Aviation Investigation Final Report

Location:	Enid, Oklahoma	**Accident Number:**	CEN18FA232
Date & Time:	June 19, 2018, 07:15 Local	**Registration:**	N2063B
Aircraft:	AIR TRACTOR INC AT 502B	**Aircraft Damage:**	Destroyed
Defining Event:	Low altitude operation/event	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The agricultural airplane was dispatched to apply fertilizer to a nearby field that he had fertilized the previous day. One witness observed the airplane make 8-10 passes over the field then saw the airplane fly low, pop up, and make a turn. According to the witness, the airplane ran into the guy wire of a tower and then the airplane "twisted violently…and dropped straight down." The 405-ft-tall tower was properly painted and lighted and was marked on the sectional chart. Examination of the accident site revealed that the airplane struck the top portion of the tower and impacted the ground in a near-vertical attitude.

Detailed examination of the airplane and engine did not reveal any pre-impact mechanical anomalies that would preclude normal operation. Toxicology testing detected doxylamine, a potentially impairing sedating antihistamine, in the pilot's blood and urine. While the detected level was within the normally sedating range, because doxylamine undergoes postmortem redistribution, levels in postmortem blood may be elevated above antemortem levels. Therefore, whether the pilot was impaired by the sedating effects of doxylamine at the time of the accident could not be determined. Additionally, the toxicology testing identified an antidepressant, citalopram, in the tested samples. Citalopram itself is not known to cause significant impairment but major depression can significantly affect judgment, response time, and executive functioning. However, because the pilot's health care prescriber could not be identified, the extent of any potential depressive symptoms at the time of the accident could not be determined.

Probable Cause and Findings

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

The pilot's failure to see and avoid a known obstacle (communications tower) during agricultural spraying operations.

Findings

Personnel issues	Identification/recognition - Pilot
Environmental issues	Tower/antenna (incl guy wires) - Response/compensation

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On June 19, 2018, about 0715 central daylight time, an Air Tractor 502B, N2063B, was destroyed when it was involved in an accident near Enid, Oklahoma. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 137 agricultural flight.

According to the operator, the airplane was dispatched to apply fertilizer to a nearby field. The pilot had also applied fertilizer to that field the previous day. Preflight operations were normal and company personnel stated that the pilot was in good spirits before the flight. A witness observed the airplane make 8-10 passes over the field then saw the airplane fly low, pop up, and make a turn. According to the witness, the airplane ran into the guy wire of a tower and then "twisted violently… and dropped straight down."

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	52,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Center
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	January 10, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 31, 2016
Flight Time:	(Estimated) 12500 hours (Total, all aircraft), 3000 hours (Total, this make and model), 100 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AIR TRACTOR INC	**Registration:**	N2063B
Model/Series:	AT 502B B	**Aircraft Category:**	Airplane
Year of Manufacture:	2012	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	502B-2800
Landing Gear Type:	Tricycle	**Seats:**	1
Date/Type of Last Inspection:	January 17, 2018 Annual	**Certified Max Gross Wt.:**	8000 lbs
Time Since Last Inspection:	300 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	3044 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Not installed	**Engine Model/Series:**	PT6-34AG
Registered Owner:		**Rated Power:**	750 Horsepower
Operator:		**Operating Certificate(s) Held:**	Agricultural aircraft (137)

Examination of maintenance logbooks for the airplane did not reveal any anomalies or uncorrected defects.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	END	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	06:56 Local	**Direction from Accident Site:**	10°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	23°C / 21°C
Precipitation and Obscuration:			
Departure Point:	Pond Creek, OK (2K1)	**Type of Flight Plan Filed:**	None
Destination:	Pond Creek, OK (2K1)	**Type of Clearance:**	None
Departure Time:	06:45 Local	**Type of Airspace:**	Class E

One of the witnesses, who was driving in the vicinity, reported that he saw the airplane flying in the area, and that the weather conditions were clear.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	36.472499,-97.940277

The aircraft wreckage was found in an open flat wheat field north of Enid, Oklahoma. It was located about 470 ft north of a 405-ft-tall transmission tower. According to the Federal Aviation Administration (FAA) inspector who initially responded to the accident scene, the tower company identified that the top 50 ft of the tower was missing. The tower remained standing but was later taken down by the tower company on the evening of June 19, 2018. About 50 ft of dark orange tower structure and two approximately 5/8-inch diameter guy wires were intertwined with wreckage.

The wreckage and ground scars were consistent with a nose-down vertical impact. There was no horizontal ground scarring or significant debris trail leading to the wreckage. Most of the wreckage was found collocated with the fuselage. The engine was found about 325 ft northeast of the fuselage and had separated at the "C" flange. The propeller blades were found in many pieces located throughout the debris field. Some of the propeller blades exhibited evidence of a wire strike and orange paint transfer.

Examination of the airplane wreckage at the accident site did not reveal any pre-impact mechanical anomalies. Flight control continuity was confirmed from the cockpit to all flight control surfaces. Thermal marks, circular scoring, and fractured turbine blades suggested that the engine was operating under some degree of power at the time of impact.

Additional Information

The 405-ft tall communications tower that the airplane collided with was constructed in 1989 and was supported by unmarked steel cables. The tower location was published on the Dallas-Fort Worth area visual flight rules sectional chart current at the time of the accident and was painted and lighted in accordance with FAA Circular 70/7460-1K, titled "Obstruction Marking and Lighting." The tower is lit 24-hrs a day and painted with FAA specification paint in alternating bands.

Medical and Pathological Information

The Board of Medicolegal Investigations, Office of the Chief Medical Examiner, Oklahoma City, Oklahoma, performed an autopsy of the pilot. The pilot's cause of death was multiple blunt force injuries.

Toxicology testing was performed at the FAA Forensic Sciences Laboratory and detected 0.149 µg/ml doxylamine in the pilot's blood specimens. It was also detected in the pilot's urine. Doxylamine is a sedating antihistamine available over the counter in cold and allergy products and is also the active ingredient in some over-the-counter sleep aids. Citalopram, a prescription antidepressant, and its metabolite, desmethylcitalopram, were detected in the pilot's blood and urine.

Preventing Similar Accidents

Preventing Obstacle Collisions in Agricultural Operations

Accidents involving collisions with obstacles, including poles, wires, guy wires, meteorological evaluation towers (MET), or trees, are among the most common types of agricultural aircraft accidents. Some collisions involved obstacles that the pilots did not see (even during survey flights) but others involved obstacles that were known to the pilot and/or had characteristics that would make them visibly conspicuous.

Agricultural pilots should do the following:

- Maintain a quick-reference document (paper or electronic) at the operations base that contains field maps, charts, photographs, and details of all known obstacles.
- Frequently review current aeronautical charts for information about obstacles.
- Before leaving the ground, spend time becoming familiar with all available information about the target field and programming navigation equipment. Such preflight action can help reduce the potential for confusion or distraction in flight.
- Conduct aerial surveys of the target field but do not rely solely on an aerial survey to identify potential obstacles.
- Conduct regular ground surveys of fields. Some towers can be erected in hours, and obstacles can change since you last worked that field. Speak with farmers and land owners to raise awareness about obstacle hazards.
- When possible, use ground crews. They may be in a better position to see certain obstacles and help you ensure that your aircraft remains clear of them.
- Watch for shadows and irregularities in growth patterns to help identify obstacles. Use GPS and other technology to maintain awareness of obstacle locations.
- Be aware that workload, fatigue, sun glare, and distractions in the cockpit can adversely affect your ability to see, avoid, or remember obstacles. Heavier loads and higher density altitudes can affect the performance of your aircraft.

The National Agricultural Aviation Association's Professional Aerial Applicators' Support System reminds pilots that, when ferrying an aircraft or transitioning between sites, flying above 500 feet reduces obstacle collision risks: "Ferry Above Five and Stay Alive."

See http://www.ntsb.gov/safety/safety-alerts/documents/SA_035.pdf for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Lionel Stevens; FAA FSDO; Oklahoma City, OK Kyle Schroeder; Air Tractor; Olney, TX
Original Publish Date:	December 3, 2020 **Investigation Class:** 2
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97527