



# Aviation Investigation Final Report

<b>Location:</b>	Drew, Mississippi	<b>Accident Number:</b>	ERA11LA424
<b>Date &amp; Time:</b>	July 26, 2011, 07:05 Local	<b>Registration:</b>	N8525L
<b>Aircraft:</b>	AIR TRACTOR INC AT-602	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Controlled flight into terr/obj (CFIT)	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

## Analysis

The non-instrument rated pilot departed on an agricultural aerial application flight in instrument meteorological conditions. There was no record of the pilot obtaining a weather briefing or filing a flight plan; however, company personnel stated that he obtained a computer weather briefing before departing. About 55 minutes after the flight's departure, a friend of the pilot observed the airplane flying over a town about 7 miles from the crash site. He stated that the weather was very foggy. The wreckage was located about 13 minutes later in a rice field by a plantation employee. The employee and the plantation owner also stated that it was very foggy with about 150 feet forward visibility. Examination of the accident site revealed that the airplane impacted the ground in a left wing low, nose down attitude. Examination of the airplane revealed no evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation. The airplane was not equipped for flight in instrument meteorological conditions. It is likely that the flight encountered dense fog, and the pilot lost visual reference outside and was unable to see the terrain prior to the airplane colliding with it.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper decision to conduct a visual flight rules aerial application flight in instrument meteorological conditions, which resulted in an in flight collision with the ground while maneuvering.

## Findings

<b>Personnel issues</b>	Weather planning - Pilot
<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Environmental issues</b>	Fog - Contributed to outcome

# Factual Information

## History of Flight

Prior to flight	Preflight or dispatch event
Maneuvering	VFR encounter with IMC
Maneuvering	Controlled flight into terr/obj (CFIT) (Defining event)

## HISTORY OF FLIGHT

On July 26, 2011, about 0705 central daylight time, an Air Tractor AT-602, N8525L, registered to Sturdivant Brothers Flying Service Inc, collided with a rice field while maneuvering near Drew, Mississippi. The certificated commercial pilot was fatally injured and the airplane sustained substantial damage. The agricultural flight was operated under the provisions of 14 Code of Federal Regulations Part 137. Instrument meteorological conditions prevailed and no flight plan was filed. An employee for the flying service stated the pilot departed from their private airstrip in the vicinity of Glendora, Mississippi, to spray a soybean field between Glendora and Drew, at about 0605.

According to company personnel, the pilot obtained a weather briefing via computer before departing. Company personnel added that the weather was cloudy when the pilot departed on the flight. The owner of the airplane stated personnel at the airstrip noted that it was a little foggy when the pilot departed. A friend of the pilot stated he observed the airplane over Drew, Mississippi at 0700, which is about 7 miles from the crash site. He stated the weather was very foggy. The wreckage was located by an employee of a plantation owner about 7 miles east of Drew, at 0713. He also stated that the conditions were very foggy with about 150 feet forward visibility. He called the plantation owner, who arrived at the accident site 1 minute later. The plantation owner further stated that the fog was so thick you could cut it with a knife and the forward visibility was about 200 feet.

## PERSONNEL INFORMATION

The certified commercial pilot, age 60, held a commercial pilot certificate with ratings for airplane single-engine land, issued on April 10, 1974. The pilot did not possess an instrument rating. According to company records, the pilot's last flight review was on December 6, 2010. The pilot held a second-class medical certificate issued on November 17, 2010, with the restriction, "Must wear corrective lenses." The pilot indicated on his application for the second-class medical certificate that he had accumulated 17,707 total flight hours. The pilot's logbooks were not recovered at the accident site.

## AIRCRAFT INFORMATION

The Air Tractor AT-602 is a tail wheel, agricultural aircraft of monoplane low-wing single-pilot configuration, and carries a hopper between the engine firewall and the cockpit. The airplane was manufactured in 2005, serial number 601-1133, and is powered by a Pratt and Whitney PT6A-60AG turboprop, 1,050-horsepower engine driving a five-bladed controllable pitch Hartzell propeller. Review of the airplane logbooks revealed the last annual inspection was completed on November 9, 2010 at a HOBBS and airframe time of 2, 224 hours. The last 100-hour inspection was completed on May 18, 2011, at a HOBBS and airframe time of 2,445 hours. The HOBBS and airframe time at the crash site was 2, 606.9 hours. The airplane had flown 161.9 hours since the last 100-hour inspection. The airplane was not equipped with an emergency locator transmitter.

## METEOROLOGICAL INFORMATION

The National Weather Service (NWS) Surface Analysis Chart for 0700 CDT (1200Z) on July 26, 2011 depicted a trough of low pressure extending over the regions with a light pressure gradient. The surrounding station models indicated light winds, broken to overcast cloud cover, visibility restricted in mist, temperatures in the mid 70 degrees F with temperature-dew point spreads of 2 degrees F or less.

The closest weather reporting location to the accident site was from Greenwood-Leflore Airport (GWO), located in Greenwood, Mississippi approximately 25 miles southeast of the accident site at an elevation of 162 feet. The airport had an Automated Surface Observation System (ASOS) and reported the following conditions surrounding the period: Greenwood (GWO) weather at 0653 CDT, automated observation, wind from 190 degrees at 3 knots, visibility 5 miles in mist, ceiling overcast at 200 feet above ground level (agl), temperature and dew point 23 degrees C, altimeter 29.90 inches of mercury (Hg).

The next closest weather reporting location was from Mid Delta Regional Airport (GLH), Greenville, MS, approximately 34 miles southwest of the accident site at an elevation of 131 feet. The airport also had an ASOS and reported IFR conditions between 0625 and 0751 CDT. At 0701 CDT, Greenville reported wind from 180 degrees at 4 knots, visibility 1 1/4 miles in mist, ceiling broken at 100 feet agl, temperature and dew point 23 degrees C, and an altimeter of 29.89 inches of Hg.

The closest upper air sounding from Jackson (JAN), Mississippi, located approximately 93 miles south of the accident site depicted a surface based temperature inversion to approximately 817 feet agl and another inversion due to subsidence at 3,300 feet. The sounding also indicated a moist low-level environment favorable for fog formation.

The Geostationary Operational Environmental Satellite number 13 (GOES-13), visible band 1 images at 0645 and 0745 depict an area of low fog and stratus extending over the accident site, with multiple cloud layers identified further south of GWO. The images indicate the instrument meteorological conditions (IMC) extended over the Drew and accident site surrounding the period.

The NWS Area Forecast for northern Mississippi that covered the route of flight expected broken clouds at 1,000 feet with tops to 1,500 feet with occasional visibility 3 to 5 miles in mist. From 0900 scattered clouds at 3,500 feet with visibility better than 6 miles. The outlook from 1700 through 2300 was for VFR conditions to prevail. The forecast was amended by Airmen's Meteorological Information (AIRMET) Sierra for IFR conditions over the state.

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There was no record of the pilot obtaining a Flight Service Station, or Direct Users Access Terminal (DUAT) weather briefing on July 26, 2011.

#### WRECKAGE AND IMPACT INFORMATION

The airplane was located in a plantation rice field about 3/4 mile north of county road 549 in the vicinity of Drew, Mississippi. Examination of the crash site revealed the left wing impacted the west side of a rice field in a descending left wing nose down attitude on a line of 085 degrees magnetic. The crash debris line was on a heading of 060 degrees magnetic. The left spray boom separated from the airframe. The propeller assembly separated from the propeller crankshaft flange follow by the spray pump, flap motor, right spray boom, left aileron, propeller blade, left landing gear leg, left wing tip debris, propeller dome and spring, and pieces of the hopper before the airplane collided with a levee and a gravel road (County Road 7 running North/South). The fuselage and wing structure were located in the rice field on the east side of County Road 7 on a heading of 360 degrees magnetic. The smell of Jet fuel was present at the scene and an area of dying rice plants was present. The crash debris line was 249 feet long.

Examination of the propeller system revealed four propeller blades remained in their respective propeller hubs and one propeller blade had separated from its propeller hub opposite the direction of rotation. All five propeller blades exhibited Torsional twisting, and "S" bending. The propeller dome and spring assembly separated from the propeller.

All engine cowling skins were separated and fragmented. The engine assembly remained attached to the engine mounts and all accessories were attached. The exhaust and combustion sections of the engine exhibited 45 degree wrinkles around the circumference of the engine. The exhaust pipes were crushed and the propeller gearbox had separated from the engine. The throttle, propeller, and condition lever remained connected to the engine.

The hopper was separated and destroyed. No chemicals were present at the crash site.

The windshield supports and canopy roof remained intact. The rollover structure was intact and not deformed. The left forward cockpit window, left and right cabin door windows were

broken. Both cabin doors were in the closed and locked position prior to the pilot being extracted. The cockpit seat remained attached to the cabin floor and the aft cockpit wall. The four point restraint system was in use at the time of the accident. The upper and lower instrument panel was intact and damaged.

The HOBBS meter at the accident site indicated 2,606.9 hours. The fuel selector switch was in the on position. The sprays handle mechanism was destroyed and the position could not be determined. The position of the throttle, propeller, and condition lever could not be determined due to damage.

The rudder cables were connected to rudder pedals and the rudder horn on the tail. The control stick remained attached to its hinge and had freedom of motion. The elevator pushrod connecting the control stick to the first idler was attached to the control stick. The aft rod end was separated and exhibited features consistent with overload, leaving the inner races intact on the idler bolt. The forward idler was intact. The long elevator pushrod was attached to the first idler. The aft rod end of the long elevator pushrod was separated and exhibited features consistent with overload, leaving the inner bearing races intact on the idler bolt. The aft idler was intact. The aft most pushrod was intact and attached at the aft idler at the elevator horns for both elevators. The right elevator hinges and horns were intact. The left elevator inboard two hinges and horn were intact. The outboard hinge was separated from the leading edge and was attached at the horizontal stabilizer.

The aileron control stick torque tube was intact and free to move. The arms of the underside of the torque tube were separated. The pushrods connecting the arms were attached. All right wing mounted aileron system components were intact and installed. The inboard rod end of the long pushrod separated and exhibited features consistent with overload. The left aileron inboard end of the long aileron pushrod was separated and exhibited fracture surfaces consistent with overload. The long pushrod was separated about 30 inches outboard of the middle flap hinge. All other components were missing and not recovered. All trim components were in their respective locations and were deformed. The flap actuator gearbox was located with the ball nut at 0.0 inches which equates to the flaps in the up position. The left and right main landing gear were separated from the fuselage.

The right wing was joined together with the left wing at the center splice joint. The leading edge of the right wing was damaged and intact. The upper and lower wing skins were damaged and intact. The right wing tip was fragmented and separated from the wing. The right flap was attached at the outboard two hinge point. The inboard hinge point was destroyed. The right aileron was damaged and attached at all three hinge points. The metal tank was ruptured and no fuel was present in the fuel tank. The right main fuel cap was tight with a tight seal. The empennage was damaged and separated in front of the leading edge of the vertical fin. The vertical fin was intact and not damaged, and the wire deflector was installed. The rudder was damaged and attached at all three vertical fin attachment points. The rudder balance weight was intact. The rudder trim system was destroyed the position could not be determined. The right horizontal stabilizer was not damaged. The right elevator was damaged at the elevator horn and remained attached at three hinge points. The left horizontal stabilizer was

damaged. The left elevator was damaged and everything outboard of the middle hinge was separated from the elevator. The tail wheel remained attached to the fuselage and was not damaged.

The left wing was joined together with the right wing at the center splice joint. The leading edge of the left wing was destroyed and separated from the wing. The left hand main spar was missing about 2 feet of its outboard end. The upper and lower wing skins outboard of the left main fuel tank were separated. The upper and lower wing skins inboard of the left main fuel tank were intact and damaged. The left wing tip was fragmented and separated from the wing. The left flap and left aileron were separated at all attachment points. The left main metal fuel tank was ruptured and no fuel was present fuel cap was tight with a tight seal.

#### MEDICAL AND PATHOLOGICAL INFORMATION

The State Medical Examiner's Office, Jackson, Mississippi, conducted an autopsy on the pilot on July 27, 2011. The cause of death was blunt force trauma. Polycystic kidney disease was identified at the autopsy. The Bioaeronautical Research Science Laboratory, FAA, Oklahoma City, Oklahoma performed a postmortem toxicology of specimens from the pilot. The specimens were negative for carbon monoxide and cyanide in the blood. No ethanol was present in the vitreous. Amiodipine of an unspecified quantity was present in the blood and urine. Benazepril of an unspecified quantity was present in the urine and the blood. Amiodipine and Benazepril are used to treat high blood pressure. These medications are acceptable to the FAA for the treatment of high blood pressure in airmen.

#### RECORDERS

The airplane was equipped with a SATLOC global positioning system. The SATLOC global positioning unit screen was broken. The memory card did not appear to be engaged. The SATLOC components were removed and forwarded to the NTSB Vehicle Recorders Laboratory for further analysis. Review of the SATLOC data reveals the airplane departed the field site at 0544:24 unit clock time. The airplane initiated a right turn at 0544:44 and climbed to 142 feet above ground level (agl) and activated the aerial spray for about 4 seconds. The airplane continued to climb to about 235 feet and initiated a descent on a westerly heading to about 175 feet at 0545:39. The altitude varied from 175 feet to 235 feet until 0548:15. The airplane initiated a descent from 195 feet at 0548:16 to 140 feet. The airplane started a gradual climb reaching 157 feet when the data ended prematurely at 0548:34, for an undetermined reason. The last data points show the airplane on a westerly track of 280-degrees true at a ground speed of 155 knots, about 3/4 mile south of the accident site. Witnesses reported the airplane 7 statute miles west of the accident site at 0700. The true clock setting was not determined and the clock setting contradicted witness statements as to when the airplane departed and when it was seen over Drew, Mississippi. The distance from Drew, Mississippi, to the accident site was about 7 miles.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	60,Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	November 17, 2010
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	December 6, 2010
<b>Flight Time:</b>	(Estimated) 17707 hours (Total, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	AIR TRACTOR INC	<b>Registration:</b>	N8525L
<b>Model/Series:</b>	AT-602	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	602-1133
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	1
<b>Date/Type of Last Inspection:</b>	May 16, 2011 100 hour	<b>Certified Max Gross Wt.:</b>	12500 lbs
<b>Time Since Last Inspection:</b>	162 Hrs	<b>Engines:</b>	1 Turbo prop
<b>Airframe Total Time:</b>	2607 Hrs at time of accident	<b>Engine Manufacturer:</b>	P&W CANADA
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	PT6A-6 SERIES
<b>Registered Owner:</b>	STURDIVANT BROTHERS FLYING SERVICE INC	<b>Rated Power:</b>	550 Horsepower
<b>Operator:</b>	STURDIVANT BROTHERS FLYING SERVICE INC	<b>Operating Certificate(s) Held:</b>	
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	ZNYG



## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	GWO,162 ft msl	<b>Distance from Accident Site:</b>	25 Nautical Miles
<b>Observation Time:</b>	06:53 Local	<b>Direction from Accident Site:</b>	139°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	5 miles
<b>Lowest Ceiling:</b>	Overcast / 200 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	3 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	190°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.89 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 23°C
<b>Precipitation and Obscuration:</b>	N/A - None - Mist		
<b>Departure Point:</b>	Glendora, MS (NONE)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Drew, MS (NONE)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	06:05 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	33.80611,-90.407775(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Smith, Carrol
<b>Additional Participating Persons:</b>	Robert T Mahaffety; FAA Jackson FSDO; Jackson, MS Kyle Schroeder; Air Tractor Inc; Olney, TX
<b>Original Publish Date:</b>	April 2, 2012
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=81231">https://data.nts.gov/Docket?ProjectID=81231</a>

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