



Aviation Investigation Final Report

Location:	Cortland, New York	Accident Number:	ERA20CA246
Date & Time:	July 13, 2020, 09:45 Local	Registration:	N2716P
Aircraft:	Piper PA22	Aircraft Damage:	Substantial
Defining Event:	Flight control sys malf/fail	Injuries:	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was performing a post-maintenance test flight after a "lengthy restoration" of the airplane had been completed by a mechanic, who accompanied him on the flight. After takeoff, the airplane did not respond in accordance with the pilot's control inputs, so he elected to immediately land the airplane. The airplane impacted the ground off the departure end of the runway, which resulted in substantial damage to the wings and fuselage. Post-accident examination of the airplane revealed that the aileron control cables had been rigged opposite of the proper orientation prescribed in the airplane's illustrated parts catalog. Both the pilot and the mechanic stated that when they conducted flight control checks prior to the flight, they confirmed deflection of the ailerons, but that they each failed to confirm that the aileron deflection corresponded correctly to the input at the control yoke.

Probable Cause and Findings

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

The mechanic's incorrect rigging of the aileron control cables, which resulted in a reversal of aileron control inputs applied by the pilot during the takeoff. Also causal was the mechanic's inadequate post-maintenance inspection and the pilot's inadequate preflight inspection and before takeoff check, which failed to detect the misrigging.

Findings

Aircraft	Aileron control system - Incorrect service/maintenance
Personnel issues	Installation - Maintenance personnel
Personnel issues	Post maintenance inspection - Maintenance personnel
Personnel issues	Preflight inspection - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Prior to flight	Preflight or dispatch event
Takeoff	Flight control sys malf/fail (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	Age:	59, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	None None	Last FAA Medical Exam:	January 1, 1999
Occupational Pilot:	No	Last Flight Review or Equivalent:	April 25, 2020
Flight Time:	787 hours (Total, all aircraft), 188 hours (Total, this make and model), 733 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft)		

Pilot-rated passenger Information

Certificate:	Private	Age:	80, Male
Airplane Rating(s):	Single-engine sea	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Unknown	Last FAA Medical Exam:	January 1, 2019
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N2716P
Model/Series:	PA22 150	Aircraft Category:	Airplane
Year of Manufacture:	1957	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	22-5280
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	July 13, 2020 Annual	Certified Max Gross Wt.:	1950 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	4065.8 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-320-A2B
Registered Owner:	On file	Rated Power:	150 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KITH,1099 ft msl	Distance from Accident Site:	13 Nautical Miles
Observation Time:	09:45 Local	Direction from Accident Site:	240°
Lowest Cloud Condition:	Scattered / 2500 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	22°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cortland, NY (N03)	Type of Flight Plan Filed:	None
Destination:	Cortland, NY (N03)	Type of Clearance:	None
Departure Time:	09:35 Local	Type of Airspace:	Class G

Airport Information

Airport:	Cortland County-Chase Field N03	Runway Surface Type:	Asphalt
Airport Elevation:	1197 ft msl	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	None
Runway Length/Width:	3400 ft / 75 ft	VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 1 None	Latitude, Longitude:	42.58889,-76.220275(est)

Preventing Similar Accidents

Perform Advanced Preflight After Maintenance (SA-041)

The Problem

In-flight emergencies, accidents, and deaths have occurred after pilots flew aircraft with incorrectly rigged flight control or trim systems. Maintenance personnel who serviced or checked the systems did not recognize that the control or trim surfaces were moving in the wrong direction. Pilots who flew the airplanes did not detect the control anomalies during their preflight checks. In many cases, although maintenance personnel made mistakes, the pilots could have prevented the accidents by performing thorough or advanced preflight checks.

What can you do?

- Become familiar with the normal directional movement of the flight controls and trim surfaces of the aircraft you fly before it undergoes maintenance. It is easier to recognize “abnormal” if you are already very familiar with what “normal” looks like.
- After maintenance, check systems more thoroughly than the normal preflight checklist implies. For example, if a preflight checklist states, “Trim – Set Takeoff,” verify not only the trim setting but also proper directional travel.
- Be prepared to abort the takeoff if something does not seem right.
- Avoid interruptions and distractions during your preflight inspection to ensure that you do not skip or miscalculate the items you are checking.
- If you suspect that there is a problem with a flight control or trim system, ask qualified maintenance personnel to inspect the aircraft. Do not attempt to perform such work yourself if you are not appropriately qualified, certificated, and authorized to do so.

See <https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-041.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):	Hill, Millicent
Additional Participating Persons:	Paul J Petrella; FAA/FSDO; Rochester, NY
Original Publish Date:	June 1, 2021
Last Revision Date:	
Investigation Class:	Class 4
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=101582

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](#).