Aviation Investigation Final Report

Location:	Cuba, Kentucky	**Accident Number:**	ERA24FA304
Date & Time:	July 13, 2024, 15:27 Local	**Registration:**	N2003Y
Aircraft:	Air Tractor AT802	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The agricultural application airplane was loaded with agriculture chemicals and fueled at the owner's operating base about 25 nautical miles away the accident site. Flight track data showed that upon arrival at the field the pilot began his aerial application to the western section of the field, from south to north. The pilot made a subsequent approach from north to south to spray the east side of the field, then made a right turn for another south to north pass on the west side. After the pass, the pilot initiated a climbing right turn, during which he leveled the wings and continued east-southeast in a relatively straight heading but descending. The airplane impacted mature corn and terrain in a slight right bank, but in a nearly flat attitude. The wings and fuselage impacted the ground in a nearly horizontal attitude with a forward speed estimated to be about 87 kts. The airplane skidded across the terrain, an asphalt road, impacted a ditch, then skidded across a bean field before coming to rest about 220 ft from the initial point of impact.

Examination of the airframe, engine and components revealed no preimpact anomalies that would have prevented normal operation or airplane performance. Review of maintenance records did not reveal any systemic or repetitive safety of flight issues. The lack of any turbine, compressor blade, vane, or shroud rubbing damage along with the damage observed to each of the five of the propeller blades indicated the engine was likely at reduced power at the time of impact, but no other anomalies were observed.

It could not be determined if the pilot reduced the engine power manually or if he became distracted and lost situational awareness during the climb and turn. Medical and toxicological findings did not suggest an incapacitating event. Based on all available evidence, the pilot, during low altitude maneuvering typical for aerial application flights, lost control of the airplane and impacted terrain for unknown reasons.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Impact with terrain for reasons that could not be determined.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Maneuvering-low-alt flying	Unknown or undetermined (Defining event)

On July 13, 2024, at 1527 central daylight time, an Air Tractor AT-802A, N2003Y, was substantially damaged when it was involved in an accident near Cuba, Kentucky. The airline transport pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 137 aerial application flight.

Before the accident flight, the airplane was loaded with agriculture chemicals and fueled at the owner's operating base in Murray, Kentucky, about 25 miles east of the accident site. Aerial application data was obtained from the company's cloud-based service that used the AgPilotX application.

The flight track data showed that the pilot approached the property from the southeast and began spraying the western section of the field (A side). The data did not include an altitude parameter; however, the subsequent increases and decreases in ground speed data implied a climb or a descent without absolute altitudes. The pilot's first and brief application pass on the field was conducted at 169 kts (all speeds reference the airplane's ground speed) on a heading of 360°. After that pass, he made a climbing right turn followed by an approach to the eastern side of the field (C side), which he overflew at 150 kts on a heading of about 180°.

After the second application, the pilot made a climbing right turn at 104 kts and then established an approach for another application on the A side of the field, on a heading of 360° and 146 kts. According to the operator, the first spray must have been a partial spray based on the second pass in the same location to re-apply product. The owner stated that the next pass was likely going to be the center of the property (for the "B" pass).

After the second A-side application, the pilot made a right turn through about a 100° heading and 86 kts then leveled out; the airplane remained on an easterly heading at a stable 90 kts where it flew into the mature corn, then impacted terrain in a flat, right-wing-low attitude and continued its forward trajectory along the ground, where it traveled over an embankment

before skidding across a 2-lane asphalt road. It impacted an irrigation ditch, then skidded through a bean field before coming to rest upright.

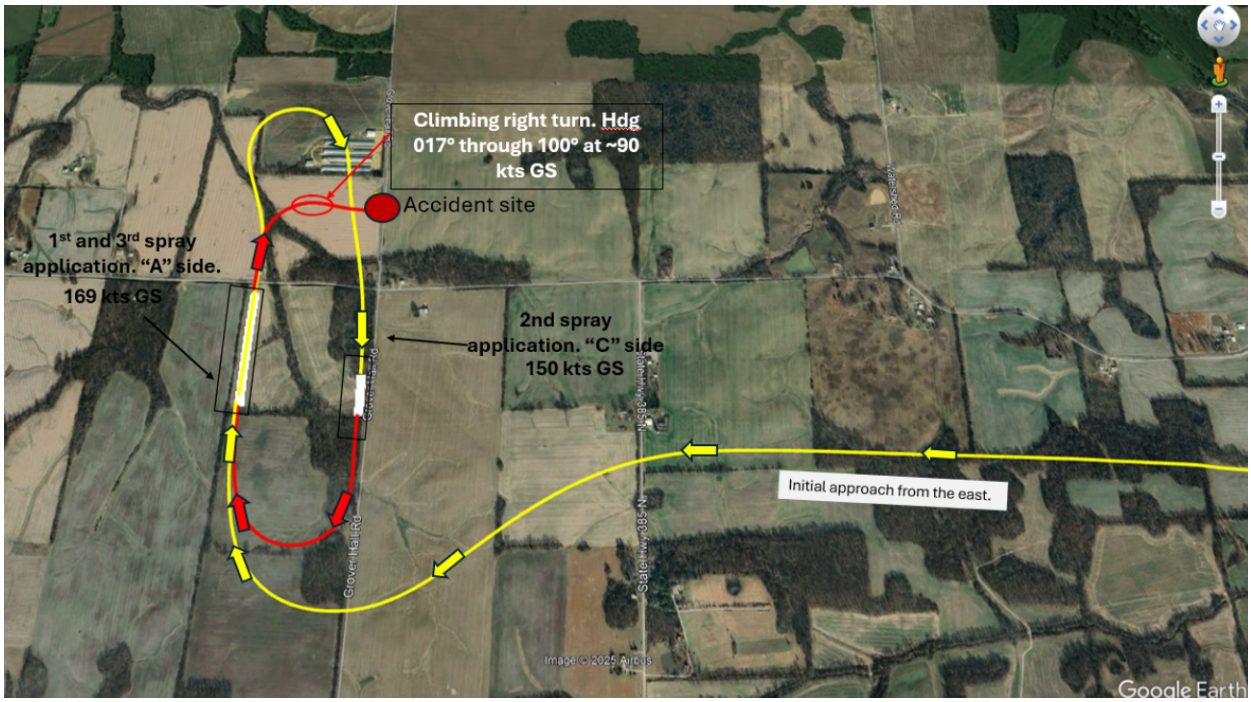

Figure 1. Flight track overview showing spray applications and accident location.

The wreckage path was about 220 ft in length and oriented on a 124° heading at an elevation of 528 ft.

According to the airplane flight manual, with a gross weight of 12,500 lbs, the stall speed with flaps up and an angle of bank at 0°, 15°, 30°, and 45° would be 76 kts, 79 kts, 83 kts, and 92 kts, respectively.

Near the time of the accident, winds were light and variable with no gusts present, so the groundspeed would be indicative of airspeed. The lowest groundspeed achieved during the entire application flight was 86 kts, when the pilot appeared to be wings level after the final turn.

According to the reported weather conditions and astronomical data, near the accident site there were few clouds reported at 4,600 ft. Sunrise was at 0546, with its culmination at 1300, and sunset was at 2014. The sun was at an altitude of 54.97° with an azimuth of 255.05°, placing the sun high above and off the left side of the airplane and then behind the airplane during the final climbing turn.

All sections and components of the airplane were located in the immediate vicinity of the accident site, which also contained a strong odor consistent with jet fuel. Postaccident examination of the airplane at the accident site revealed chemical spray application nozzles and plumbing at the initial impact site. The landing gear was sheared off and scrapes and

paint transfer marks were observed on the asphalt in the direction of travel. The corn was cut from top to bottom at a 20° angle progressively lower towards terrain. There was an impact footprint in the shape of the airplane's fuselage and wings in the flattened corn and terrain. At the start of the impact site near the undamaged corn, the corn on the right side of the direction of travel was cut several inches lower than the corn on the left side.

The airplane's 5-blade metal propeller assembly separated at the reduction gear unit and was located on an embankment about 60 ft from the main wreckage. The blades exhibited chordwise/rotational abrasion and exhibited varying degrees of damage, with two of the blades exhibiting wave bending throughout the entire span. The remaining three blades were bent uniformly aft mid-span about 80° to 90° degrees. Four of the blades were at their respective pitch stops. There was no indication that the blades were feathered at the time of impact. There was no damage indicative of a wire strike, and no wires were damaged on site or in the surrounding area. There was no damage to indicate the propellers were feathered or in a high-power setting before impact.

The horizontal stabilizer and elevators separated during the accident sequence, but the vertical stabilizer, rudder, ailerons, and wings all remained attached to the airframe at their respective locations. Continuity was established on all flight control surfaces through the cockpit controls, pushrods, and cables.

The cockpit instrument panel was displaced aft and upward; the floorboards and rudder pedals were displaced upward. The pilot's seat back remained attached to the cockpit bulkhead, but the horizontal seat and frame were displaced downward. The 5-point harness contained airbags, which were deployed.

The flap control was in the up position. The throttle was 2 inches above idle; the propeller lever was aft but forward of the feathered position and the trim was set in the takeoff position; however, emergency services personnel had entered the cockpit to conduct lifesaving efforts and extraction of the pilot.

The engine was displaced upward but remained attached to its mounts and the airframe. The compressor turbine disk was visually examined via a borescope and no anomalies were observed. The combustion chamber and exit ducts (large and small) were in good condition. The power turbine vanes and disc were undamaged and did not exhibit any rubbing on the blade tips or the shroud. Debris consistent with soil was found ingested in the bottom of the shroud. The engine could be partially rotated using the spline drive at the accessory section of the engine. The engine was separated at the hot section for further examination. The engine spun freely up to the combustion chamber, but the front of the engine would not rotate due to deeply impacted organic debris and fiberglass that was packed into the forward reduction gearbox teeth; however, the gearbox looked normal and there were no gearbox anomalies observed visually or through a borescope examination.

The fuel control unit and fuel pump were sent to engine manufacturer for examination and testing. Both units were free of anomalies that would have contributed to a loss of power or performance and the subsequent bench test yielded operating limitations that would not cause a loss of pre-impact power or performance. There were no indications of any pre-impact mechanical anomalies to any of the engine components or accessories that would have precluded normal engine operation.

A review of the airplane's maintenance records going back 48 months revealed that the most recent airframe annual inspection occurred on May 25, 2024, at 5,948.9 hours total time. All airworthiness directives (AD) were documented as being complied with and revealed normal inspections, maintenance, and corrective action.

The most recent engine inspection (hot section) occurred on December 5, 2023, at 5,837 hours engine total time. The compressor turbine shroud segments and the outer combustion liner that contained out of limits cracks and heat signatures were removed and replaced. No other defects were noted, and the hot section of the engine was signed off as airworthy.

The most recent 100-hour inspection of the engine's power section was accomplished on August 30, 2023, at 5,760.1 hours total engine time. The inspections and routine items were normal.

There were no logbook entries that suggested an airframe, engine, or component failure or anomaly.

An autopsy of the pilot was performed by the Office of the State Medical Examiner, Commonwealth of Kentucky, Louisville. The pilot's cause of death was multiple blunt force injuries and manner of death was plane crash.

Toxicology testing performed by the FAA's Forensic Services Laboratory in Oklahoma City on the pilot's blood and vitreous fluid did not detect any substance that would be considered impairing; it was negative for volatiles, carboxyhemoglobin, drugs of abuse, and elevated glucose levels.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	41,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Single
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	March 11, 2024
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 10, 2023
Flight Time:	(Estimated) 4500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Air Tractor	**Registration:**	N2003Y
Model/Series:	AT802 A	**Aircraft Category:**	Airplane
Year of Manufacture:	2011	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	802A-0428
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	May 5, 2024 Annual	**Certified Max Gross Wt.:**	16000 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo prop
Airframe Total Time:	5949 Hrs as of last inspection	**Engine Manufacturer:**	P&W CANADA
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	PT6A-65AG
Registered Owner:	OOPS LLC	**Rated Power:**	1295 Horsepower
Operator:	OOPS LLC	**Operating Certificate(s) Held:**	Agricultural aircraft (137)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CEY,578 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	15:35 Local	**Direction from Accident Site:**	72°
Lowest Cloud Condition:	Few / 4600 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/ None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	33°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Murray, KY	**Type of Flight Plan Filed:**	None
Destination:	Murray, KY	**Type of Clearance:**	None
Departure Time:	14:50 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	36.584728,-88.687044

Administrative Information

Investigator In Charge (IIC):	Mccarter, Lawrence
Additional Participating Persons:	Nicholas Anderson; FAA/FSDO; Louisville, KY Beverly Harvey; Transportation Safety Board of Canada; OF Frederic Cardinal; Pratt & Whitney Canada; Quebec , OF
Original Publish Date:	September 11, 2025
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=194684