

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23LA268

## **AIRPLANE EXAMINATION SUMMARY**

September 7, 2023

## **A. ACCIDENT**

Location: Tahlequah, Oklahoma  
Date: June 27, 2023  
Time: 1012 Local  
1512 UTC  
Airplane: Velocity XL

## **B. AIRPLANE EXAMINATION SUMMARY**

|              |                                                                  |
|--------------|------------------------------------------------------------------|
| IIC          | Laura Abraham<br>NTSB<br>Aurora, Colorado                        |
| Party Member | David Harsanyi<br>Lycoming Engines<br>Williamsport, Pennsylvania |
| Party Member | Scott Swing<br>Velocity Aircraft<br>Sebastian, Florida           |

## **C. SUMMARY**

On June 27, 2023, at 1012 central daylight time, a Velocity XLRG airplane, N340XL, was substantially damaged when it was involved in an accident near Tahlequah, Oklahoma. The pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, he departed from the Flying Machines Airstrip (AR08) in Eureka Springs, Arkansas, on June 24, 2023, and flew to the Lawton-Fort Sill Regional Airport (LAW) in Lawton, Oklahoma. Later that same day, he departed LAW with both fuel tanks full of fuel, and attempted to fly back to AR08; however, the engine had a loss of power, so the pilot landed the airplane in a field near Chickasha, Oklahoma.

A mechanic examined the airframe and engine and could not determine the reason for the loss of engine power. Three days later, on June 27<sup>th</sup>, the pilot performed an engine run-up in the field and determined the engine was running properly. He departed the field and flew northeast toward AR08. The pilot stated that one hour after departure, while cruising at 10,000 ft above ground level (AGL), the engine began to misfire. He descended to 9,500 ft AGL and tried to trouble shoot the issue by leaning and richening the mixture. Doing that did not resolve the misfire, so he turned on the electric fuel

pump and checked each magneto. Turning off the left magneto did not make a difference with the misfire issue; however, turning off the right magneto resulted in the power dropping off dramatically. The pilot turned the right magneto back on and increased the manifold pressure, at which time, the power dropped off completely. He landed in a field and was seriously injured. The experimental canard pusher design airplane sustained substantial damage to both wings, empennage, and fuselage. Several electronic devices were removed from the airplane for examination and retrieval of recorded flight data.

## **D. DETAILS OF THE EXAMINATION**

### **1.0 Airframe Examination**

The Velocity XL, an experimental canard pusher design airplane, was highly fragmented. The wings and empennage were separated from the fuselage during the impact sequence and were cracked and bent in several places. Most of the fuselage was splintered and fragmented.

#### **1.1 Landing Gear**

The main landing gear was still attached to the fuselage. However, the nose landing gear separated during the impact sequence.

#### **1.2 Fuel/Fuel System**

The fuel system lines, routing, and layout could not be traced due to impact damage and fragmentation of the airplane. The fuel caps were inspected, and the rubber O-rings on the outer sealing surface were cracked and dry rotted.

### **2.0 Engine Examination**

The engine sustained a large amount of impact damage. The cases were cracked and there were missing pieces of aluminum. The number 5 cylinder intake and exhaust tubes were dented, and numerous accessories were fractured. The number 5 cylinder intake and exhaust pushrods were removed to facilitate rotation of the crankshaft. Crankshaft rotation was confirmed, and thumb compression was notated on all cylinders. No damage was observed on the valve springs of each cylinder.

The vacuum pump was fractured. The right-hand magneto was attached to the engine. However, the body was impact damaged, and the right magneto could not be functionally tested. The left-hand magneto was rotated by hand, and a spark was produced on all leads. The oil suction screen was removed from the oil sump and found free from obstruction. The oil filter was cut open and was free of debris.

The fuel servo was impact separated and the unit was spilt into two pieces at the diaphragm. The fuel inlet screen was removed and found free of debris. The fuel servo diaphragm was damaged and contained debris likely due from the impact sequence. The unit was unable to be tested due to damage. The spark plugs were removed and appeared to be normal.

### **3.0 Propeller Examination**

The three-blade MT propeller was found fragmented and splintered midspan on two of the blades. The third blade was fractured at the root with remaining pieces of the blades located within the airplane wreckage.

Submitted by:

Laura Abraham  
Air Safety Investigator