

NATIONAL TRANSPORTATION SAFETY BOARD

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



July 13, 2022

MATERIALS LABORATORY FACTUAL REPORT

Report No. 22-053

A. ACCIDENT INFORMATION

Place : Titusville, Florida
Date : 10/14/2021
Vehicle : Velocity SE RG (N755V)
NTSB No. : ERA22FA015
Investigator : Robert Gretz

B. COMPONENTS EXAMINED

1. Fire damaged piece of pitch control pushrod

C. DETAILS OF THE EXAMINATION

Views of the as-received piece of pitch control pushrod is shown in Figures 1 and 2. The pushrod had been exposed to fire such that a portion of the tube had collapsed and melted.

The purpose of this report is to document the condition of the threads in the threaded insert within the control tube.

The end of the threaded insert is shown in Figure 2. No contact marks from the jam nut are evident. Oblique images in Figure 3 reveal that the first three threads in the threaded insert are missing.

The end of the pushrod with the threaded insert was longitudinally cross section as documented in Figure 4 to reveal the threads within the insert. The threads (including the area with missing threads) were largely covered in a coating of sub-stoichiometric thermally-degraded organic matter and soot. The first three threads are missing as revealed in Figure 4 and in closer images in Figure 5. The cross-section pieces were ultrasonically cleaned in a non-ionic detergent with ultrasonics to remove some of the black deposits. Microscope examination with a 5X to 50X stereo microscope revealed that the first three threads were fractured in shear overstress.

Michael Budinski
Chief, Materials Laboratory Division



Figure 1 Four views of the fire-damaged pushrod piece.

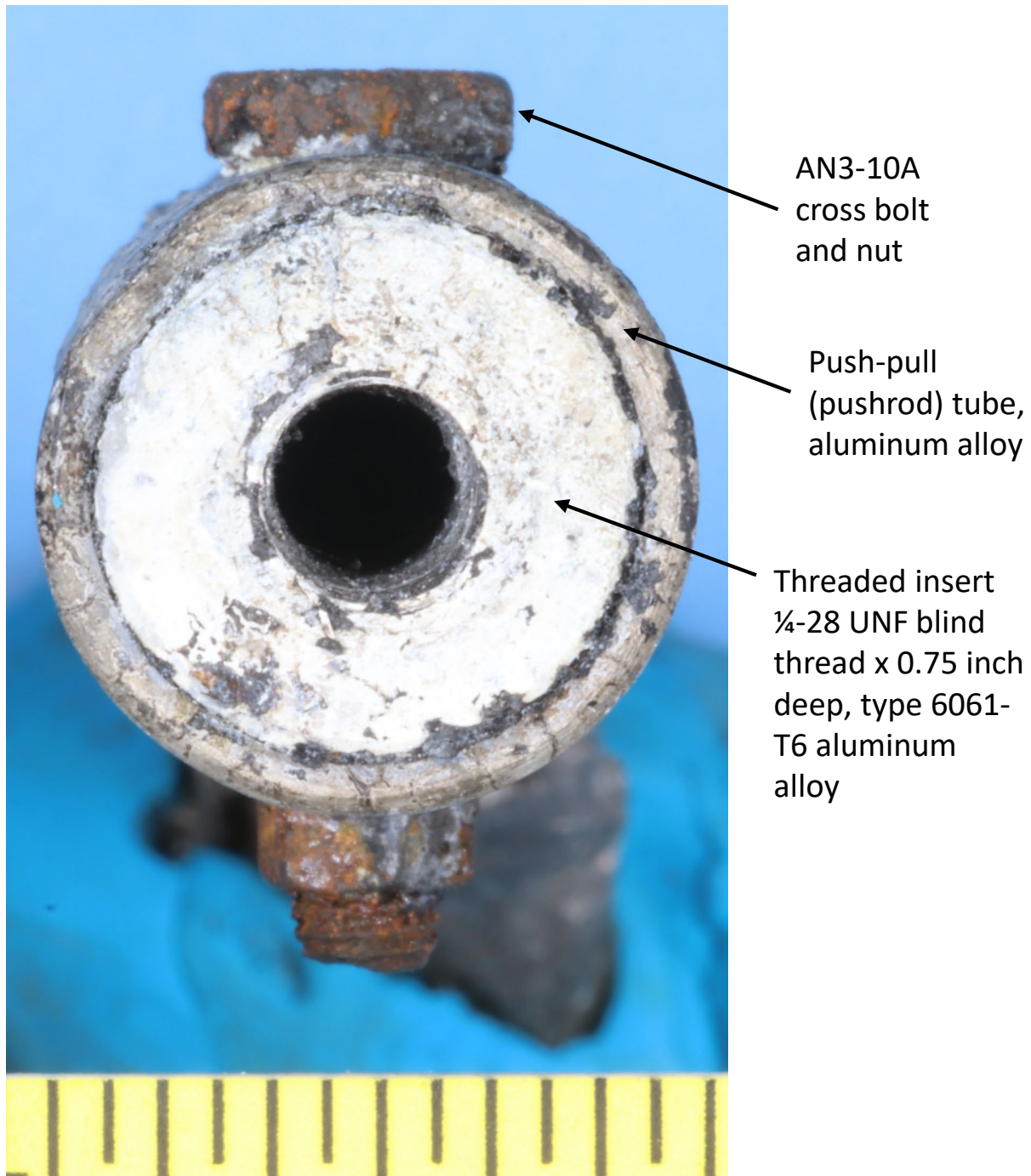


Figure 2 View of the end of the pushrod showing the threaded insert.

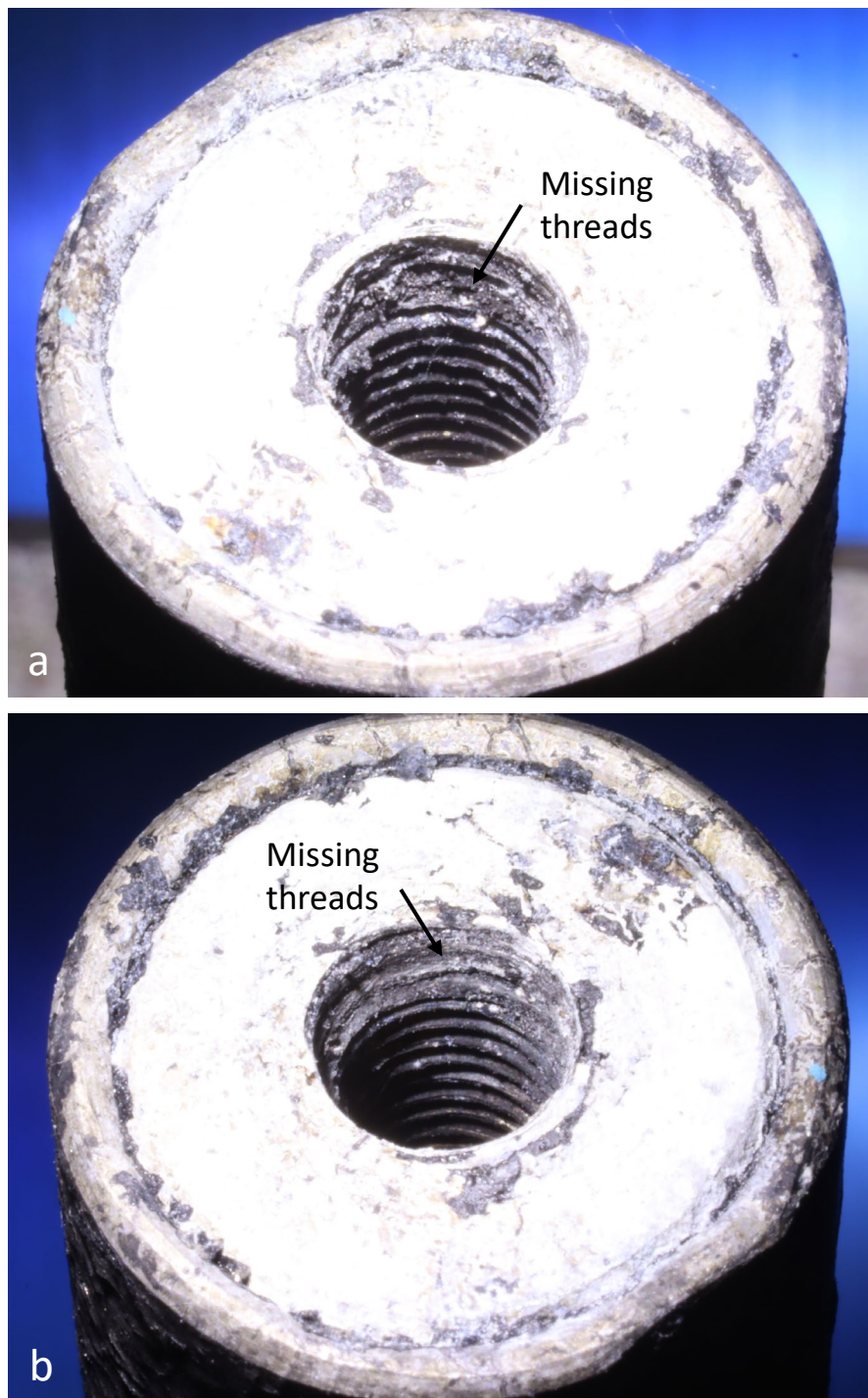


Figure 3 Oblique views of the end of the pushrod with the threaded insert revealing the location of missing threads.

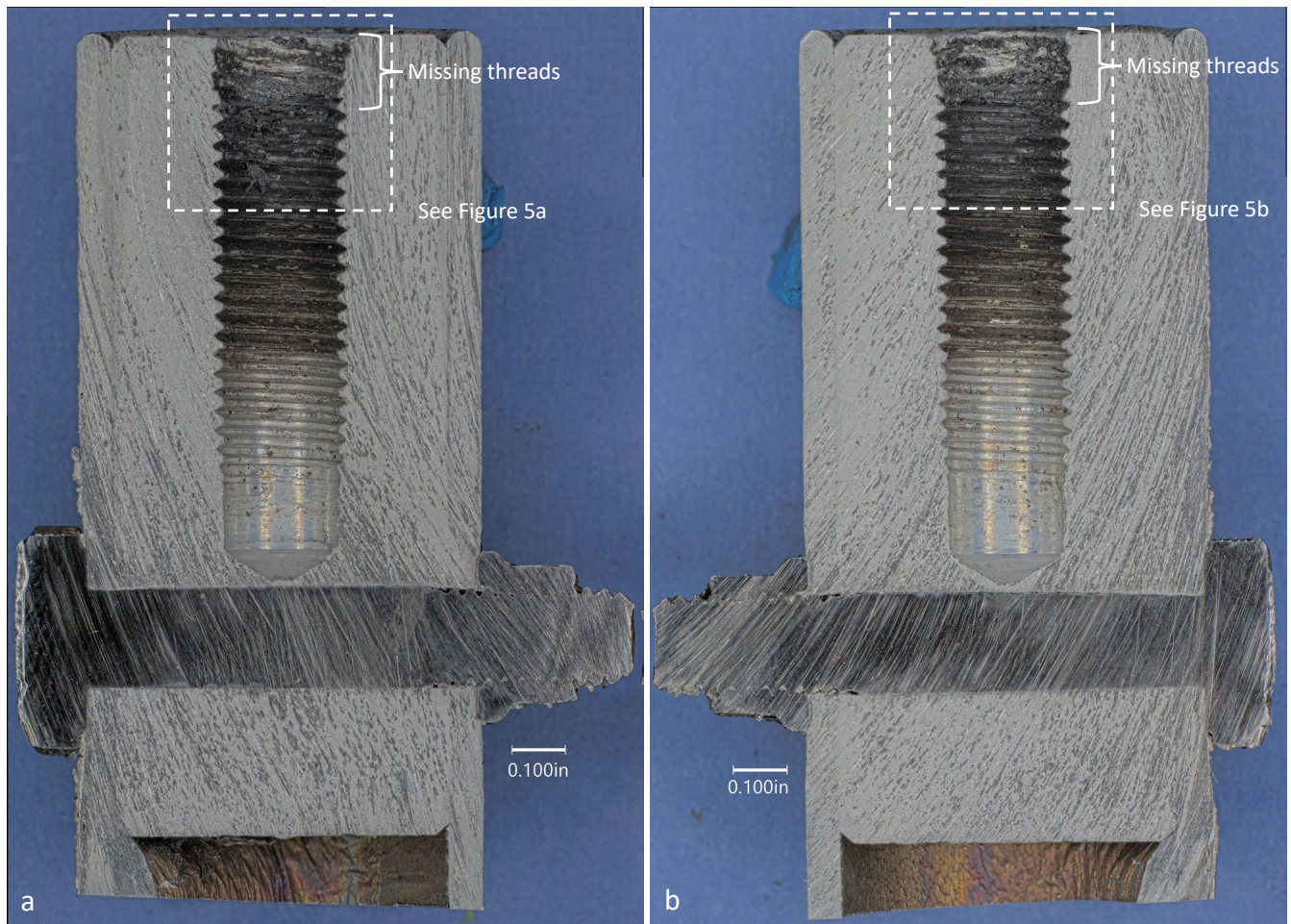


Figure 4 Digital microscope images of longitudinal cross-sections of the threaded insert.

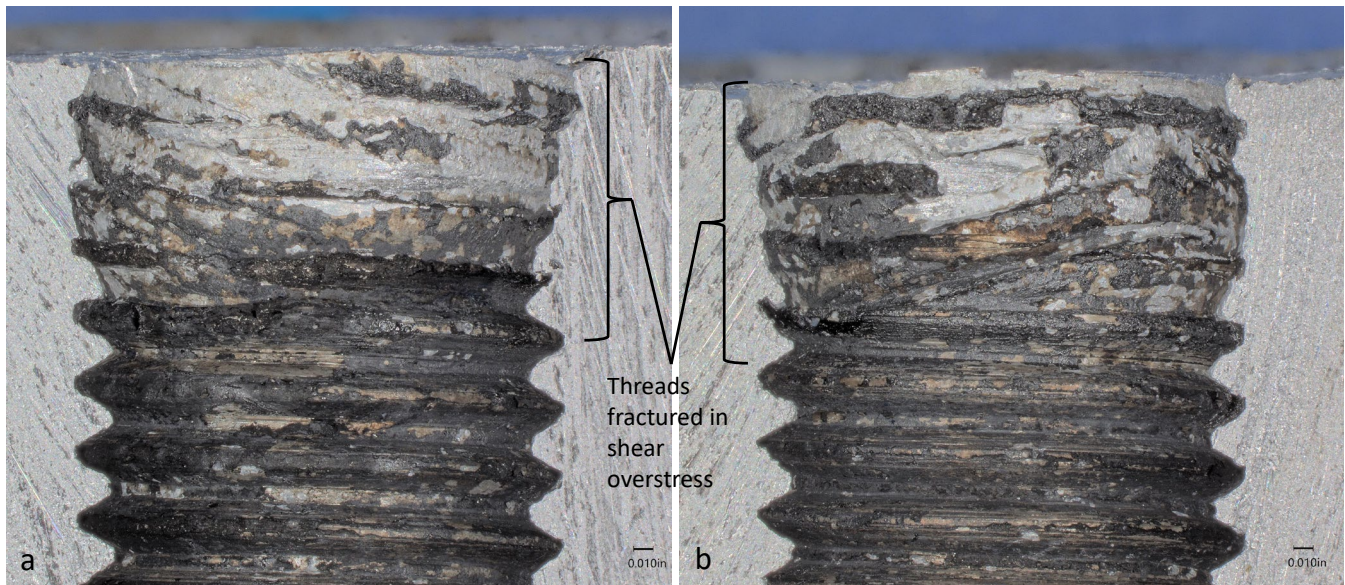


Figure 5 Digital microscope images showing closer views of the missing threads in the threaded insert. The threaded area was cleaned using a non-ionic detergent with ultrasonics.