



Air Tractor, Inc.
Accident Investigation

AIRFRAME ACCIDENT REPORT

NTSB Accident Number:

CEN16LA154

Date & Location of Accident:

4/18/16
Kilbourne, LA

NTSB REQUESTED CONFIDENTIAL:

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PREPARED BY:

Kyle Schroeder
Air Tractor, Inc.





Air Tractor, Inc. Accident Investigation

FACTUAL INFORMATION

AIRCRAFT:

AT-502 manufactured in 1989
502-0037
N301LA

DATE & TIME:

4/18/16
~09:10 am local (CDT)

INJURIES:

Fatal

LOCATION:

Approx. 4.5 miles S of Kilbourne, LA
N 32.93424° W 91.31785° (Crash site)

PILOT:

Bobby Daniel (Danny) Morgan Jr.
[REDACTED]

OPERATOR:

Pioneer Flying Service
[REDACTED] g Rd.

NTSB INVESTIGATOR:

Mike Folkerts
Central Region
4760 Oakland St. Suite 500
Denver, CO 80239
[REDACTED]

INSURANCE:

AIG Aviation Insurance
TW Cook - Adjuster
[REDACTED]

FAA INVESTIGATOR:

Shawn Crump
Baton Rouge FSDO
[REDACTED]

SALVAGE:

Lone Star Retrieval
Richard Ball
[REDACTED]

OTHER CONTACTS:

OTHER CONTACTS:

West Carroll Parrish Sheriff's Office
Deputy Chuck Harris
[REDACTED]



Example of AT-502B in Flight (AT-502 similar)

The information contained in this report is the result of travelling to the accident site on 4/19/16 under the supervision of FAA FSDO Inspector Shawn Crump and West Carroll Parrish Deputy Sherriff Chuck Harris. This examination was conducted before the wreckage removal by the salvage company. I also returned to the accident site on 4/20/16 to witness the wreckage removal and was accompanied by salvage company personnel.

A subsequent examination of the wreckage was performed at Air Salvage of Dallas on June 28, 2016 with IIC Mike Folkerts of the NTSB present.

This report is subject to revision as additional information becomes available. The intent of this report is to provide details relating to the investigation of the subject accident. This report is not to be shared with any person outside the scope of this official investigation.

GENERAL OBSERVATIONS OF WRECKAGE AND ACCIDENT SITE:

Arrival at the accident scene was at approximately 10:00 am on 4/19/16. The wreckage was located in an open field on the north side of Macon Front Road south of Kilbourne, LA. To the north and east of the wreckage is a bayou populated with tall trees. Other than the trees and a set of local electric lines running along Macon Front Road, no towers or significant obstacles were noted in the immediate area.

The aircraft N-number had been burned away, but the aircraft data plate confirmed that this was an Air Tractor model AT-502 serial number 502-0037, which was manufactured in 1989. The Hobbs hourmeter was not located to confirm time-in-service hours on the airframe.

The wreckage was tightly confined to the immediate vicinity of the impact site. The fuselage was largely destroyed by impact forces and a post-crash fire. The fire had only damaged the inboard sections of the wings. The primary ground impact mark consisted of an impact crater in the soft soil that is consistent with a nose-in impact at modest speed. This impact crater contained pieces of the engine cowling, large pieces of the hopper top and lid, and pieces of

windshield plexiglass.



Accident Scene as Approached from the South

Radiating from the impact crater were two impressions in the soft earth that are consistent with the impact of the wing leading edges. These impact marks were oriented in a northwest-southeast direction. These impact marks were characterized by a shallow impression in the soil, along with yellow paint flakes. At the end of each of these marks were blue paint flakes and thick pieces of broken glass, consistent with the blue paint stripes and landing lights at the aircraft's wingtips.

From the impact marks, the aircraft came to rest approximately 8-10 feet away.

From the information at the scene, this impact is consistent with the aircraft impacting the ground in a nose down (almost vertical, slightly inverted) attitude, wings roughly level with the righthand wingtip oriented toward the southeast. This would be a high angle, low speed impact. The evidence suggests an incipient stage stall/spin from low altitude. The aft fuselage and rudder showed signs of some momentum toward the lefthand side of the aircraft.

There were no signs of an in-flight impact with trees, wires, or other obstacles noted in the wreckage. The wooded area to the north of the accident was searched for broken branches or other signs of tree impact. None were found. It was noted that there were significant amounts of green leaves on the ground throughout the area due to a storm that had been through the area in the days prior to the accident.

FUSELAGE:

The fuselage was heavily damaged by impact and fire, particularly from the cockpit forward. Generally all non-metallic items in the cockpit were destroyed by fire. Aluminum items in this

area were either destroyed or severely heat damaged. Steel components were intact, but exhibited high-temperature surface corrosion.



Fuselage Wreckage

The seat, control stick and much of the cockpit overturn structure had been cut out by EMS personnel to aid in extrication of the pilot.

The lap belt buckle was found still latched with most of the webbing burned away. The shoulder harness buckles were not found properly installed on the lap belt buckle assembly. This would likely be indicative that the pilot was not wearing the shoulder harnesses at the time of the accident.



Lap Belt Buckle Assembly

LANDING GEAR:

The main landing gear was found still attached to its fuselage fittings and located in its normal placement among the aircraft wreckage. The landing gear appeared to be undamaged by impact forces, but suffered significant fire damage to the non-metallic components.

The tailwheel assembly remained installed on the aft fuselage and was undamaged. No wire strike or other impact damage was noted on the tailwheel assembly.

WINGS:

Both wings were substantially damaged. The leading edges on both wings were crushed aft from the impact. In the inboard section of the wings (containing the stronger fuel tank structure) the leading edges were crushed back to the wing main spar. Outboard of the fuel tank, the wings were crushed aft to the rear spar. The left hand wing received more damage than the righthand wing. This is typically consistent with the aircraft being slightly left-wing-low upon impact.

On both wings, the ailerons and flaps remained attached and installed. The tips of each wing (outboard of the ailerons) were separated from the wing structure and found adjacent to the main wreckage.

The inboard portion of the wings was heavily damaged by fire.

The wing center splice connection remained intact with all structural attachments in place.



Righthand Wing Wreckage



Lefthand Wing Wreckage

EMPENNAGE:

Both horizontal stabilizers and elevators remained in place on the aft fuselage. These surfaces received only minor damage. The rear spar attachment of the righthand horizontal stabilizer had been fractured at the fuselage. The front spar attachment of the righthand

horizontal stabilizer was intact but damaged. There was some damage to the trailing edge of the righthand elevator.

The front spar attachment of the lefthand horizontal stabilizer was fractured at the fuselage. The rear spar attachment was intact at the fuselage.

The attachment points of both horizontal stabilizer V-struts were intact and undamaged.

The rudder was present at the accident site. The rudder had been fractured chordwise just above the boost tab (servo tab). The bottom portion of the rudder remained attached to the bottom hinge point and rear spar of the vertical stabilizer.

The top portion of the rudder was found on the ground adjacent to the cockpit wreckage.

The piece of aft spar that was attached to the bottom portion of the rudder was the only component of the vertical stabilizer that was positively identified among the wreckage. Multiple pieces of fire-damaged aluminum were identified as possible vertical stabilizer components but could not be confirmed.

1. There were no witness reports of any components departing the aircraft in-flight.
2. The rudder was present at the accident scene.
3. A witness mark was found on the top fuselage skin that corresponded to the shape of the vertical stabilizer leading edge skin.
4. The wire deflector cable that was attached to the tip of the stabilizer was present at the accident scene.
5. The treeline, wooded area, and field to the north of the accident scene were searched for any evidence of aircraft components and none were found.



Condition of Empennage Wreckage

FLIGHT CONTROLS:

Flight control continuity was established to the extent possible by the condition of the wreckage. Establishing flight control continuity was performed under the supervision of Inspector Shawn Crump of the Baton Rouge FSDO

Elevator Controls

The elevator controls are manually operated by steel and aluminum pushrods connecting the control stick to the elevator control horns through two control idlers. The elevator controls were found as follows.

The control stick had been cut by EMS personnel during the extrication process. This cut was immediately above the pushrod attachment to the control stick. The pushrod remained intact and correctly installed on the control stick. This pushrod was continuous back to the first elevator control idler.

The first elevator control idler is connected to the second idler by a long aluminum pushrod. This pushrod was found properly connected at both ends with the proper hardware. This pushrod was partially consumed by fire resulting in a discontinuity.

The second elevator control idler is connected to the elevator control horns by a steel pushrod. This portion of the control system was found intact and continuous.

The elevators were found properly attached to the horizontal stabilizers at all hinge points.

Rudder Controls

The rudder controls are manually operated by a pair of stainless steel cables running directly from the rudder pedal assemblies to the rudder control horns. The rudder controls were found as follows.

The rudder cables were found properly connected to both rudder horns at the aft end of the airplane. These cables were traced forward and found to be continuous, and generally undamaged, to the cockpit.

The forward end of the lefthand rudder cable had the appropriate hardware installed and remained connected to its aluminum adjustment channel. The aluminum channel was melted and no longer attached to the rudder pedal assembly. Otherwise, the rudder pedal assembly was found intact and appeared to be properly installed.

The forward end of the righthand ruder cable remained properly installed on rudder pedal assembly. The rudder pedal assembly was also found intact and appeared to be properly installed.

Aileron Controls

The aileron controls are manually operated by steel and aluminum pushrods connecting the control stick to the aileron control horns through a torquetube and multiple bellcranks and idlers. In addition, the AT-502 ailerons incorporate a drooping feature that lowers both ailerons in conjunction with deployment of the flaps. The aileron drooping controls are documented below under "Flap System". The primary aileron controls were found as follows.

The control stick is attached directly to a floor-mounted torquetube through an aluminum socket. The control stick had been cut by EMS personnel during the extrication process. This cut was immediately above the pushrod attachment to the control stick. The control stick aluminum socket was consumed by fire, only leaving small amounts behind on the installed attaching hardware. This socket would have rotated on two steel bearings that were found in their proper location on the torquetube. This torquetube was found in its proper location with both ends installed in heavily fire-damaged pillow-block bearings.

From this cockpit torquetube, the lefthand aileron controls were continuous through the upper pushrod and fuselage bellcrank. From this fuselage bellcrank, a long aluminum pushrod runs through the trailing edge of the wing. This pushrod was installed in the wing and the inboard end was consumed by fire. The inboard rodend remained properly installed on the fuselage bellcrank. The controls were continuous from the long pushrod outward to the lefthand aileron.

From the cockpit torquetube, the righthand aileron controls were continuous through the upper pushrod and fuselage bellcrank. From this fuselage bellcrank, a long aluminum pushrod runs through the trailing edge of the wing. This pushrod was installed in the wing and the inboard end was consumed by fire. The inboard rodend remained properly installed on the bellcrank. The controls were continuous from the long pushrod outward to the righthand aileron.

Flap System

The flap actuator was found in the retracted position, indicating that the flaps were retracted at the time of the impact. The electric motor was broken free of the gearbox assembly and there was some heavy heat damage and minor impact damage to the flap actuator.

The flap torquetube which interconnects the left and right flaps was intact and properly installed. Control continuity to the right flap was found except for the aluminum torquetube arm that was partially consumed by fire. All of the steel attaching hardware was found properly installed. The left flap continuity was found the same as the right flap, with the note that the left flap was much more fire damaged than the right.

The lefthand and righthand aileron drooping systems were found to be continuous and appeared to be properly installed.

Trim Systems

This aircraft was equipped with a trim system for the elevator controls only. The trim system was heavily damaged during the impact and fuselage deformation so that trim control positions at the time of impact could not be reliably ascertained. The trim system was found to be continuous at all points except for a fractured pushrod connecting to the lefthand trim tab. The fracture surface appeared to be due to tensile overload.

Aileron/Rudder Interconnect

During the subsequent wreckage examination at Air Salvage of Dallas, it was noted that aileron/rudder interconnect system had been removed from the aircraft. This system consists of cable assemblies that connect the rudder pedals to the aileron controls. The purpose of this system is to assist the pilot with coordinated flight and to provide positive dihedral effect as required by 14 CFR 23.177.

POWERPLANT:

The engine and propeller were substantially damaged during the impact. The propeller remained attached to the engine flange. Two of the blades were bent aft. One blade was bent forward and twisted in its clamp. The propeller counterweight positions, as found, were consistent with a low-pitch blade angle. No significant chordwise scoring of the blades was noted, except some fresh markings at the blade roots where the blades enter the spinner.

The engine was found with the engine mount ring still installed. The engine dataplate confirmed that this was a Pratt & Whitney PT6A-34AG engine serial number PCE-PH0200. The engine had separated at the "F" Flange. Most of the rear engine-mounted accessory components had broken free of the accessory gearbox, including the FCU, high-pressure fuel pump, low-pressure fuel pump, and starter/generator. All of these accessory components were severely damaged. The safety wire on the fuel filter bowl on the high pressure fuel pump was broken, but the bowl did not seem to be unseated or damaged. After a discussion about the risk of contaminating the fuel filter, it was decided not to open this fuel bowl to check for the presence of fuel.



Engine Wreckage as Found

Two pieces of turbine blades were found on the ground when the engine was lifted and

removed. These were later confirmed to be Power Turbine (PT) blades.



Power Turbine Blades

DISTURBANCE OF WRECKAGE:

No portion of the wreckage was removed by me during my involvement in this accident investigation. My disturbance of the wreckage was limited to handling components to the extent necessary for identification and documenting their condition, including removing inspection covers/access panels if necessary and cutting the wing skins to view interior components. I did not make any modification to the aircraft wreckage that would result in loss of evidence.

FAA Inspector Shawn Crump took possession of the CPU component of the agricultural GPS system. This unit appeared to be a Satloc Bantam system, but was badly damaged by fire.



GPS Unit in Wreckage (circled)