



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Forrest City, Arkansas	Accident Number:	CEN13LA168
Date & Time:	February 7, 2013, 16:00 Local	Registration:	N198LA
Aircraft:	AIR TRACTOR INC AT-502	Aircraft Damage:	Substantial
Defining Event:	Flight control sys malf/fail	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

After making an agricultural application, the pilot made a climbing left turn; the airplane then began vibrating and shaking. The pilot was able to return the airplane to level flight, but it rocked left and right, with the left aileron going up and down from stop to stop. The pilot chose to perform an emergency landing in a field next to an airport. A postaccident examination of the airplane revealed that the two aileron push-pull rod bolts were missing. The bolts and associated hardware were not located among the wreckage. The airplane had undergone extensive maintenance about 5 months before the accident. A review of the airplane's maintenance manual revealed that the nuts installed in the airplane control system are self-locking nuts, which can loosen if insufficient torque is applied to them. It is likely that maintenance personnel applied improper torque to the aileron's push-pull rod self-locking nuts, which resulted in the eventual loosening of the nuts and the separation of the left aileron's push-pull rod and hardware.

Probable Cause and Findings

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

The in-flight separation of the left aileron's push-pull rod and hardware. Contributing to the accident was the failure of maintenance personnel to apply proper torque to the self-locking nuts.

Findings

Aircraft	Aileron control system - Incorrect service/maintenance
Personnel issues	Installation - Maintenance personnel

Factual Information

History of Flight

Maneuvering	Flight control sys malf/fail (Defining event)
Landing	Off-field or emergency landing

On February 7, 2013, about 1600 central standard time, an Air Tractor AT-502 airplane, N198LA, collided with terrain during a landing near Forrest City, Arkansas. The commercial rated pilot was injured and the airplane was substantially damaged. The airplane was registered to and operated by South Delta Aviation, LLC, West Helena, Arkansas, under the provisions of 14 Code of Federal Regulations Part 91 as a maintenance test flight. Visual meteorological conditions prevailed for the flight that operated without a flight plan.

The pilot reported that he departed with 150 gallons of water to calibrate the spray system on the airplane. After making a spray pass, he started a climbing turn to the left; the airplane then began vibrating and shaking. The pilot added that he managed to get the airplane straight and level, but still rocked left and right. He further added that the left aileron was going up and down; stop to stop.

The pilot found that as he slowed the airplane to 90 mph, he would lose aileron control and the airplane would start a slow left turn while rocking back and forth. The pilot then performed a long circle and selected a hay field, next to the airport for the emergency off-field landing.

According to the responding Federal Aviation Administration (FAA) inspector, the airplane was substantially damaged during the accident. Additionally, inspection of the airplane revealed that the two bolts in the aileron push-pull rod were missing. The bolts and associated hardware were not located among the wreckage. The inspector also noted that the airplane had undergone extensive maintenance, about five months before the accident. A review of the airplane's maintenance manual revealed that the nuts installed in the airplane control system are self-locking nuts.

Pilot Information

Certificate:	Commercial	Age:	62
Airplane Rating(s):	Single-engine land	Seat Occupied:	Single
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
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:	January 13, 2013
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	22300 hours (Total, all aircraft), 22300 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AIR TRACTOR INC	Registration:	N198LA
Model/Series:	AT-502	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	502-0198
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	September 1, 2013 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Turbo prop
Airframe Total Time:		Engine Manufacturer:	P&W
ELT:		Engine Model/Series:	PT6A SER
Registered Owner:	SOUTH DELTA AVIATION INC	Rated Power:	750 Horsepower
Operator:	SOUTH DELTA AVIATION INC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KAWM	Distance from Accident Site:	
Observation Time:	15:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	4200 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 4200 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	3 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.92 inches Hg	Temperature/Dew Point:	18°C / 12°C
Precipitation and Obscuration:			
Departure Point:	Forrest City, AR	Type of Flight Plan Filed:	None
Destination:	Forrest City, AR	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	34.946388,-90.774444(est)

Administrative Information

Investigator In Charge (IIC): Hatch, Craig

Additional Participating Persons: Tommy Arnold; FAA FSDO; Little Rock, AR

Original Publish Date: January 30, 2014

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=86264>

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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](#).