



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

# Aviation Investigation Final Report

<b>Location:</b>	Brookings, South Dakota	<b>Accident Number:</b>	CEN23LA175
<b>Date &amp; Time:</b>	May 4, 2023, 18:30 Local	<b>Registration:</b>	N1674E
<b>Aircraft:</b>	Cessna 172S	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control on ground	<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

## Analysis

The check instructor reported that during a soft field takeoff for an end-of-course test, the student pilot did not correct for an increasing nose up attitude and struck the tail on the runway surface. The student was then instructed to abort the take-off several times, to which the student did not immediately respond. During the abort, the student pilot lost directional control and the instructor took control of the airplane. However, the instructor reported that he was unable to regain full control before the airplane left the runway surface. The airplane struck a runway sign which resulted in substantial damage to the fuselage.

## Probable Cause and Findings

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

The student pilot's failure to maintain pitch and directional control during the takeoff roll. Contributing to the accident, was the student pilot's delay in relinquishing control of the airplane and the instructor's delayed reaction before the loss of directional control.

## Findings

<b>Personnel issues</b>	Aircraft control - Student/instructed pilot
<b>Personnel issues</b>	Delayed action - Instructor/check pilot
<b>Personnel issues</b>	Delayed action - Student/instructed pilot
<b>Aircraft</b>	Pitch control - Incorrect use/operation
<b>Aircraft</b>	(general) - Incorrect use/operation
<b>Aircraft</b>	Directional control - Not attained/maintained

## Factual Information

### History of Flight

Takeoff	Tailstrike
Takeoff	Loss of control on ground (Defining event)
Takeoff	Collision with terr/obj (non-CFIT)

### Check pilot Information

Certificate:	Commercial; Flight instructor	Age:	24,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	August 23, 2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 26, 2022
Flight Time:	723 hours (Total, all aircraft), 585 hours (Total, this make and model), 637 hours (Pilot In Command, all aircraft), 103 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft)		

### Student pilot Information

Certificate:	Student	Age:	20,Male
Airplane Rating(s):	None	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:	
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	September 1, 2022
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	80 hours (Total, all aircraft), 80 hours (Total, this make and model), 9 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N1674E
<b>Model/Series:</b>	172S	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2005	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	172S9915
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	March 23, 2023 100 hour	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>	95 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	8705.6 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	C91 installed, not activated	<b>Engine Model/Series:</b>	IO-360-L2A
<b>Registered Owner:</b>	MEDARY AVIATION LLC	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	South Dakota State University	<b>Operating Certificate(s) Held:</b>	Pilot school (141)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	U72S

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KBKX, 1648 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	17:56 Local	<b>Direction from Accident Site:</b>	113°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 9000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	6 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	110°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.76 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 4°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Brookings, SD	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Brookings, SD	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>	Brookings Regional KBKX	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1648 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	12	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	100 ft / 6000 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	44.306876,-96.822444

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Finne, Andrew
<b>Additional Participating Persons:</b>	Smith, Andrew; FAA-FSDO; Rapid City, SD
<b>Original Publish Date:</b>	June 29, 2023
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</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=114702">https://data.nts.gov/Docket?ProjectID=114702</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](#).