



Aviation Investigation Factual Report

Location:	Shaw, Mississippi	Accident Number:	ERA17LA286
Date & Time:	August 21, 2017, 18:30 Local	Registration:	N247LA
Aircraft:	AIR TRACTOR INC AT 402A	Aircraft Damage:	Substantial
Defining Event:	Runway excursion	Injuries:	1 Minor
Flight Conducted Under:	Part 137: Agricultural		

Factual Information

On August 21, 2017, about 1830 central daylight time, an Air Tractor AT-402A airplane, N247LA, was substantially damaged when it was involved in an accident in Shaw, Mississippi. The pilot received minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 137 aerial application flight.

The airplane impacted terrain during takeoff from Tapley Airport (1MS0), Shaw, Mississippi. The pilot reported that he had a full load of herbicide onboard in the hopper tank. After applying engine power for takeoff, he noticed that the instruments were indicating maximum engine torque and maximum engine rpm.

When the airplane reached the end of the paved portion of the runway, he could "feel that the airplane did not want to fly." He then lowered the wing flaps and "pushed the throttle to the stop," but the airplane was still not flying. As he approached the end of the runway, he dumped the load of herbicide. As the airplane continued off the end of the runway, the left wing "went down," and the right wing "went up" as the airplane crossed a drainage ditch. The airplane then slid, spun around, and came to rest in a bean field.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the airplane was substantially damaged. All four propeller blades were bent about mid-span, the aft fuselage was bent and torn almost in half, the right main landing gear wheel had separated from its mounting position and the gear leg was bent inward, the tail wheel landing gear assembly had separated from its mounting position, and the right and left wings were bent, twisted, and displayed visible wrinkling of the upper surfaces. No preimpact failures or malfunctions were discovered with the airplane or engine.

The pilot advised that, before the accident flight, he had been flying all day and had previously taken two loads of the same mixture and quantity in the hopper tank with no indication of any problems.

Review of weight and balance information submitted by the pilot indicated that he had calculated the weight of the load in the hopper (which he listed as consisting of Gramoxone, sodium chlorate, and water) at 3,350.70 lbs, 100.7 lbs higher than Air Tractor's placarded hopper limit of 3,250 lbs. He had also calculated the takeoff weight to be 8,543.20 lbs, which was 1,543.20 lbs more than Air Tractor's published maximum gross weight of 7,000 lbs.

Review of photographs taken by the FAA revealed that the hopper contained 4 gallons of Gramoxone, 48 gallons of sodium chlorate, 4 gallons of fungicide, and 1 gallon of surfactant.

Calculations by Air Tractor indicated that the load in the hopper at the time of the accident weighed about 3,400 lbs, which was about 150 lbs higher than the placarded limit of 3,250 lbs. Calculations also revealed that the airplane's total takeoff weight was about 8,863.5 lbs, which was about 1,863.5 lbs more than the manufacturer's published gross weight.

At the time of certification of the airplane design, the Civil Air Regulations (CARs) and Civil Aeronautics Manual (CAM) were in effect. Chapter 8 (CAR 8/CAM 8), provided for the type and airworthiness certification of aircraft built or modified for special purposes (for example, crop dusting, seeding, and spraying) and eliminated the “equivalent level of safety” provision for restricted category aircraft. CAM 8 also set forth acceptable procedures and practices for guidance for those airplanes that were certificated under CAR 8 and allowed the use of CAM 8 in approving gross weight increases, if CAR 8 was used as part of the certification basis.

Published guidance by Air Tractor advised that the AT-402A/402B was certificated by the manufacturer for a gross weight of 7,000 lbs starting with serial number 402A-1021; however, under the provisions of CAM 8, the operator could select its own maximum operating weight, and field experience showed that operating weights up to 8,600 pounds could be carried safely with adequate margins of performance and structural strength. Air Tractor did not publish weight and balance data above the certificated gross weight of 7,000 lbs.

The closest weather reporting station was located at Cleveland Municipal Airport (RNV), Cleveland, Mississippi, 10 nautical miles north of the accident site. At 1835, the weather report included wind from 280° at 4 knots, 10 miles visibility, scattered clouds at 4,800 ft, temperature 33°C, dew point 24°C, and an altimeter setting of 30.04 inches of mercury. Density altitude was calculated as about 2,472.8 ft around the time of the accident.

Calculations by Air Tractor using takeoff data of a similar airplane from a previous company test program indicated that the calculated ground roll distance on a paved surface at 35°C at sea level was about 2,322 ft.

Review of an FAA Koch Chart, which depicts the effects of density altitude on takeoff and climb performance, indicated that, given the atmospheric conditions present at the time of the accident, takeoff distance would have been increased by 24%, and there would have been an 18% decrease in rate of climb.

Pilot Information

Certificate:	Commercial	Age:	35,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Single
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	November 16, 2016
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 21, 2017
Flight Time:	5400 hours (Total, all aircraft), 3850 hours (Total, this make and model), 5300 hours (Pilot In Command, all aircraft), 325 hours (Last 90 days, all aircraft), 155 hours (Last 30 days, all aircraft), 17 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AIR TRACTOR INC	Registration:	N247LA
Model/Series:	AT 402A	Aircraft Category:	Airplane
Year of Manufacture:	2012	Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	402A-1247
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	March 1, 2017 Annual	Certified Max Gross Wt.:	7000 lbs
Time Since Last Inspection:	249 Hrs	Engines:	1 Turbo prop
Airframe Total Time:	2679 Hrs at time of accident	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Not installed	Engine Model/Series:	PT6A-31
Registered Owner:	BOAIR INC	Rated Power:	550 Horsepower
Operator:	BOAIR INC	Operating Certificate(s) Held:	Agricultural aircraft (137)
Operator Does Business As:		Operator Designator Code:	077G

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	RNV,140 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	18:35 Local	Direction from Accident Site:	360°
Lowest Cloud Condition:	Scattered / 4800 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	33°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SHAW, MS (1MS0)	Type of Flight Plan Filed:	None
Destination:	SHAW, MS (1MS0)	Type of Clearance:	None
Departure Time:	18:30 Local	Type of Airspace:	Class G

Airport Information

Airport:	Tapley Airport 1MS0	Runway Surface Type:	Concrete;Grass/turf
Airport Elevation:	129 ft msl	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	2300 ft / 50 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	33.599723,-90.781112(est)

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd
Additional Participating Persons:	Albert L McCray; FAA/FSDO; Jackson, MS Earl Chapman; TSBC; Ottawa Kyle Schroeder; Air Tractor; Olney, TX Marc Gratton; Pratt & Whitney Canada; Montreal
Report Date:	December 31, 2021
Last Revision Date:	March 14, 2025
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=95863

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).