

NATIONAL TRANSPORTATION SAFETY BOARD

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



February 23, 2018

MATERIALS LABORATORY ADDENDUM REPORT

Report No. 17-032B

A. ACCIDENT INFORMATION

Place : Williamson, Georgia
Date : November 17, 2016
Vehicle : Curtiss JN4D
NTSB No. : ERA17FA050
Investigator : Ralph Hicks, AS-ERA

B. COMPONENTS EXAMINED

Photographs of the St. Croix wood propeller.

C. DETAILS OF THE EXAMINATION

According to the primary restorer and caretaker of the accident airplane, a crack was observed in the brass leading edge of the propeller near the tip in July 2015. A photograph of the crack prior to the repair is shown in figure 1. The propeller was sent back to the manufacturer, St. Croix Propeller, where it was repaired. According to an October 13, 2015 email from the propeller manufacturer, there was a "fatigue cracked rivet exactly halfway down inside the wood." To repair the problem, the rivets in the area were "doubled up". The repair was completed in October, 2015, and the propeller was reinstalled on the airplane in November, 2015.

For comparison, photographs of the accident blade in the same area shown in figure 1 is presented in figure 2. Repair rivets visible in figure 2 are indicated. The fatigue fracture through the leading edge strip intersected the original rivet at the crack location shown in figure 1 and through the adjacent repair rivet closer to the hub. The fracture in the underlying wood intersected the original rivet hole and the adjacent repair rivet closer to the blade tip.

Matthew R. Fox, Ph.D.
Senior Materials Engineer

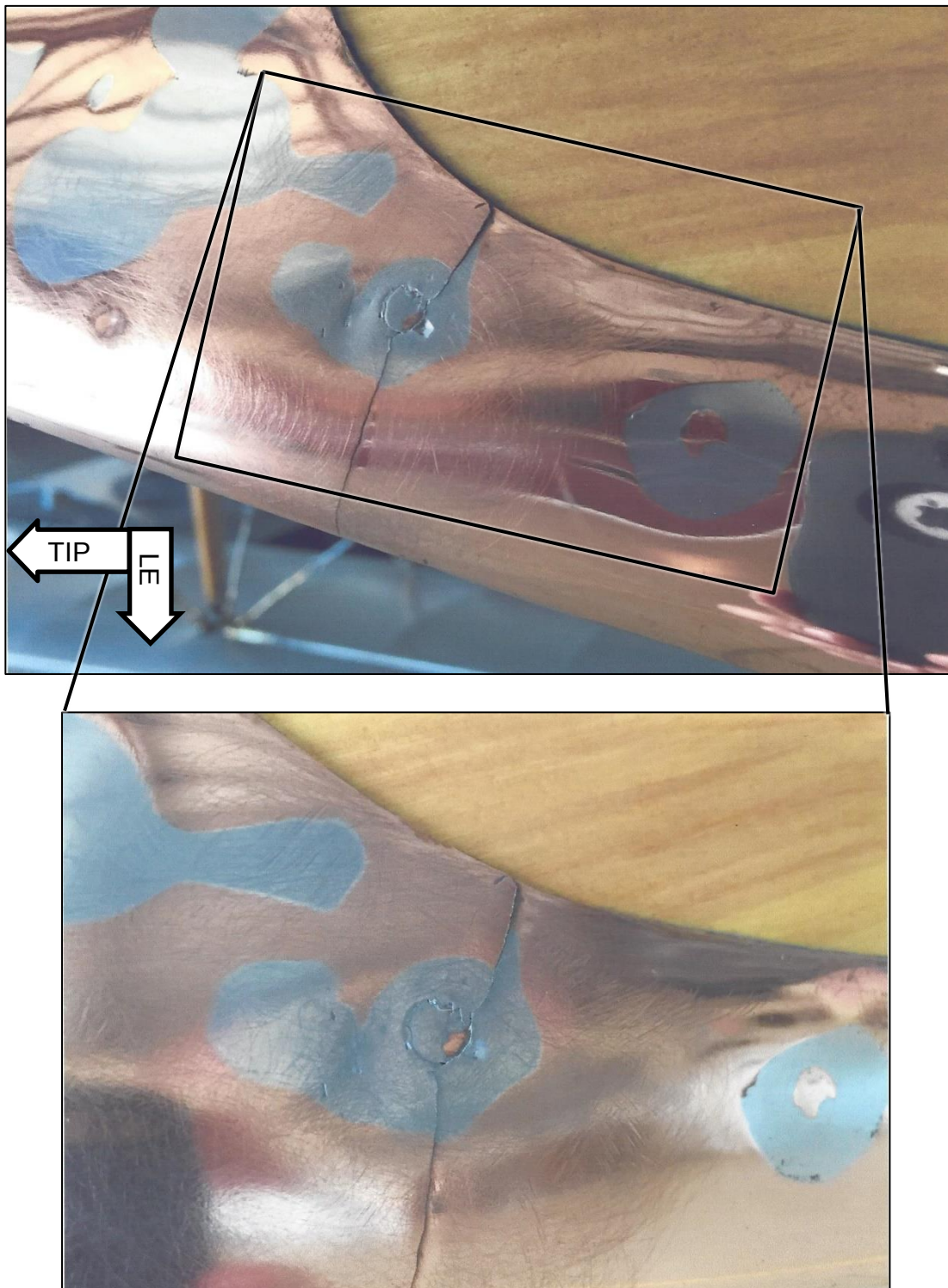


Figure 1. Forward (suction) side of the blade showing the crack found by inspection in July, 2015, before the blade was repaired (photographs provided courtesy of the primary restorer and caretaker).

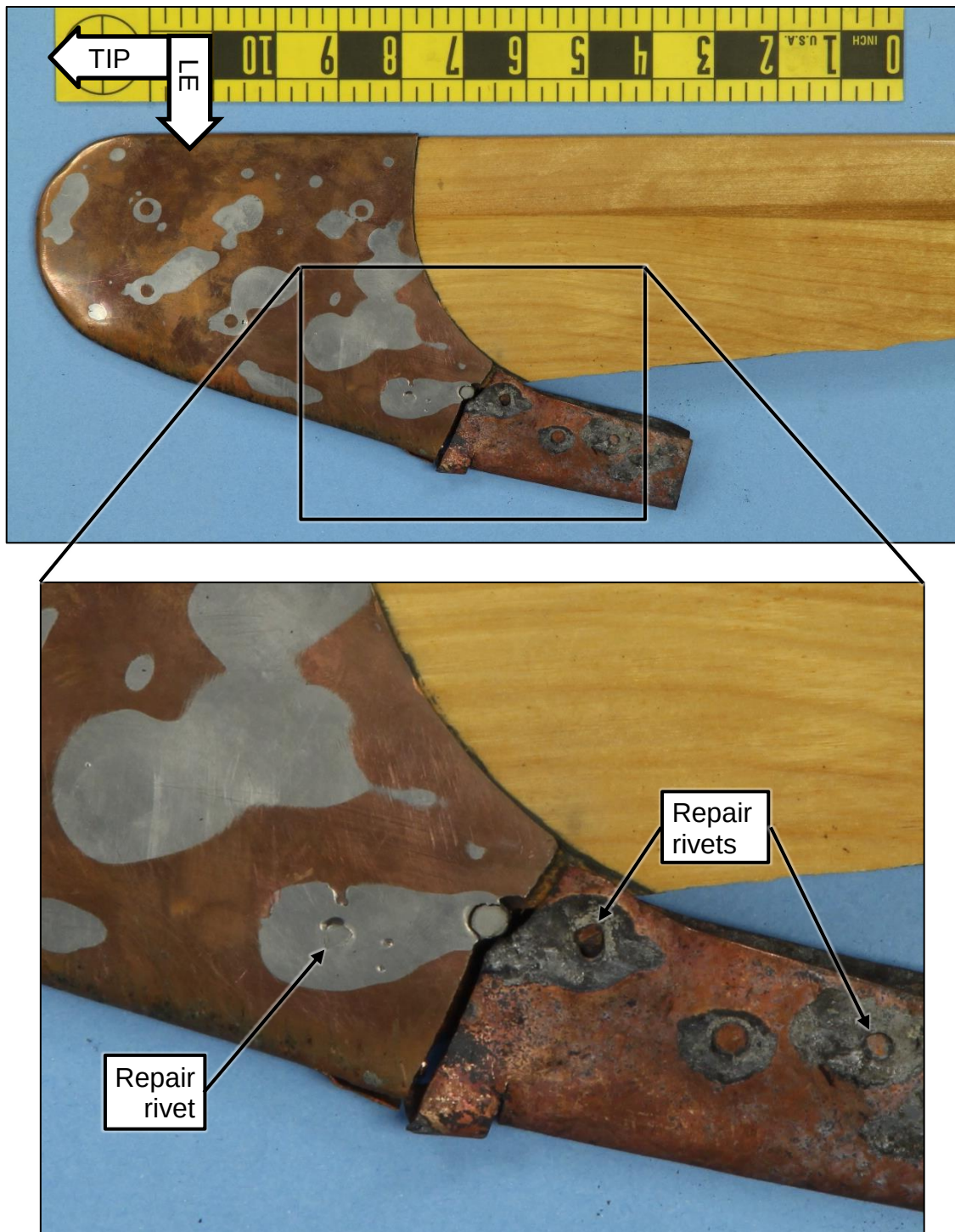


Figure 2. Overall view of the blade tip showing the forward (suction) side (upper image) with a closer view of the same area shown in figure 1.