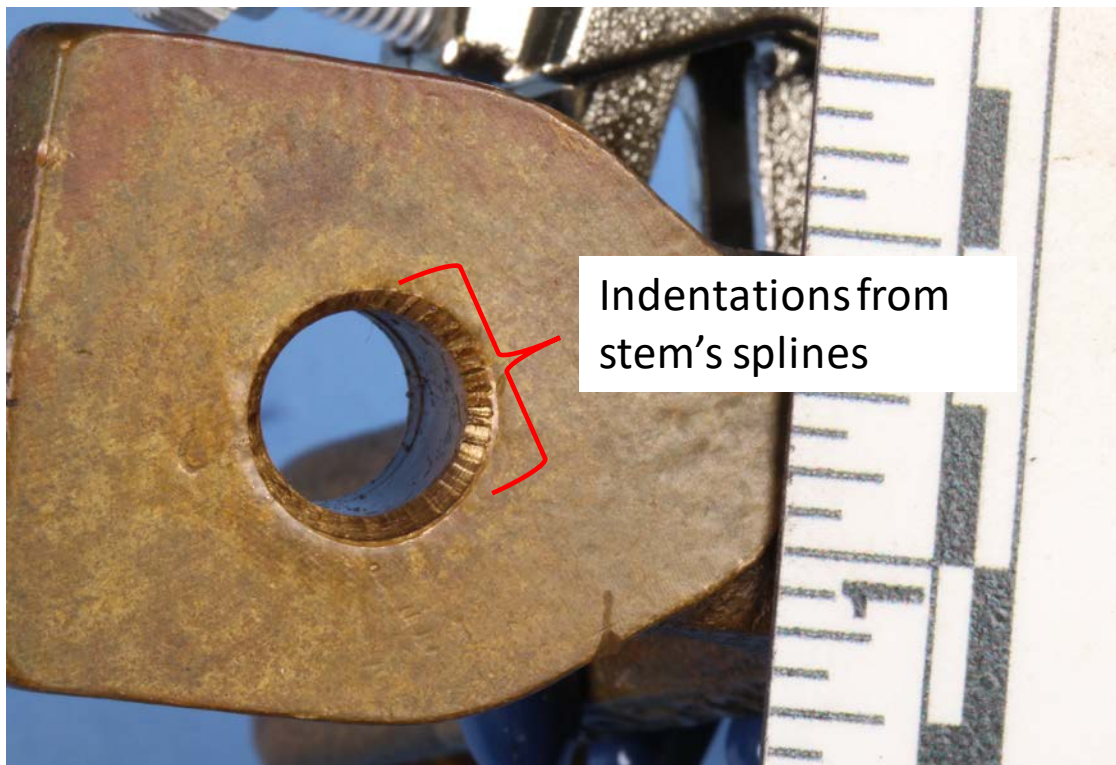


Figure 4: Spline indentations on portion of control lever through hole.

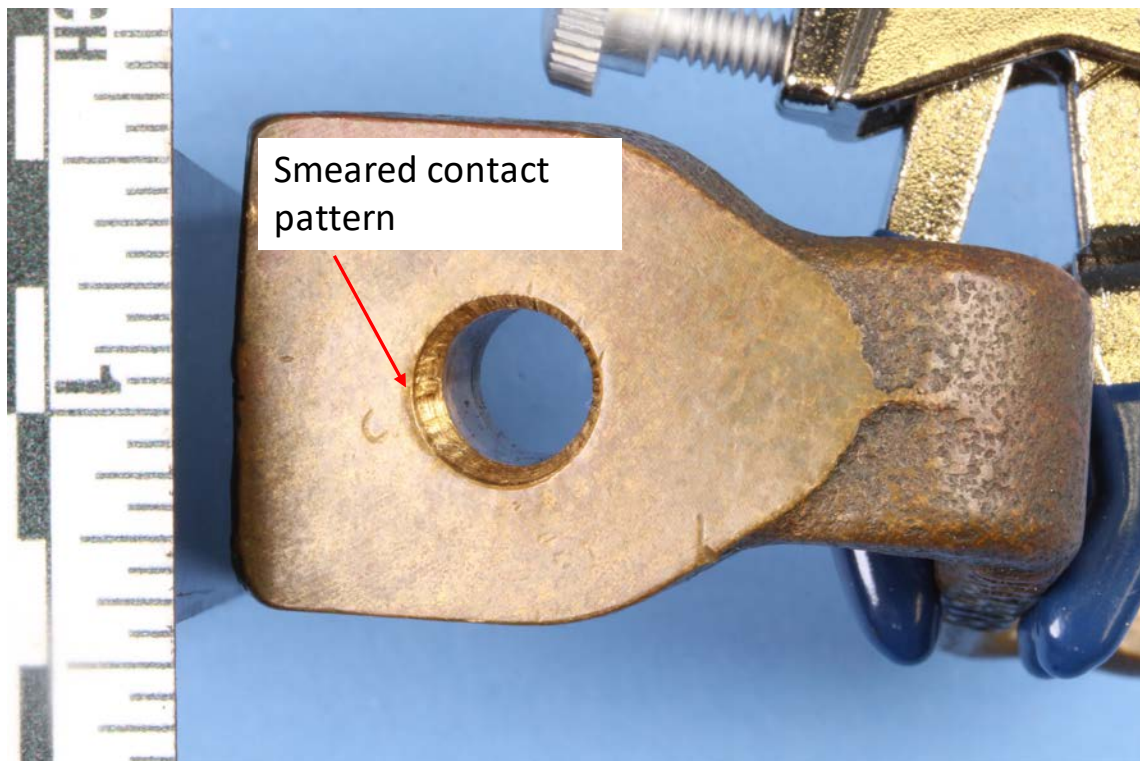


Figure 5: Smeared contact pattern on portion of control lever through hole.

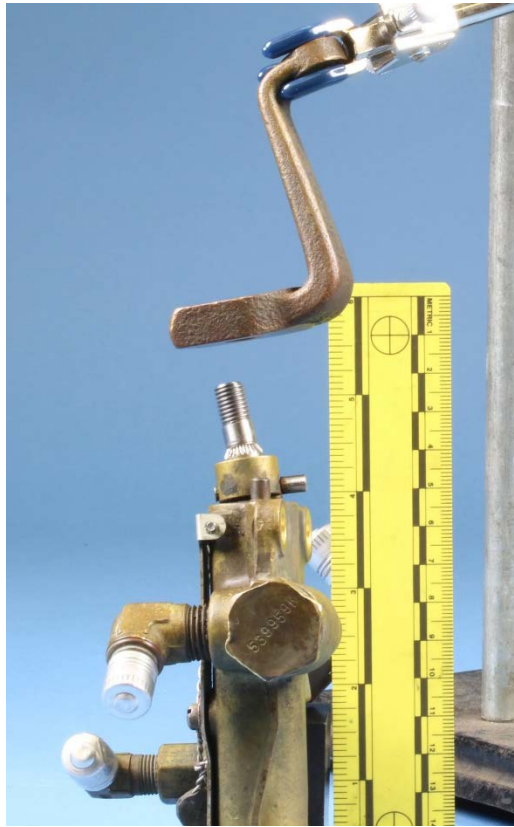


Figure 6: Alignment of metered fuel assembly stem and control lever.

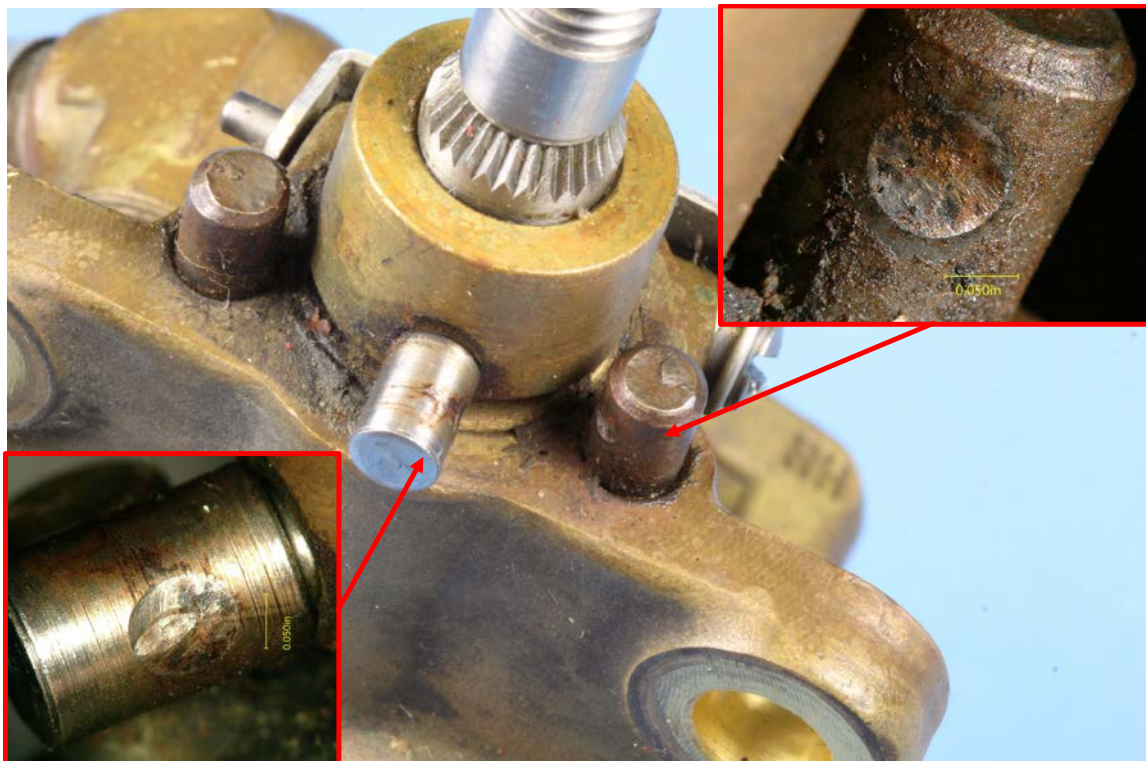


Figure 7: Contact pattern on stop pins.