NATIONAL TRANSPORTATION SAFETY BOARD

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

December 3, 2018

MATERIALS LABORATORY FIRE FACTUAL REPORT Report No. 18-094

A. ACCIDENT INFORMATION

Place	:	West Milford, New Jersey
Date	:	May 2, 2018
Vehicle	:	Piper PA-32
NTSB No.	:	ERA18FA138
Investigator	:	Daniel Boggs AS-ERA

B. ACCIDENT SUMMARY

On May 2, 2018 about 1410 eastern daylight time, a Piper PA-32-300, N4153R, impacted trees and terrain at the Greenwood Lake Airport (4N1) West Milford, New Jersey. The private pilot was fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the flight to the Orange County Airport (MGJ), Montgomery, New York. The airplane was owned and operated by a private individual as a personal flight in accordance with the provisions of 14 Code of Federal Regulations Part 91.

A witness located one mile north of the airport heard the airplane take off and then heard the airplane's engine sputter then shut off. He then heard a crash and called 911.

A flight instructor located at 4N1, and friend of the pilot stated that he was talking to the pilot just before the crash. He stated the pilot told him he was having problems with his engine, and thought it was either the magnetos or the spark plugs. The pilot stated he was going to go down to the end of the runway and perform an engine run-up. If the engine run-up was successful, then he was going to take a short flight to MGJ and back. That was the last time the flight instructor spoke to the pilot.

C. DETAILS OF THE EXAMINATION

The aircraft fuselage was completely destroyed as shown in Figure 1. The main body, particularly the right side, of the fuselage was melted down to the floor level of the cabin in several spots as shown in Figure 2. The left side of the fuselage near the engine compartment was partially intact as shown in Figure 3. The wings and empennage were relatively intact. There were some areas of localized fire damage consistent with a ground fire as shown in Figures 4-8.

Engine compartment

The firewall exhibited buckling consistent with impact. The thermal damage was limited to upper right corner of the firewall where a clean burn area (free of soot) was located as shown in Figures 9 and 10. The area oxidized due to exposure to moisture after the accident. The damage extended through the fire wall and was evident on the cabin-facing surface of the fire wall. This area was located behind the fuel pump. Approximately 15 inches of aluminum strip attached to the top edge of the firewall was missing with melting to the ends of the remaining section as shown in Figure 11.

The engine was undamaged except for an area on the aft right side. The damage is shown in Figure 12 and 13. The fire sleeving on the oil lines located in this area exhibited thermal damage. The rubber skirt on the engine was melted in this area as shown in Figure 14. The oil cooler exhibited heavy sooting. During the field engine teardown, a fuel line on the output side of the fuel pump was found to have a loose b-nut connection. The loose condition of the b-nut connection was more than could be accounted for by heat exposure and impact. The fuel line was undamaged and in serviceable condition, however it was not an aircraft-approved fuel line as shown in Figure 15.

The upper engine cowling was intact but exhibited heavy thermal damage to the aft edge on the right side as shown in Figure 16 and 17. The lower surface (engine-facing side) in this area was heavily sooted and the fiberglass resin was charred and missing in areas, exposing the glass fiber matting. This damage extended from the right edge to the midline of the upper cowling.

The right lower engine cowling was heavily sooted and exhibited mechanical damage as shown in Figure 18. The louver on this side was heavily sooted and had some thermal damage to the paint as shown in Figure 19.

The left lower engine cowling had thermal and mechanical damage, but the thermal damage was to a lesser extent that that found on the right side as shown in Figure 20. The louver on this side was sooted and had some thermal damage to the paint as shown in Figure 21.

Cockpit and Cabin area

The thermal damage extended through the firewall and was evident on the aft surface of the firewall as shown in Figure 22. This side of the firewall, which serves as the forward wall of the forward cargo compartment, was normally covered with a vinyl liner. The liner was largely missing, presumed destroyed by fire. A small portion was present near the floor of the compartment.

The floor of the cargo compartment was lined with carpet. The carpet was relatively intact except where the carpet was in contact with the right side of the firewall. The contents of the cargo compartment (personal items, log books and tool kit) were heavily fire damaged particularly on the top and on the forward-facing side as shown in Figures 23.

The rest of the cockpit and cabin area was destroyed as shown in Figure 24. All polymeric and aluminum components were missing or melted. Only ferrous-based components, like the seat frames, remained and were heavily oxidized.

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Fire and Explosion Specialist

Figure 1. On-scene photograph of fuselage and empennage.

Figure 2. Photograph of forward section of fuselage and right wing root.

Figure 3. Photograph of left side of cockpit.

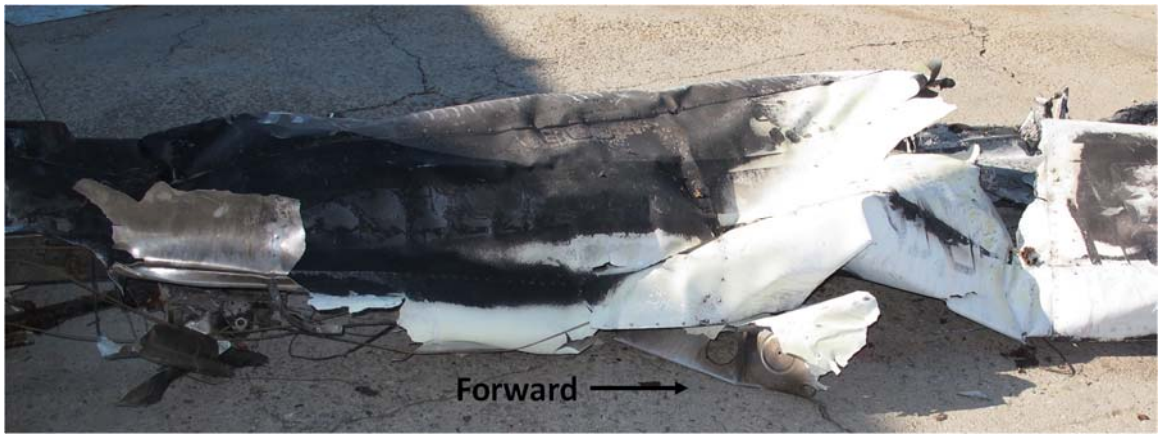

Figure 4. Photograph of empennage (from the right side).

Figure 5. Photograph of upper surface of left wing.

Figure 6. Photograph of upper section of right wing.

Figure 7. Photograph of lower surface of right wing.

Figure 8. Photograph of lower surface of left wing.

Figure 9. Photograph of forward surface of engine compartment firewall.

Figure 10. Closeup photograph of clean burn area.

Figure 11. Photograph of missing section of aluminum strip (highlighted by the red box).

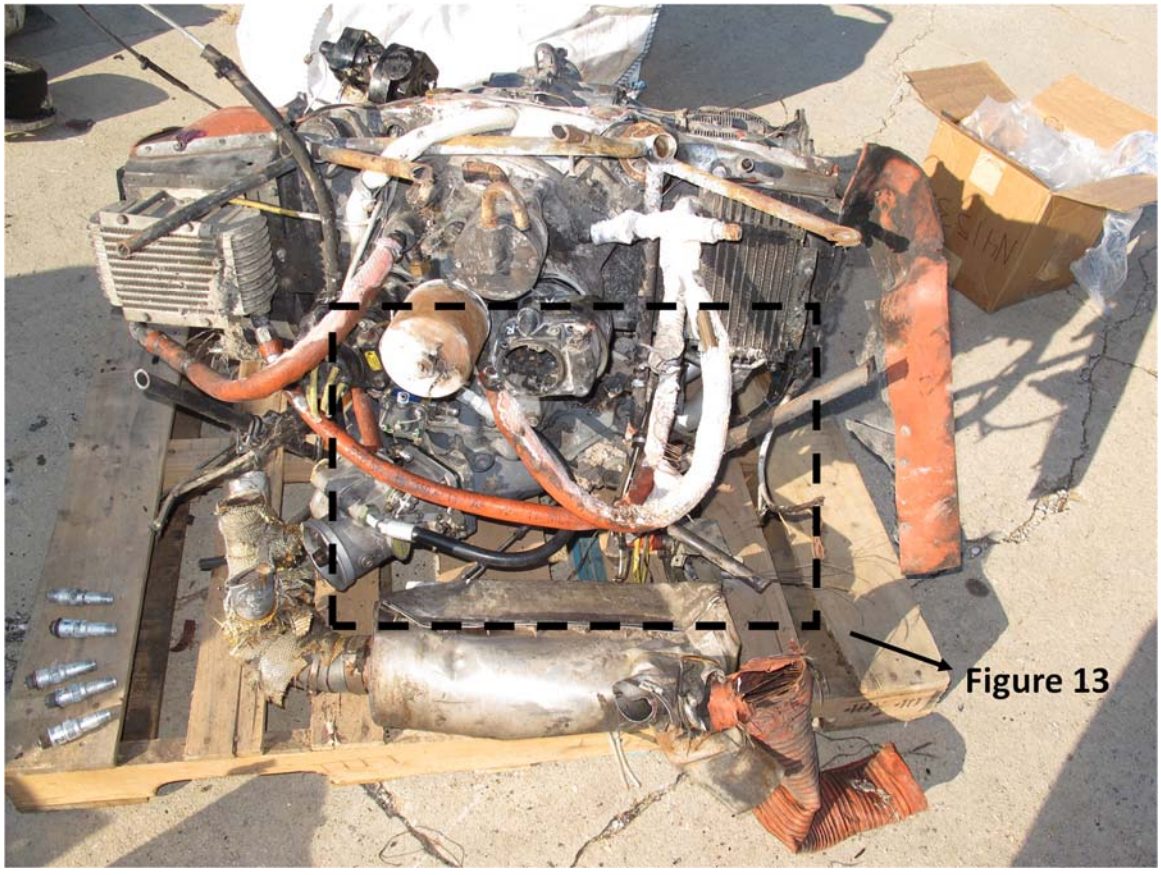

Figure 12. Photograph of aft end of engine.

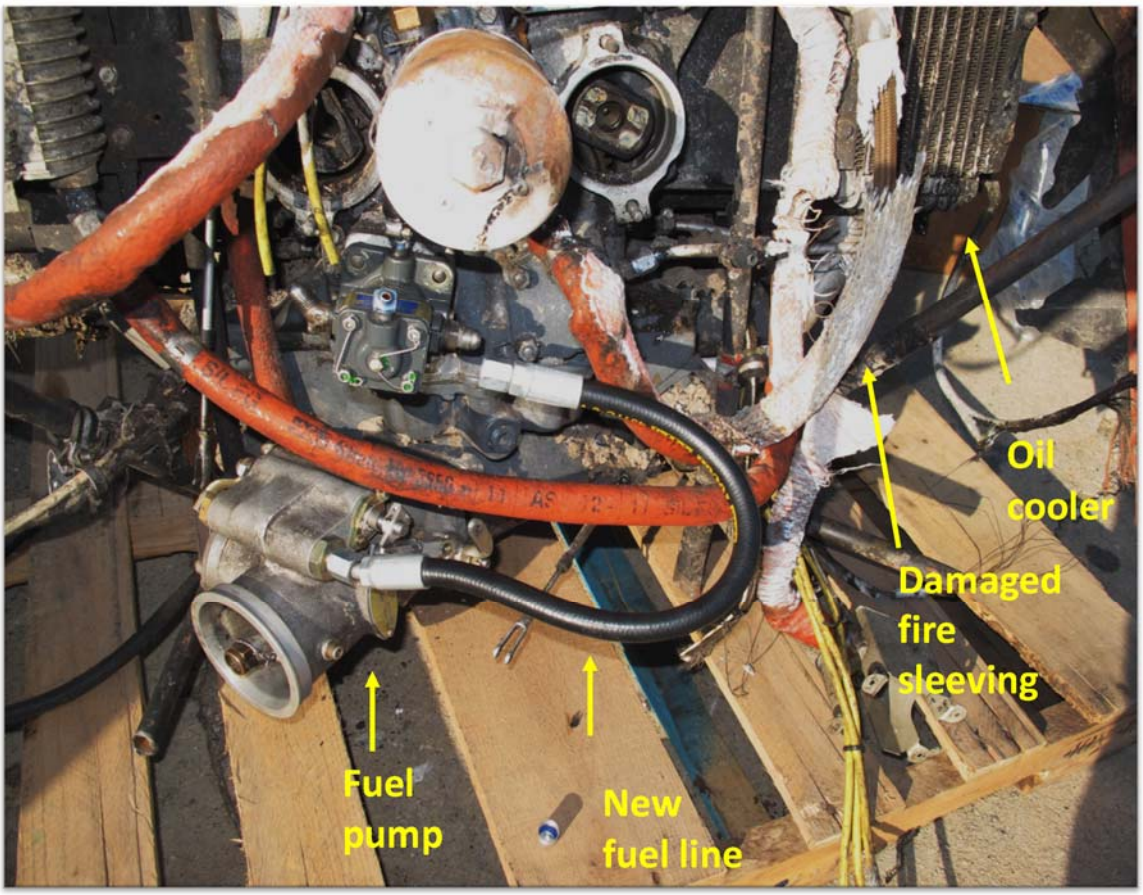

Figure 13. Close-up photograph of fire damaged area of engine.

Figure 14. Photograph of damaged rubber strip.

Figure 15. Photograph of unapproved fuel line. The loose connection found on-scene is shown highlighted by the red circle.

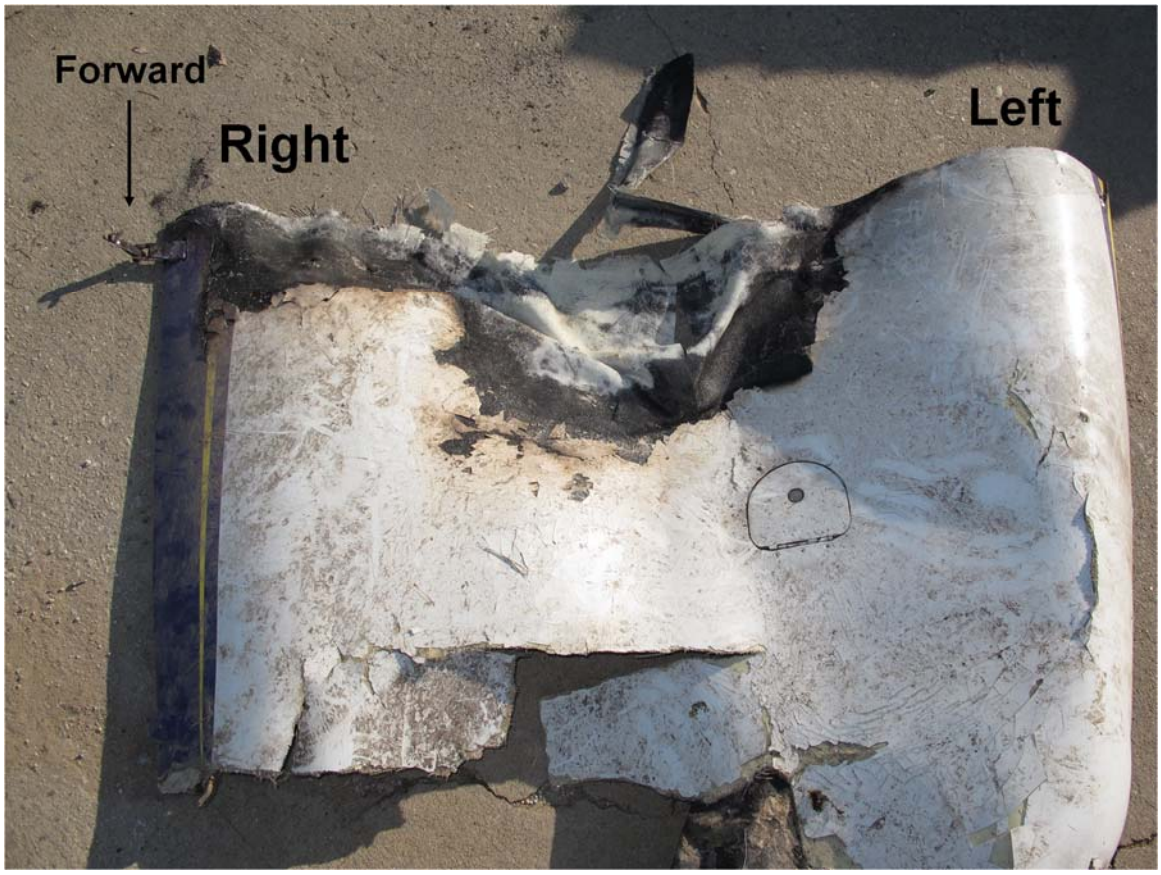

Figure 16. Photograph of upper surface of upper engine cowling.

Figure 17. Photograph of lower surface of upper engine cowling.

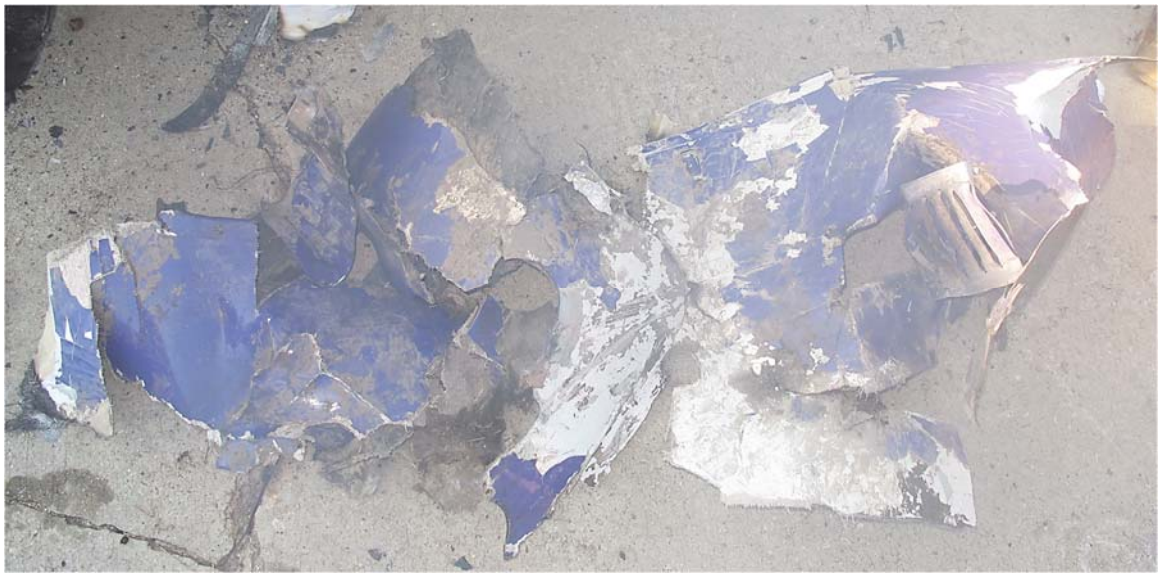

Figure 18. Photograph of lower right cowling.

Figure 19. Photograph of lower right cowling exhaust louver.

Figure 20. Photograph of lower left engine cowling.

Figure 21. Photograph of lower left engine cowling exhaust louver.

Figure 22. Photograph of aft surface of engine compartment firewall (cargo compartment forward wall).

Figure 23. Photograph of overhead view of forward cargo compartment.

Figure 24. On-scene photograph of cockpit and cabin area.