



# Aviation Investigation Final Report

<b>Location:</b>	South Bethlehem, New York	<b>Accident Number:</b>	ERA23LA229
<b>Date &amp; Time:</b>	May 11, 2023, 14:20 Local	<b>Registration:</b>	N1596E
<b>Aircraft:</b>	Cessna 172	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Collision with terr/obj (non-CFIT)	<b>Injuries:</b>	2 Serious, 1 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

Due to his injuries, the pilot did not recall the accident. A pilot-rated witness reported seeing the airplane make an intersection takeoff from a 2,853-ft-long runway with a tailwind (9 kts, gusting to 13 or 14 kts). The intersection used resulted in only 2,293 ft of runway available. The accident airplane subsequently impacted a field near the departure end of the runway and came to rest upright.

Postaccident examination of the wreckage did not reveal evidence of any preimpact mechanical malfunctions. Review of weight and balance data for the airplane revealed that it was loaded to within 80 pounds of its maximum gross weight before accounting for baggage and fuel (the quantities of which could not be determined). Review of performance data revealed that at maximum gross weight, in the reported wind and temperature conditions, the airplane required about 2,300 ft of runway to take off to clear a 50-ft obstacle. There were no performance data for tailwind conditions greater than 10 knots or any weight above the maximum gross weight. Based on the takeoff performance data, the pilot was likely attempting to operate the airplane in excess of its performance capabilities, which resulted in a subsequent collision with terrain when it was unable to climb. Instead of departing with a tailwind, and from an intersection with a reduced amount of runway remaining, had the pilot instead elected to depart in the opposite direction utilizing the full runway length, it is possible that the accident could have been avoided.

## 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 attempt an intersection takeoff in a tailwind when the full runway in the opposite, headwind direction was available.

## Findings

<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Aircraft</b>	Takeoff distance - Capability exceeded
<b>Environmental issues</b>	Tailwind - Decision related to condition

# Factual Information

## History of Flight

Takeoff	Collision with terr/obj (non-CFIT) (Defining event)
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On May 11, 2023, about 1420 eastern daylight time, a Cessna 172N, N1596E, was substantially damaged when it was involved in an accident near South Bethlehem, New York. The private pilot and one passenger suffered serious injuries, while a second passenger incurred minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that his injuries included a vertebrae fracture and concussion, and he could not recall the accident sequence. A pilot-rated witness reported that the airplane was attempting to take off from runway 19 at South Albany Airport (4B0), South Bethlehem, New York. Runway 19 was 2,853 ft-long, 60 ft-wide, and consisted of asphalt. About 15 minutes before the accident takeoff, another Cessna 172 performed a tailwind takeoff on runway 19 uneventfully; however, that airplane started its takeoff roll at the beginning of the runway.

The accident airplane took off beginning at a runway intersection, with about 2,293 ft of runway remaining, in an approximate 9-kt tailwind, gusting to 13 or 14 kts. The accident airplane subsequently impacted a field near the departure end of runway 19 and came to rest upright.

Examination of the wreckage by a Federal Aviation Administration inspector revealed substantial damage to the left wing and fuselage. The inspector observed the flaps in the retracted position and did not note evidence of any preimpact mechanical malfunctions.

Following the wreckage recovery to a storage facility, recovery company personnel were able to rotate the propeller by hand, confirm powertrain continuity to the rear accessory section, and attain thumb compression on all cylinders.

Review of weight and balance data for the airplane revealed that it had a useful load of 820 lbs. The reported occupant weights totaled about 740 lbs., leaving 80 lbs for fuel and baggage. The amount of fuel onboard and weight of the baggage was unknown.

Review of performance data from a make and model pilot operating handbook revealed that, at maximum gross weight and in the reported wind and temperature conditions, the airplane required about 2,300 ft of runway to take off and clear a 50-ft obstacle. There were no performance data for any tailwind greater than 10 knots or any weight above the maximum gross weight.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	28,Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 1 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	August 3, 2022
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	February 11, 2023
<b>Flight Time:</b>	(Estimated) 169 hours (Total, all aircraft), 100 hours (Total, this make and model), 67 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N1596E
<b>Model/Series:</b>	172 N	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1972	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	17271060
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	July 1, 2022 Annual	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	12309 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed	<b>Engine Model/Series:</b>	O-360-A4M
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	ALB,280 ft msl	<b>Distance from Accident Site:</b>	11 Nautical Miles
<b>Observation Time:</b>	14:51 Local	<b>Direction from Accident Site:</b>	8°
<b>Lowest Cloud Condition:</b>	Few / 11000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots / 16 knots	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	270°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.03 inches Hg	<b>Temperature/Dew Point:</b>	26°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	South Bethlehem, NY	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	South Bethlehem, NY	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	South Albany Airport 4B0	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	195 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	19	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	2853 ft / 60 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 Serious, 1 Minor	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Serious, 1 Minor	<b>Latitude, Longitude:</b>	42.560722,-73.833944

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Gretz, Robert
<b>Additional Participating Persons:</b>	Sean Mullis; FAA/FSDO; Albany, NY Henry Soderlund; Textron Aviation; Wichita, KS
<b>Original Publish Date:</b>	June 5, 2024
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=149068">https://data.nts.gov/Docket?ProjectID=149068</a>

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](#).