Aviation Investigation Final Report

Location:	Princeton, Minnesota	**Accident Number:**	CEN14LA028
Date & Time:	October 28, 2013, 12:45 Local	**Registration:**	N4803A
Aircraft:	Piper PA 22-150	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was flying his airplane to a hunting location. No one witnessed the departure or accident. A postaccident examination of the accident site indicated that the airplane departed the runway and then impacted the ground in a wooded area about 600 feet from the approximate midpoint of the runway. A postimpact fire occurred. An 8-knot crosswind was recorded about the time of the accident. The loaded weight of the airplane could not be determined due to fire damage. Postaccident examinations of the airplane revealed no mechanical anomalies that would have precluded normal operation. Although the toxicology report showed that the pilot was exposed to carbon monoxide, the level of exposure would only have resulted in a slight headache.

A review of the airplane's maintenance logbooks revealed that the airplane's tires were replaced with larger tires in accordance with a supplemental type certificate the day before the accident. However, the change would have had a small effect on the performance of the airplane. The evidence indicates that the pilot likely lost airplane control during takeoff.

Probable Cause and Findings

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

The pilot's loss of airplane control during takeoff.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Not attained/maintained

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On October 28, 2013, about 1245 central daylight time, a Piper PA-22-150, N4803A, impacted trees and terrain following a takeoff from the Princeton Municipal Airport (PNM), near Princeton, Minnesota. The pilot, who was the sole occupant, sustained fatal injuries. The airplane was destroyed during a subsequent post impact ground fire. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as personal flight. Day visual flight rules (VFR) conditions prevailed for the flight, which did not operate on a VFR flight plan. The flight was originating at the time of the accident and was destined for an unknown location in North Dakota.

The purpose of the flight was to travel to a hunting location. There were no witnesses who reported seeing the departure or accident. The airplane appears to have departed runway 33 and impacted the ground in a wooded area about 600 feet to the west of the approximate mid-point of the runway where a post impact fire occurred.

Pilot Information

Certificate:	Private	**Age:**	51
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 23, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 10, 2012
Flight Time:	(Estimated) 719.9 hours (Total, all aircraft), 12.8 hours (Last 30 days, all aircraft)		

The 51-year old pilot held a Federal Aviation Administration (FAA) private pilot certificate with an airplane single-engine land and instrument ratings. The pilot's most recent third-class FAA medical certificate was issued on April 23, 2013, without any limitations. On the application for that medical certificate, the pilot reported that he had accumulated 625 hours of total flight time and 85 hours in the six months prior to the application. The pilot recorded in his logbook that he had accumulated 719.9 hours of total flight time and 12.8 hours of flight time in the 30 days prior to the accident. The logbook contained a tailwheel endorsement for the pilot dated October 6, 2012. The logbook showed that the pilot's latest flight review endorsement was dated September 12, 2013.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4803A
Model/Series:	PA 22-150	**Aircraft Category:**	Airplane
Year of Manufacture:	1956	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-3955
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	February 5, 2013 Annual	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3336.5 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:		**Engine Model/Series:**	O-320
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

N4803A, a 1956 model Piper PA-22-150, was an externally braced high wing, airplane with serial number 22-3955. A major repair and alteration form, dated July 11, 1986, indicated that the airplane was modified with the installation of a 150-horsepower Lycoming O-320 engine. A logbook entry indicated the engine's serial number was L-8351-27. The engine drove a fixed pitch Sensenich M74DM57 propeller with serial number 18889. An endorsement in the airplane's logbook showed that an airplane annual inspection, which included the cabin heater, was conducted on February 5, 2013. At the time of that inspection, the airplane had accumulated 3,283.6 hours total time.

Another logbook endorsement, dated October 27, 2013, indicated that the airplane's 6:00-6 tires were removed and two 8:50-6 tires were installed in accordance with supplemental type certificate SA02672CH. Additionally, that endorsement showed that the airplane's tailwheel assembly was removed and a 3200-B bushwheel tailwheel assembly was installed in accordance with supplemental type certificate SA01233SE. The airplane accumulated 3,336.5 hours total time at the time of that endorsement.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPNM,979 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	12:33 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	40°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.45 inches Hg	**Temperature/Dew Point:**	4°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Princeton, MN (PNM)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	12:45 Local	**Type of Airspace:**	

At 1233, the recorded weather at PNM was: Wind 040 degrees at 8 knots; visibility 10 statute miles; sky condition clear; temperature 4 degrees C; dew point -6 degrees C; altimeter 30:46 inches of mercury.

Airport Information

Airport:	PRINCETON MUNI PNM	**Runway Surface Type:**	
Airport Elevation:	980 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	33	**IFR Approach:**	None
Runway Length/Width:	3900 ft / 75 ft	**VFR Approach/Landing:**	None

PNM was located about one mile southwest of Princeton, Minnesota, at a surveyed field elevation of 980 feet above mean sea level. The airport was serviced by one runway, 15/33. The runway was equipped with medium intensity runway edge lights and four-light precision approach path indicators. The runway was 3,900 feet by 75 feet, dry asphalt and had a published 0.1 per cent gradient.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	45.560001,-93.609725(est)

A FAA inspector examined the accident site and airplane wreckage. Witness impact marks in the wooded area were consistent with the airplane traveling in a westerly direction. The airplane came to rest with its nose at about a 75-degree heading. The airplane was consumed by a post impact fire. All control surfaces were intact and continuity was established for all control systems. Indications from the on scene examination of the engine and propeller were consistent with the propeller being driven at time of impact. However, the amount of power applied could not be determined. No mechanical anomalies were discovered during the on scene investigation.

Medical and Pathological Information

An autopsy was performed on the pilot by the Mille Lacs County Medical Examiner's Office. The autopsy indicated blunt force and thermal injuries as the cause of death.

The FAA Civil Aerospace Medical Institute prepared a Final Forensic Toxicology Accident Report. The report indicated "19 (%) CARBON MONOXIDE detected in Blood."

Additional Information

The FAA medical facts for pilots pamphlet, "Carbon Monoxide: A Deadly Menace," in part, stated:

There should be little or no carbon monoxide in the blood of individuals who have not been exposed to smoke or other by-products of combustion. People living in polluted urban environments may have between 3-10% carboxyhemoglobin concentrations because of the carbon monoxide contained in the smoke and fumes they inhale, while a cigar smoker could have up to 15%. People in certain occupations

such as foundry workers, welders, mechanics, firefighters, and tollbooth or tunnel attendants that expose them to products of combustion may also have elevated carbon monoxide baseline levels.

A table in the pamphlet showed the most common symptoms of carbon monoxide exposure and associated exposure levels in percent CO in blood. The table, in part, stated:

Percent CO in Blood.....Typical Symptoms
<10.....None
10-20.....Slight headache

The SA02672CH supplemental type certificate holder's certification plan for the modification of the PA-22 airplane with the installation of 8:50-6 size main landing gear tires was reviewed. The FAA approval of this certification plan for the 8:50-6 size tires did not include a flight test. The approval was based on a previous flight test with the FAA for a PA-22 airplane modification for the installation of both the 26-inch size tires and an 82-inch McCauley 1A200FA propeller. No changes to the performance section of the pilot operating handbook were published as part of the testing of the larger 26-inch size tires and larger propeller combination. The demonstrated performance during a flight test of the 8:50-6 size main landing gear tire installation with a type certificated 74-inch propeller was not conducted.

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	David R Nelson; Federal Aviation Administration; Minneapolis, MN Charles Little; Piper; CA John Butler; Lycoming; TX
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