

# National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR23FA044

## **MATERIALS LABORATORY**

Specialist's Factual Report 24-077

10/31/2024

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## **A. ACCIDENT INFORMATION**

Location: Banning, California  
Date: November 22, 2022  
Vehicle: Velocity Gallagher XLT-RG  
Investigator: Tealeye Cornejo  
AS-WPR

## **B. COMPONENTS EXAMINED**

Aircraft examination to determine origin and cause of inflight fire.

## **C. EXAMINATION PARTICIPANTS**

Investigator-in-Charge	Tealeye Cornejo NTSB-WPR
Investigator	Kristyn Blocher NTSB-WPR
Subject Matter Expert	Nancy B McAtee NTSB-RE30

## **D. ACCIDENT SUMMARY**

On November 22, 2022, about 1824, Pacific standard time, an amateur-built XLT-RG (Velocity), N101BH, was destroyed when it was involved in an accident near Banning, California. The pilot was fatally injured. The aircraft was operated as a Title 14 Code of Federal Regulations Part 91 cross-country personal flight.

A witness stated that he was driving on Interstate 10 when he noticed a trail of smoke and fire from the rear of the aircraft. The witness said that the aircraft appeared to be in a stable flight condition as it crossed the Interstate and there were no erratic movements. As the aircraft continued its flight path toward the Banning Municipal Airport (BNG), the fire progressively got worse. Shortly after, the aircraft entered a right bank and impacted terrain.

Security camera video footage of the accident aircraft showed the aircraft on fire prior to the impact with desert terrain. Additional dashcam video showed the accident aircraft on fire before it impacted terrain.

Examination of the accident site revealed that the aircraft impacted terrain about 1-1/2 miles northeast of the Banning Municipal Airport (BNG), Banning, California. The first identified point of contact (FIPC) was damage to vegetation, with branches displaced toward the direction of the main wreckage. All major structural components of the aircraft were observed within the debris path.

## **E. DETAILS OF THE EXAMINATION**

The accident aircraft was a carbon fiber composite experimental aircraft with a Lycoming TIO-540-EXP reciprocating engine<sup>1</sup>. A witness to the accident reported that an aircraft on fire came down at an angle, impacted the ground, and immediately burst into flames. Video of the accident confirmed the accident scenario. The aircraft was destroyed.

Several small pieces of fuselage and empennage were found away from the impact site and were largely intact with limited fire damage. The remaining composite portions of the aircraft were either missing or heavily fire damaged. The fire damaged composite portions consisted of the carbon fiber mat with the resin burned out as a result of fire/heat exposure as shown in Figure 1.

The wing remnants (spars and the remains for upper flight surfaces) were still attached to the engine and engine firewall as shown in Figure 2. During the examination, the engine mounts were cut to separate the engine from the wings/firewall section.

The firewall had varying levels of thermal discoloration and sooting with significant whitening and oxidation in the lower right quadrant of the firewall as shown in Figure 3. There were several indentations in the surface of the firewall that corresponded to various components (fuel pump and oil filter) on the accessory case. The left wing spar was delaminated and thermally damaged but was still completely attached to the firewall as shown in Figure 4. The right wing spar was delaminated and exhibited heavy thermal damage. It also had significantly more damage at the attachment point than the left spar, as shown in Figure 5.

The recovered sections of the fuselage consisted of carbon fiber mat with no resin remaining in the cloth mat and the remaining pieces were unidentifiable.

A visual examination of the engine was performed after the engine was removed from the firewall. The engine was heavily sooted with several areas of thermal damage. The most severe area of thermal damage was located on the forward end of the engine in the area of the accessory case and turbocharger as shown in Figure 6. The secondary alternator case was melted. The oil filter was thermally discolored and exhibited significant impact damage. The fuel pump cover was melted and sooted. The forward plate on the hydraulic pump exhibited some melting. All cylinder assemblies were sooted. The rocker box covers for Cylinders 2,4 and 6 were thermally discolored as shown in Figure 7. The oil filter, fuel pump, hydraulic pump and oil pump were removed to visualize the accessory case as shown in Figure 8. A distinct V-shaped burn pattern was found to the right of the oil

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<sup>1</sup> The aircraft was an amateur-built canard pusher design aircraft produced by Velocity Inc.

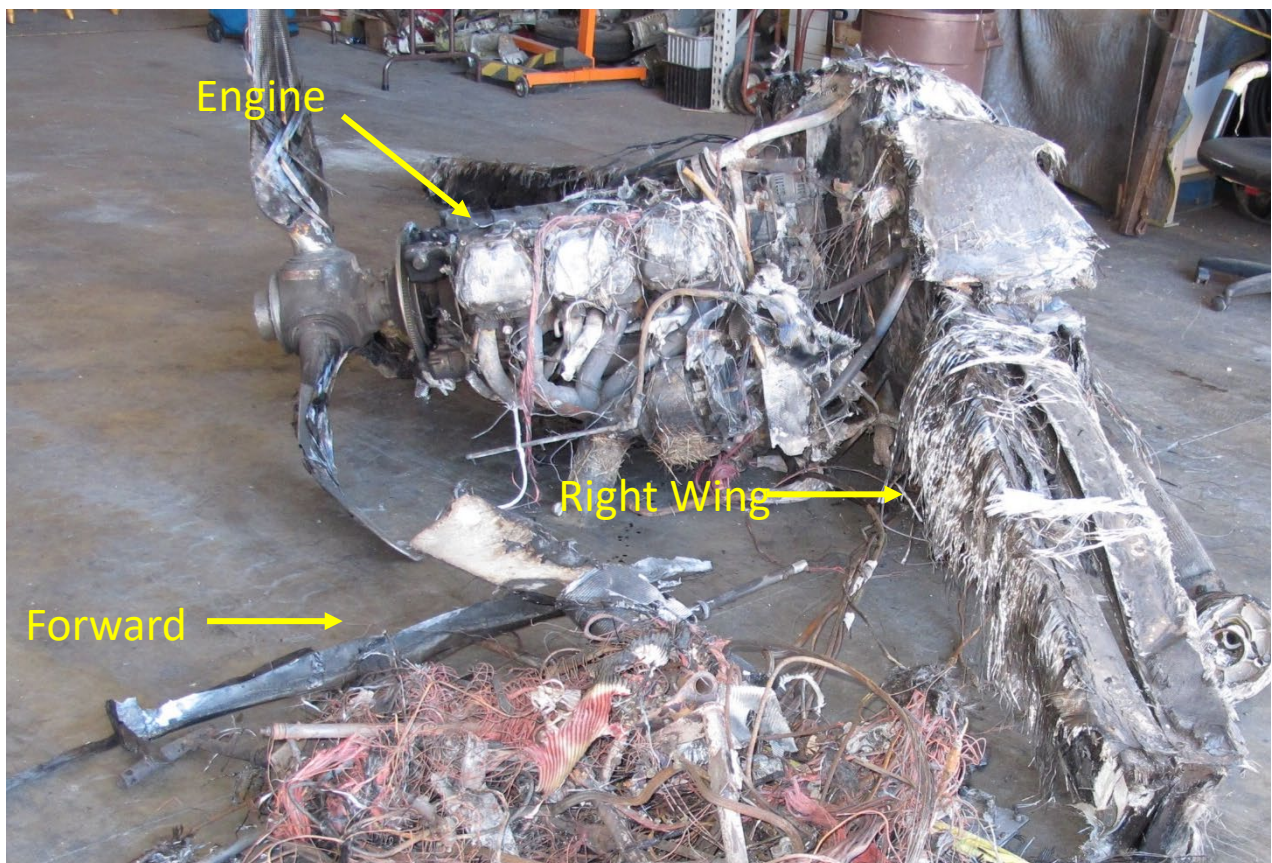
filter/pump and right mag plate. The pattern extended down and to the right towards the turbocharger. A closeup photograph is shown in Figure 9. The aluminum cover on the "cold" side of the turbocharger was melted as shown in Figures 10 and 11. All associated electrical wiring was missing insulation but the individual conductors showed no signs of electrical arcing such as beading, welding or surface erosion.

Submitted by:

Nancy B McAtee  
Fire and Explosion Specialist



**Figure 1.** Overall photograph of accident aircraft on scene.



**Figure 2.** Propeller, engine, firewall, and right wing.



**Figure 3.** The right side of the fire wall. Thermal damage highlighted by red circle.

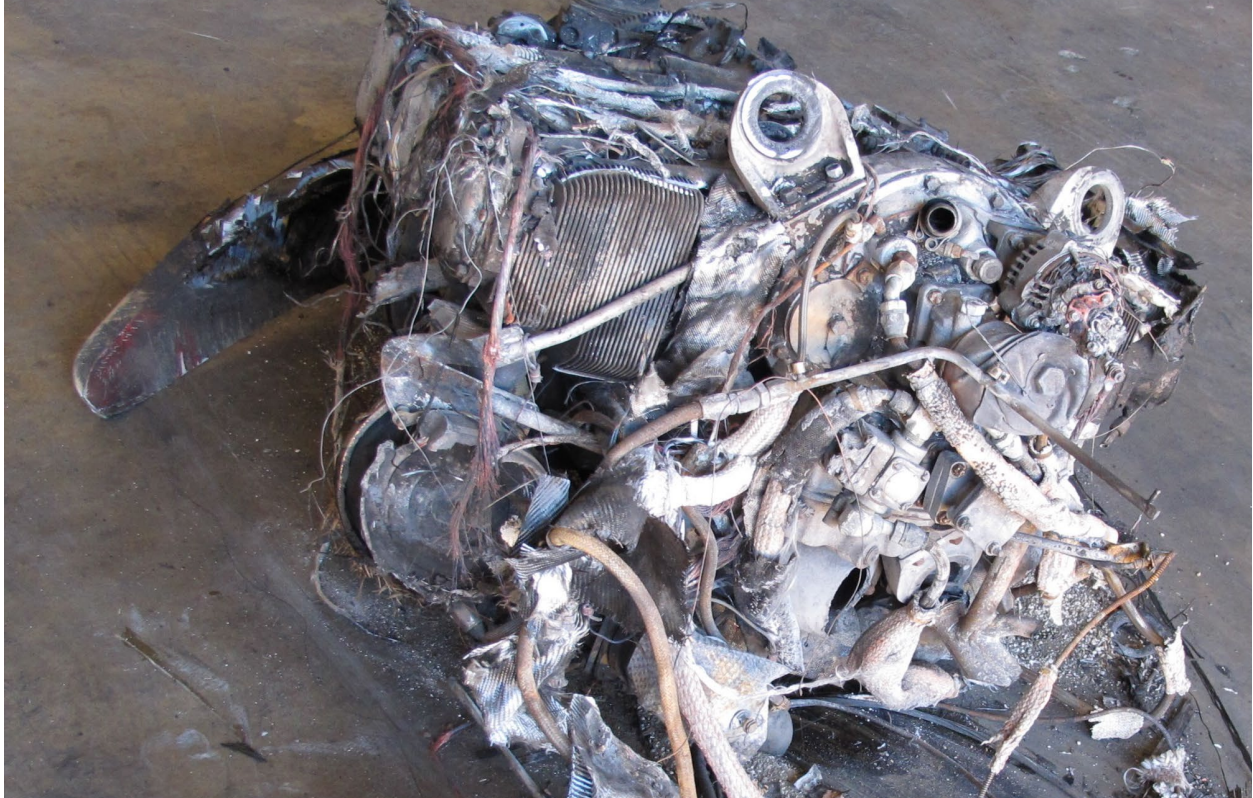


**Figure 4.** Left wing spar attachment at the firewall.



**Figure 5.** Right wing spar attachment.





**Figure 6.** Front of engine.



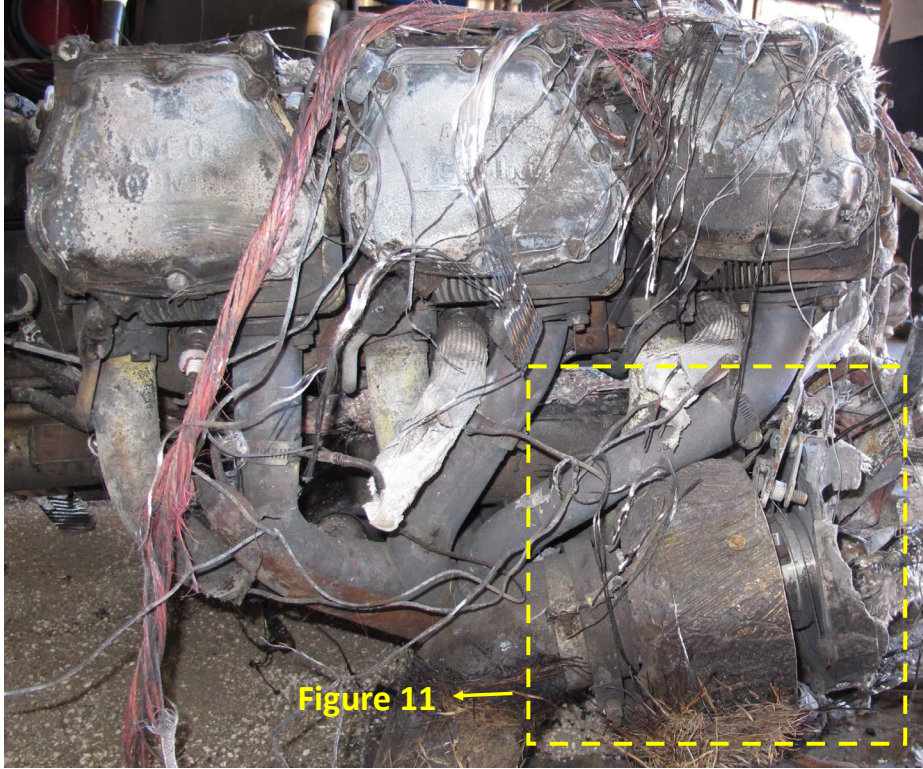
**Figure 7.** Thermal damage to cylinder covers (Cylinders 2, 4 & 6).



**Figure 8.** Accessory area of engine (forward section of engine).



**Figure 9.** Burn pattern on accessory case.



**Figure 10.** Right side of engine with turbocharger.



**Figure 11.** Closeup of turbocharger.