



**National Transportation
Safety Board**

Memorandum For The Record

DATE: September 28, 2018

FROM: Courtney Liedler, NTSB IIC

SUBJECT: Details of Aircraft Wreckage Examination for N534MM

The right wing remained attached to the fuselage and included the right aileron and right flap. The leading edge of the wing was impact damaged and the inboard leading edge was crushed and torn up. The right flap remained attached to the wing and was impact damage and wrinkled. The right flap appeared to be retracted or up. The right aileron remained attached to the wing and was impact damage and wrinkled. The control tubing for the right aileron was continuous from the aileron inboard to the right-wing root. The control tube was separated from the flight controls and the damage was consistent with impact damage and overload separation.

The left wing remained attached to the fuselage and exhibited exposure to heat and fire. The outboard 58 inches of the left wing were bent up, crushed, torn, and partially fragmented. The leading edge of the wing was impact damaged. The left flap separated from the wing and was impact damage and fragmented. The left aileron separated from the wing and was impact damage and wrinkled. The control tubing for the left aileron was continuous from the aileron hinge point inboard to the flight controls.

The empennage remained attached to the fuselage and included the tailwheel, horizontal stabilizer, elevator, vertical stabilizer, and rudder. The left horizontal stabilizer and elevator were crushed aft at the root and were impact damaged. The right horizontal stabilizer and elevator were bent up at the tip, impact damaged, and wrinkled. The control tubing for the elevator was continuous from the elevator control forward to the fuselage. There was one separation in the control tubing between the elevator and the flight controls and the damage was consistent with impact damage. The vertical stabilizer exhibited exposure to heat and fire and was otherwise unremarkable. The rudder remained attached to the empennage and was bent and wrinkled. The rudder cables were continuous from the rudder control forward to the rudder pedals.

The cabin was charred, melted, and partially consumed by fire. The canopy separated and was impact and fire damaged. The instrument panel, including the radios and engine controls, was charred, melted, and partially consumed by fire.

The horizon multi-function display was impact and fire damage. The circuit boards were fire damaged and the USB/thumb drives and cards were absent. The indicating needle on the airspeed indicator pointed to zero. The Kollsman window was selected to 30.06. No other instruments or gauges provided reliable readings. The seats and seatbelts were charred, melted, and partially consumed by fire. The latch for the belts remained together.

The engine remained attached to the airplane and was charred, melted, and partially consumed by fire. The oil pan was impact damaged and fragmented. The engine cowling was charred, melted, and partially consumed by fire.

The upper bank of spark plugs were removed and exhibited normal signatures when compared to a spark plug chart. The magnetos and spark plug wires were fire damaged and could not be functionally tested. The propeller governor was fire and impact damaged and could not be functionally tested. The fuel pump moved air when actuated by hand.

The engine was rotated through at the propeller flange. Air movement and valve train continuity was confirmed for all 4 cylinders. There were no anomalies with the engine that would have precluded normal operation.

Both propeller blades separated from the engine. The blades were arbitrarily labeled "A" and "B" for identification purposes. Blade A exhibited leading edge polishing and scoring on the face of the blade and was otherwise unremarkable. Blade B exhibited leading edge polishing and scoring on the face of the blade. The blade was bowed aft about 45° and was twisted at the tip.