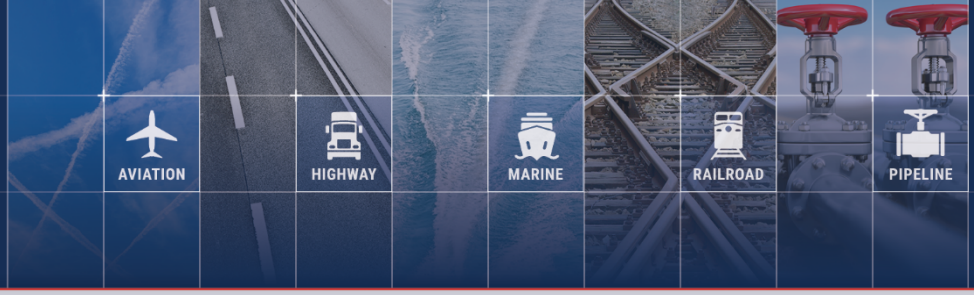

Aviation Investigation Final Report

Location:	Bowling Green, Ohio	**Accident Number:**	CEN12LA176
Date & Time:	February 19, 2012, 13:15 Local	**Registration:**	N45TT
Aircraft:	AVIAT AIRCRAFT INC A-1C-200	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that upon landing, the airplane veered as if the left brake was locked and the airplane exited the runway, incurring substantial damage to the left wing. The pilot also reported that after the accident, when the left brake caliper assembly was disassembled, a metal shaving was found in the bleed valve port. The non-ferrous metal shaving appeared to be the remnant of drilling operations as evidenced by its spiral shape. There was no flattening of the spiral shape that would indicate that the shaving had become jammed between the caliper piston and its bore. Examination of the brake caliper revealed no malfunctions or failures that would have precluded normal operation. Based on the lack of available evidence that the brake had become locked, it is likely that the loss of directional control was for non-mechanical reasons.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain directional control during landing.

Findings

Aircraft	Directional control - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Landing-landing roll	Loss of control on ground (Defining event)
Landing-landing roll	Runway excursion

On February 19, 2012, about 1315 eastern standard time, an Aviat Aircraft, model A-1C-200, N45TT, was substantially damaged when it exited the right side of runway 10 during landing at the Wood County Airport (1G0), Bowling Green, Ohio. The pilot and pilot rated passenger were not injured. The aircraft was registered to Differential Leasing, LLC and operated by the airline transport pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not on a flight plan. The local flight originated at 1300.

The pilot reported to Federal Aviation Administration (FAA) Inspectors and to the NTSB investigator-in-charge that the left brake locked during landing and caused the airplane to veer to the side. Examination of the airplane by FAA inspectors revealed damage to the left wing and wing spar. Additional damage was noted to the left landing gear and propeller. No anomalies were detected by the inspectors, however, the airplane owner reported to FAA inspectors that he disassembled the left brake and found metal shavings within the port where the brake bleeder was attached. The left brake caliper assembly, along with the recovered metal shavings, were sent to the National Transportation Safety Board investigator for examination.

The left brake assembly was a disk brake type caliper that had two independent pistons. The brake caliper and metal shavings were examined using a 10X magnifier. The piston bores within the main body of the caliper were clean with no evidence of scoring of the piston bores. The pistons each had circumferential abrasions on the outside of their bodies consistent with the pistons having been misaligned with the piston bores at some point. The O-ring seals appeared intact with no deficiencies noted. With the O-rings removed, the pistons were placed in their bores and were free to move. The previously mentioned abrasions, although visible, did not impede the movement of the pistons in either direction. The brake pads appeared intact and did not appear to have excessive wear. The metal shavings were not attracted to a magnet, which indicated that they were non-ferrous. The spiral appearance of the shavings was consistent with that of shavings expelled during drilling operations. The shavings still had a spiral shape and did not appear flattened. The lack of flattening of the spiral shavings indicated that they had not become jammed in between the piston and the piston bore. The examination of the brake assembly revealed no anomalies that would have precluded normal operation.

The recorded weather conditions at the Toledo Executive Airport, about 12 miles northeast of

the accident site, included wind from 20 degrees at 10 knots.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	Balloon	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	August 10, 2011
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:			

Other flight crew Information

Certificate:	Airline transport	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Front
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	November 4, 2011
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	AVIAT AIRCRAFT INC	**Registration:**	N45TT
Model/Series:	A-1C-200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3081
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 18, 2011 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	71 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	111 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	IO-360-A1D6D
Registered Owner:	On file	**Rated Power:**	200 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:	TDZ,623 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	13:11 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 3000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 16 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	-1°C / -7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bowling Green, OH (1G0)	**Type of Flight Plan Filed:**	Unknown
Destination:	Bowling Green, OH (1G0)	**Type of Clearance:**	None
Departure Time:	13:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Wood County Airport 1G0	**Runway Surface Type:**	Asphalt
Airport Elevation:	673 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	10	**IFR Approach:**	None
Runway Length/Width:	4199 ft / 75 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	41.391109,-83.630279

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	David Lindsey; FAA-Cleveland FSDO; Cleveland, OH
Original Publish Date:	October 29, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83006