



Aviation Investigation Final Report

Location:	Portland, Arkansas	Accident Number:	ERA22FA338
Date & Time:	July 26, 2022, 17:01 Local	Registration:	N749LA (A1); N214RL (A2)
Aircraft:	Air Tractor Inc. AT-802A (A1); Air Tractor Inc. AT-802 (A2)	Aircraft Damage:	Destroyed (A1); Substantial (A2)
Defining Event:	Midair collision	Injuries:	1 Fatal (A1); 1 Serious (A2)
Flight Conducted Under:	Part 137: Agricultural (A1); Part 137: Agricultural (A2)		

Analysis

The pilot of an Air Tractor AT-802A was applying chemical on the first pass over a cotton field in a southerly direction. Simultaneously, an AT-802 was ferrying in a southeasterly direction, between 400 and 500 ft above the ground. As the AT-802A pilot completed his pass and climbed to reverse the direction of turn, his airplane collided with the ferrying AT-802 passing overhead. The AT-802A continued in a left turn and crashed into a soybean field, killing the pilot. The AT-802 began to spin and descended vertically to the ground; its pilot was seriously injured.

The surviving pilot of the AT-802 later reported that he was unaware that the other pilot was operating in the area. The two pilots were not communicating by radio. Although there may have been some sun glare that could have affected the AT-802A pilot's visibility, the investigation revealed that both pilots were in positions to see the other airplane in ample time to avoid a collision. An examination of both wreckages did not reveal evidence of a preexisting malfunction or failure that would have prevented normal operation of the either airplane.

Although the Professional Aerial Applicator's Support System (PAASS) slogan, "Ferry above five (hundred) and stay alive" was known to the AT-802 pilot and was commonly known in the aerial application industry, this investigation revealed that both pilots consistently climbed above 500 ft agl during their reverse-direction turns while applying chemical. If the pilot of the AT-802 had flown his airplane at or above 1,000 ft agl, the collision would likely have been avoided.

Probable Cause and Findings

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

The failure of both pilots to see and avoid the other airplane during aerial application and ferry operations.

Findings

Personnel issues (A1)	Monitoring other aircraft - Pilot
Personnel issues (A2)	Monitoring other aircraft - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying (A1)	Midair collision (Defining event)
Uncontrolled descent (A1)	Collision with terr/obj (non-CFIT)
Enroute (A2)	Midair collision
Uncontrolled descent (A2)	Collision with terr/obj (non-CFIT)

On July 26, 2022, about 1701 central daylight time, an Air Tractor AT-802A airplane, N749LA, and an Air Tractor AT-802 airplane, N214RL, were involved in an accident near Portland, Arkansas. The AT-802A was destroyed and the AT-802 was substantially damaged. The pilot of the AT-802A was fatally injured and the pilot of the AT-802 was seriously injured. Both aircraft were operated as Title 14 *Code of Federal Regulations* Part 137 aerial application flights.

According to a witness who was familiar with both airplanes and pilots, the AT-802 was transiting the area at low altitude in a southeasterly direction. The area consisted mainly of mature soybean and cotton fields. Concurrently, the AT-802A pilot was applying chemical to a soybean field in a southerly direction. The pilot of the AT-802A pitched up at the end of his application run and collided with the AT-802 as it was flying overhead. The AT-802A continued to the northeast for about ¼ mile and crashed in a soybean field. The AT-802 began to spin vertically downward and impacted a cotton field underneath the point of collision.

First responders extricated the pilot of the AT-802 and extinguished a postaccident fire in the engine compartment. He was airlifted to a hospital for treatment of his injuries.

The pilot of the AT-802 was interviewed by the National Transportation Safety Board (NTSB) investigator-in-charge after the accident and the pilot reported that he had finished spraying soybeans on a friend’s farm and was ferrying the airplane back to his home airstrip. He was on a southeasterly heading and his hopper was empty. Suddenly, he heard and felt an impact. He recalled seeing the red striping on the other airplane and knew that it was the AT-802A. His airplane immediately started to spin and it spun 3-4 times before hitting the ground. The descent was straight down with no lateral movement. He believed that the forward windscreen blew out during the collision because the breeze was coming through the open cockpit and it was very quiet. He did not recall hearing the engine running after the collision with the AT-802A.

The pilot of the AT-802 thought that he was about 500-600 ft above ground level (agl) when the collision occurred. He was familiar with the phrase, “Ferry at 5, stay alive.” He was not

communicating on his radio at the time and was unaware that the pilot of the AT-802A, who he had been friends with for years, was working in the area. He also reported the larger, turbine-powered airplanes normally top out at 600-700 ft when making a reverse-direction turn, especially on cool days. He stated that there are a lot of blind spots on the AT-802 due to its large, low-mounted wing.

The AT-802A was equipped with a SATLOC G4 aerial guidance system and the AT-802 was equipped with an AgPilotX GPS system. The nonvolatile memory units were sent to the NTSB Vehicle Recorders Laboratory for download and analysis of the data.

The data revealed that the AT-802A departed from runway 1 at Lake Village Municipal Airport (M32), Lake Village, Arkansas, about 1655. The AT-802A made a left, climbing turn to a southwesterly heading. About 1700:35, at 289 ft (all altitudes for both airplanes are in GPS altitude), the AT-802A made a left turn to a southerly heading and descended to below 100 ft, presumably to apply chemical. Concurrently, the AT-802 was positioned to the west of the AT-802A on a southeasterly heading. The altitude of the AT-802 varied between 407 and 465 ft during the 1 minute before the collision.

Based on the relative positions of both airplanes, as the AT-802A was on its southwesterly heading, the AT-802 would have been located at the pilot's approximate 1 o'clock position. Simultaneously, about 45 seconds before the collision, as the AT-802 was flying on the southeasterly heading, the AT-802A would have been positioned at the pilot's approximate 10 o'clock position. Just before the collision (1701:07), the AT-802 indicated 477 ft altitude and about 139 knots ground speed, while the AT-802A indicated 341 ft altitude and 110 knots ground speed. The data indicated that the AT-802A was in a climbing, left turn at the time of impact, while the AT-802 was flying relatively straight and level (see figure 1).



Figure 1: Track of the AT-802 (214RL, Cyan) and the AT-802A (N749LA, Yellow). Approximate location of collision is where the lines converged.

Pilot Information (A1)

Certificate:	Commercial	Age:	54,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	Center
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	January 10, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 9, 2022
Flight Time:	(Estimated) 17950 hours (Total, all aircraft), 2350 hours (Total, this make and model)		

Pilot Information (A2)

Certificate:	Commercial	Age:	45, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	February 28, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 31, 2021
Flight Time:	17606 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information (A1)

Aircraft Make:	Air Tractor Inc.	Registration:	N749LA
Model/Series:	AT-802A	Aircraft Category:	Airplane
Year of Manufacture:	2021	Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	802A-0932
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	April 1, 2022 100 hour	Certified Max Gross Wt.:	16000 lbs
Time Since Last Inspection:	143 Hrs	Engines:	1 Turbo prop
Airframe Total Time:	237 Hrs as of last inspection	Engine Manufacturer:	P&W CANADA
ELT:		Engine Model/Series:	PT6A-65AG
Registered Owner:	WESTWIND AIR LLC	Rated Power:	1300 Horsepower
Operator:	WESTWIND AIR LLC	Operating Certificate(s) Held:	Agricultural aircraft (137)

Aircraft and Owner/Operator Information (A2)

Aircraft Make:	Air Tractor Inc.	Registration:	N214RL
Model/Series:	AT-802	Aircraft Category:	Airplane
Year of Manufacture:	2021	Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	802-0896
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	July 21, 2022 100 hour	Certified Max Gross Wt.:	16000 lbs
Time Since Last Inspection:		Engines:	1 Turbo prop
Airframe Total Time:	1029 Hrs as of last inspection	Engine Manufacturer:	P&W CANADA
ELT:		Engine Model/Series:	PT6A-65AG
Registered Owner:	LASSCO LLC	Rated Power:	1300 Horsepower
Operator:	LASSCO LLC	Operating Certificate(s) Held:	Agricultural aircraft (137)

An examination of the AT-802's planform revealed that, with the low-wing design, downward and forward visibility was most restricted at the AT-802 pilot's 9:00 (o'clock) to 9:30 and 2:30 to 3:00 positions. Upward visibility for the AT-802A was restricted by the cockpit window and door frames and the cockpit roof.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPBF, 204 ft msl	Distance from Accident Site:	62 Nautical Miles
Observation Time:	16:53 Local	Direction from Accident Site:	338°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	29.94 inches Hg	Temperature/Dew Point:	37°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lake Village, AR (M32) (A1); Portland, AR (PVT) (A2)	Type of Flight Plan Filed:	None (A1); None (A2)
Destination:	Lake Village, AR (M32) (A1); Portland, AR (PVT) (A2)	Type of Clearance:	None (A1); None (A2)
Departure Time:	16:55 Local (A1); 16:00 Local (A2)	Type of Airspace:	Class G (A1); Class G (A2)

The sun position data at 1700 for Portland, Arkansas included an azimuth of 269.51° with an altitude of 34.67° above the horizon. The sky was clear at the time of the accident.

Wreckage and Impact Information (A1)

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	33.22667,-91.47111(est)

Wreckage and Impact Information (A2)

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	33.22667,-91.47111(est)

Both airplanes crashed into fields of actively growing crops. The wreckage of the AT-802 came to rest upright in a cotton field consistent with a near-vertical descent path to the ground. The wreckage of the AT-802A was highly fragmented and the main wreckage came to rest in a soybean field. The main wreckagees were about 0.25 nautical mile apart, with the AT-802 located southwest of the AT-802A.

AT-802 Wreckage Examination

An examination of the AT-802 wreckage revealed impact signatures to the leading edge of the left wing and forward wind screen, consistent with contact with the AT-802A. The wind screen and its frame separated in flight and were found about 50 ft southeast of the main wreckage. A large section of the left wing's outboard leading edge was separated and missing. Red paint transfer marks matching the paint scheme of the AT-802A were found on the remaining left wing structure. The engine remained attached to the engine mount and the mount was attached to the firewall. The forward area of the engine and the surrounding cowling showed evidence of postaccident fire. An external examination of the engine revealed no evidence of an in-flight case breach or oil leak.

The five-bladed propeller was separated from the engine consistent with ground impact forces; it was located immediately forward of the engine. The blades exhibited "s" bending, twisting, and chordwise scratching.

The on-scene examination of the AT-802 did not reveal evidence of a preexisting malfunction or failure that would have prevented normal operation of the airplane.

AT-802A Wreckage Examination

The wreckage of the AT-802A was highly fragmented and spread over a path about 300 ft in length and about 75 ft wide. There was no fire observed in the AT-802A wreckage.

Due to the general fragmentation of the wreckage and the similar paint schemes of both aircraft, no transfer marks were found suggesting in-flight contact with the AT-802. Both

aircraft were painted yellow; however, the AT-802A had red and black paint stripes, while the AT-802 had blue and black paint stripes.

The fuselage came to rest on its right side on a northeasterly heading. The fuselage separated from the wing box and came to rest adjacent to the wing. The left and right wings remained attached at the through spar as a single unit. The engine and engine mount separated from the fuselage and were found about 15 ft northeast of the cockpit area. The forward section of the engine case was fractured and loose in the debris field. An external examination of the engine revealed no evidence of an in-flight case breach or oil leak. The five-bladed propeller was separated from the engine consistent with ground impact forces at the second stage reduction gear; it was found adjacent to the right-wing leading edge. The blades exhibited “s” bending, twisting, and chordwise scratching. One of the blades was separated and was buried in the soil near the point of initial ground impact.

The on-scene examination of the AT-802A did not reveal evidence of a preexisting malfunction or failure that would have prevented normal operation of the airplane.

Medical and Pathological Information

According to autopsy an report from the State Crime Laboratory, Little Rock, Arkansas, the cause of death of the pilot of the AT-802A was multiple blunt force injuries and the manner of death was accident.

Additional Information

On August 8, 2022, the Professional Aerial Applicator’s Support System (PAASS) published a safety bulletin on avoiding mid-air collisions. The bulletin reminded pilots of the PAASS slogan, “Ferry above five (hundred) and stay alive.” The bulletin also stated that ferrying above 500 ft agl greatly increases the chances of avoiding a collision with another agricultural aircraft making an application.

According to the SATLOC G4 data, the pilot of the AT-802A applied chemical to three other fields before the accident. The application patterns were examined to determine maximum altitude gained during the reverse-direction turns. The data revealed that the AT-802A routinely exceeded 500 ft GPS altitude, and consistently reached maximum altitudes between 600 and 700 ft agl.

According to the AgPilotX data, the pilot of the AT-802 applied chemical to a field before the accident. The application patterns were examined to determine maximum altitude gained during the reverse-direction turns. The data revealed that the AT-802 routinely exceeded 500 ft GPS altitude, and consistently reached maximum altitudes between 700 and 850 ft agl.

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Daniel Dunn; FAA/FSDO; Little Rock, AR
Original Publish Date:	March 20, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=105589

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