

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN24LA007

WRECKAGE EXAM

January 29, 2025

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A. ACCIDENT INFORMATION

Location: Richmond, TX
Date: October 8, 2024
Time: 1235 CDT
1735 UTC
Airplane: Mooney M20E

B. WRECKAGE EXAM PARTICIPANTS

IIC	Bradley Miller NTSB Denver, CO
Air Safety Investigator	David Harsanyi Lycoming
A&P / IA	Lucky Louque Air Salvage of Dallas Lancaster, TX

C. HISTORY OF FLIGHT

On October 8, 2024, about 1235 central daylight time, a Mooney M20E airplane, N9151V, was substantially damaged when it was involved in an accident at the Covey Trails Airport (X09), Richmond, Texas. The pilot and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to Mr. Neret N9151V was purchased by his father and that he was building flight time in it. He stated he had roughly 375 hours of total flight time, of which, about 300 hours were in the accident airplane and about 75 hours of flight time accumulated in a Cessna 172 and a Piper Archer.

The following description of the events that occurred was given by the pilot.

On the day of the accident, he was going to practice commercial pilot maneuvers in preparation for his upcoming flight examination for his commercial certificate. He asked one of his pilot-rated friends to act as a safety pilot for the flight.

The flight departed West Houston Airport (KIWS), Houston, TX and flew to the vicinity of Wharton Regional Airport (KARM), Wharton, TX, where he performed 4 landings and performed some flight maneuvers nearby.

On the return leg the pilot decided to conduct a touch and go landing at Covey Trails Airport (X09), Fulshear, TX. The pilot executed the touch and go landing on runway 35 during which he said all the engine indications appeared normal.

On his initial climb he turned right crosswind at 300-400 feet and smelled an odor that could best be described as pancakes, then there was a loud bang, and the engine started shaking and a total loss of engine power occurred. He immediately put the gear and flaps down, due to concerns about losing electrical power. He ran his emergency checklist while making for a left base for runway 17. He said he had a 14-knot tailwind, so he had to slip the airplane onto the runway and touched down within the first 1,000 feet at about 70 knots. He locked up the brakes and skidded across the wet grass and thought he was going about 30-40 knots when the airplane went through the ditch.

The pilot stated that the FAA looked at the airplane on Wednesday after the accident and that he went to the airport on Thursday to lock the doors on the airplane and retrieve some personal items. At that time, he stated he pulled the oil dipstick and saw metal in the oil on the dipstick.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site



Figure 1. Accident site (courtesy of FAA).

The accident airplane overran the end of runway 17 and went through a wood airport perimeter fence that was painted black. The airplane came to rest about 150 feet south of the runway just beyond a road outside the perimeter fence. See Figure 1.

The FAA documented the site and reported that there were no holes in the engine case or anything obvious to suggest a catastrophic engine failure. Fuel was noted in both wing fuel tanks and the pilot reported having shut off the master switches and moved the fuel selector to the OFF position. The airplane was recovered to Air Salvage of Dallas (ASOD), in Lancaster, Texas. The following sections of this report gives the details of the examination at ASOD on November 4, 2024.

2.0 Airframe Examination



Figure 2. Wreckage at ASOD before examination started.



Figure 3. Fuselage data plate (photo courtesy of FAA).

The wings were cut off near their roots and the fuselage had been set up on stands. The empennage had been cut off also and was sitting on the shop floor with the wings.

The JPI 900 had been removed from the instrument panel by the pilot for safe keeping and was not present. A copy of the data for the accident flight was obtained from the pilot.

The Avidyne IFD 540 was not present in the instrument panel - the unit was with the insurance claims adjuster. The insurance adjuster was contacted and the unit was sent to the NTSB Vehicle Recorders Lab for a data download.

Accident site photos showed the upper cowling forward edge had bare metal and rivet tails indicative of an aftermarket fairing that was no longer present. See Figure 4. None of the missing fairing was recovered from the accident site. Review of the maintenance logs showed a Supplemental Type Certificate (STC) for a "nose bowl modification" (STC SA7589SW) that was installed at the same time as the Lycoming IO-360 engine was installed per its STC in June of 1997.



Figure 4. Missing upper cowl fairing (courtesy of FAA).

Accident site photos also showed that the lower engine cowl had a damaged aftermarket fiberglass fairing present also. See Figure 5.

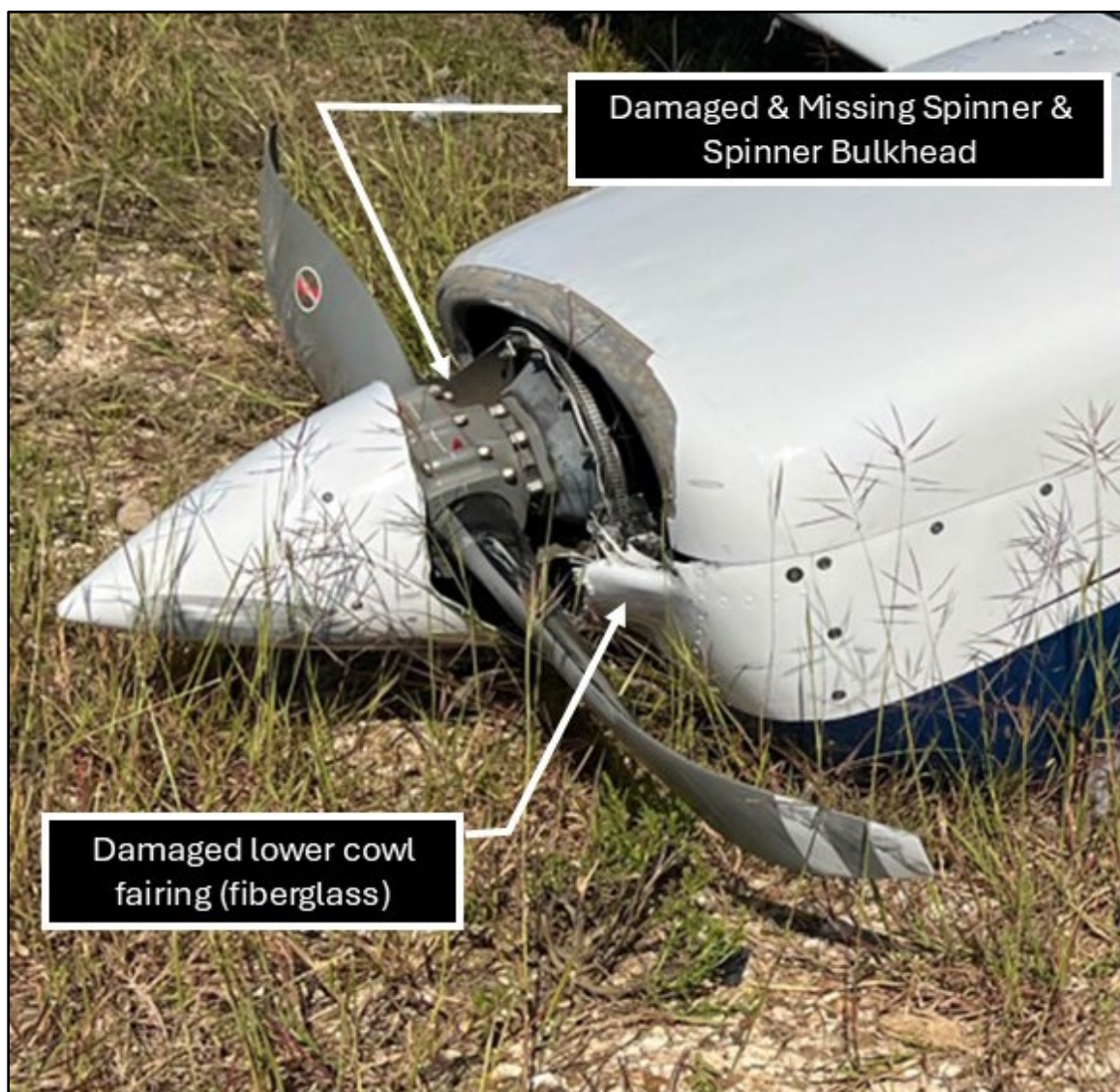


Figure 5. Damaged lower cowl leading edge.

Additionally, the left front corner of the engine compartment had a vented baffle installed that is similar to one sold by Aero Resources Inc. on their website (part number: 600103-AV), however no record of installation was found during the review of the provided maintenance records. See Figures 6-9.



Figure 6. Left Vented Baffle (photo courtesy of FAA).



Figure 7. Left Vented Baffle top view after removal from airplane.



Figure 8. Left Vented Baffle bottom view after removal from airplane.

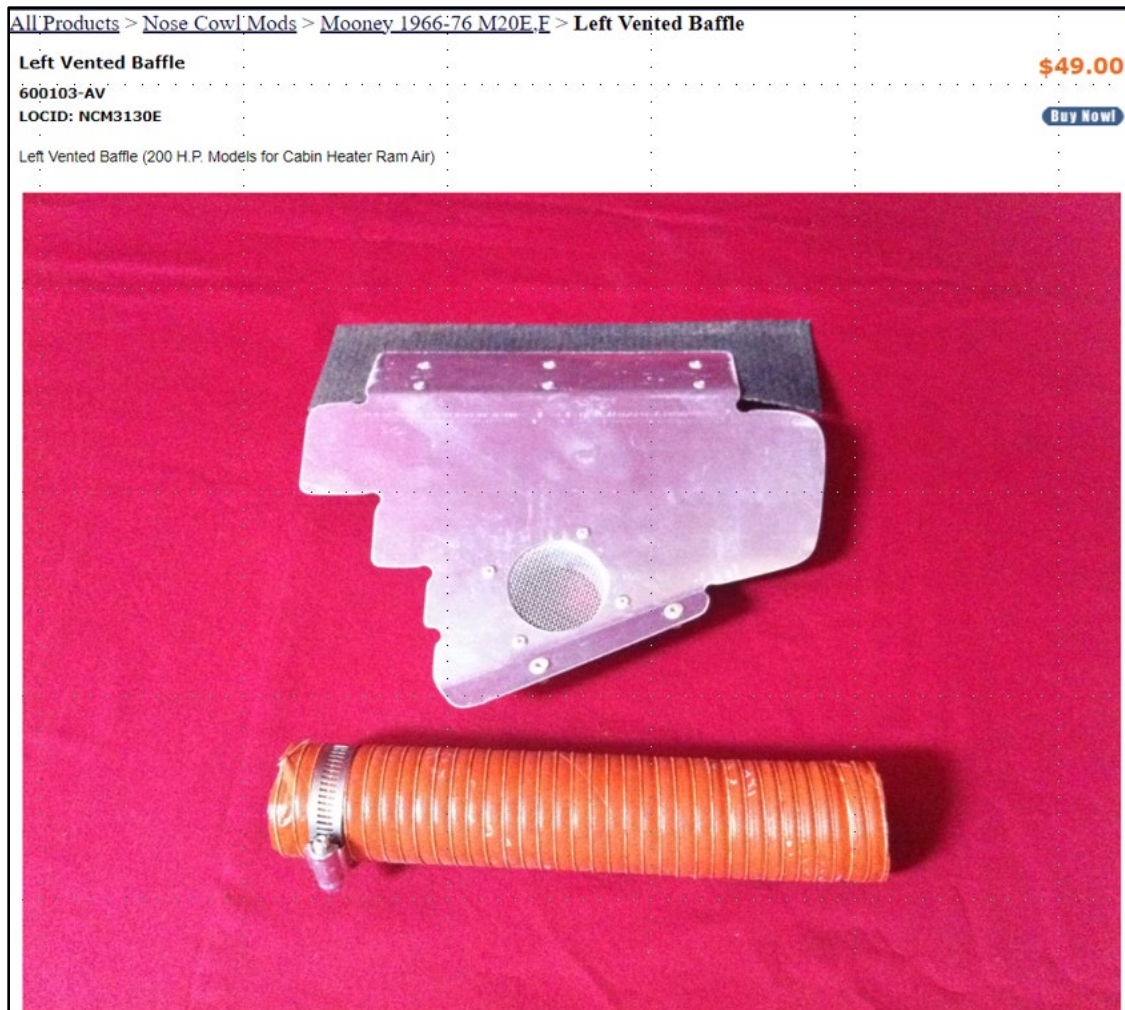


Figure 9. Left Vented Baffle, part number 600103-AV, Air Resources Inc. website.

3.0 Engine Examination

The accident airplane was equipped with a Lycoming IO-360-A3R6 (200 hp) engine that was installed in 1997 and had accumulated 854 hours since new. It's last annual inspection was on May 17, 2024, and had accumulated 98 hours of use since inspection. No notable maintenance entries were found when the engine and airframe logs were reviewed.



Figure 10. Engine data plate.

Prior to Engine Test Run

To facilitate an engine test run the upper and lower cowlings were removed. The induction air filter was part of the lower cowl assembly. No anomalies were noted with the air filtration and engine air inlet components.

The engine mount weldment was damaged and the engine was angled downward preventing running the engine with the cowls and air filtration system in place.

The propeller was damaged and was replaced with one suitable for an engine run. The damaged spinner and spinner bulkhead were removed.

Drivetrain continuity was observed by moving the propeller by hand and observing the vacuum pump driveshaft rotate on the accessory case.

Throttle and Mixture controls were actuated in the cockpit and stop-to-stop movement was noted at their respective actuation arms at the engine, albeit the mixture lever operated stiffly.

The bottom spark plugs were removed and when visually examined exhibited normal wear.

The cylinders were examined using a lighted borescope. No anomalies were noted on the valves, pistons, or cylinder walls.

There was 6 quarts of new looking oil present on the dipstick and no visual indication of metal or other anomalies present. No oil was added for the engine test run.

The tailpipe on the exhaust system was crushed during the accident and had to be cut off. The end of the remaining pipe was forced open to allow proper operation during the test run.

Damage was noted in the fuel lines from the left fuel tank to the fuel selector. The finger screen was removed from the fuel line pickup location in the right wing and utilized to provide fuel during the test run.

The accident airplane was strapped to a gooseneck trailer for its test run and the trailer was secured so it couldn't move.



Figure 11. Accident airplane with engine running on a trailer.

Test Run #1

The first engine test run was conducted at low rpm, estimated to be about 800-900 rpm for about two minutes before the engine was shut down and leak checked; no leaks were present. The boost pump operated normally, and the propeller cycled without any anomalies noted.

Test Run #2

The second engine test run was conducted at a mid-power setting, estimated to be around 1,400 rpm. The magnetos were run separately and together, and no anomalies were noted. The boost pump operated normally, and the propeller cycled without any anomalies noted.

Test Run #3

Before the third test run was conducted a JPI 930 was installed on the JPI 900 wire harness in the airplane in order to obtain basic engine readings. The wire diagrams showed the wiring was common to both and that one unit simply had more inputs than the other. The engine was run at 1,800 rpm for about 4 minutes. The left magneto dropped 50 rpm when checked and the right magneto 40 rpm. Manifold pressure was about 18 inches. All other

displayed parameters were normal. The boost pump operated normally, and the propeller cycled without any anomalies noted.

4.0 Propeller Examination

During the airframe examination a portion of the spinner was noted to be missing and not present in the recovered wreckage. The damaged spinner was removed from the spinner bulkhead. On the inside of the spinner, the bulkhead that fits over the piston dome on the propeller hub was offset from its normal position to one side and showed rotational damage consistent with having occurred while engine power was present. See Figure 12.



Figure 12. Left photo diagram shows rotational damage to interior bulkhead of the spinner. Photo on right shows the remaining portions of the spinner and spinner bulkhead.¹

A portion of the spinner bulkhead was missing and not present in the recovered wreckage. The exterior of the remaining spinner bulkhead on the airplane had missing paint and scratches in the metal present around its circumference consistent with chafing or hard contact while rotating. See Figures 12-13.

¹ The spinner bulkhead attaches to the propeller hub and acts as a mounting point for the spinner.

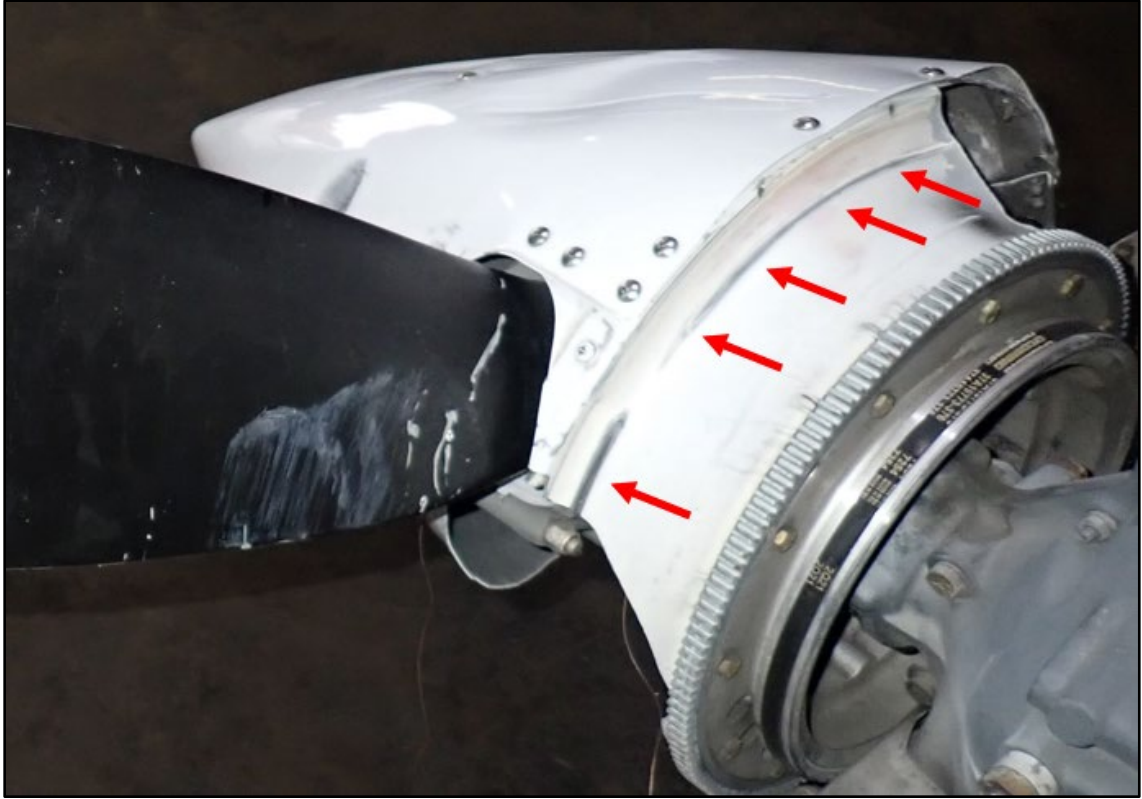


Figure 13. Contact marks on the remaining portion of the spinner bulkhead.

The exterior of the spinner had two black paint transfer marks that were similar to the color of the fence the airplane went through. The two black marks were horizontal down the longitudinal axis of the spinner. Additionally, the spinner had an area of scratches that penetrated the paint and scratched the metal that were at a 30-45 degree angle. See Figure 14.



Figure 14. Spinner exterior.

The propeller blades were arbitrarily labeled Blade A & Blade B.

The blade back on Blade A (cambered side) showed paint transfer consistent with the color of the wood fence the plane went through and other paint marring. The blade face on Blade A had scratches, gouges, and white paint transfers near the blade root and paint transfer was also present mid-span. Blade A was bent aft near the outboard end. See Figures 15-17.



Figure 15. Blade A - blade back.



Figure 16. Blade A - blade face.



Figure 17. Blade A bent aft near outboard end of blade.

The blade back of Blade B (cambered side) had paint marring present. Blade B's blade face had had paint transfer, scratches, gouges near the blade root. Blade B was bent aft at its mid-span. See Figures 18-19.



Figure 18. Blade B - blade back.



Figure 19. Blade B - blade face. Blade is bent aft at mid-span.

Submitted by:

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Aviation Accident Investigator