Aviation Investigation Final Report

Location:	Farmingdale, New Jersey	**Accident Number:**	NYC02FA126
Date & Time:	July 1, 2002, 11:45 Local	**Registration:**	N2414P
Aircraft:	Piper PA-18-150	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The airplane taxied onto the runway, engine noise increased to "full throttle," and the airplane began to accelerate. Prior to rotation, the airplane began to drift right. The right tire rolled off the runway, and the left tire became airborne. The right tire then lifted off, and the airplane immediately entered a right turn. The bank angle continued to increase until the right wing contacted the ground. Winds at the time of the accident were 7 knots. The pilot had approximately 62 hours in the accident airplane make and model in the previous 2 months. No preimpact failures or malfunctions were identified with either the airframe or engine during the course of the investigation.

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 takeoff.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER

Phase of Operation: TAKEOFF

Findings
2. TERRAIN CONDITION - GRASS

Factual Information

HISTORY OF FLIGHT

On July 1, 2002, about 1145 eastern daylight time, a Piper PA-18-150, N2414P, was destroyed when it impacted terrain during takeoff from runway 32R at the Allaire Airport (BLM), Farmingdale, New Jersey. The certificated commercial pilot was fatally injured. Visual meteorological conditions prevailed for the local commercial banner flight. No flight plan was filed, and the flight was conducted under 14 CFR Part 91.

According to a witness who was waiting to depart from runway 32R, he observed the accident airplane taxied onto the runway with the pilot in the front seat. The engine noise increased to "full throttle," and the airplane began to accelerate down the runway. Prior to rotation, the airplane began to drift right. The right tire rolled off the runway, and the left tire became airborne. The right tire then lifted off, and the airplane immediately entered a right turn. The bank angle continued to increase until the right wing contacted the ground, which marked the start of the impact sequence. The airplane came to a stop, and caught fire.

The accident occurred during the hours of daylight. The wreckage was located to the east of runway 32R at 40 degrees, 11.667 minutes north latitude, 74 degrees, 07.692 minutes west longitude, and an elevation of 160 feet.

AIRCRAFT INFORMATION

Examination of the airframe logbooks revealed that an annual inspection was performed on April 8, 2002. At the time of the inspection, the airplane had accrued 3,159.0 hours of flight time. On June 4, 2002, the airplane was equipped with new aileron cables. At that time, the airplane had accrued 3,210.9 hours of flight time. After June 4, 2002, there were no other entries in the logbook. According to the operator, at the time of the accident, the airplane had accrued approximately 3,286.0 hours of flight time. None of the pilots that flew the airplane since the aileron cables were replaced, mentioned any problems with the flight characteristics of the airplane.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with an airplane single-engine-land, airplane multi-engine land, and instrument airplane rating. His last FAA first-class medical certificate was dated April 1, 2002. According to the operator, the pilot had approximately 1,100 hours of total flight experience, 400 hours of banner experience, and approximately 61 hours in the accident airplane during the previous 2 months. The pilot's logbook was not located at the accident site, and follow-on attempts to acquire it were unsuccessful.

METEOROLOGICAL INFORMATION

A weather observation taken at the airport about 10 minutes after the accident recorded the wind as 260 degrees at 7 knots, visibility 10 miles, few clouds at 3,400 feet and 5,000 feet, temperature 84 degrees Fahrenheit, dew point 63 degrees Fahrenheit, and an altimeter setting of 30.16 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The debris path started 180 feet east of runway 32R, and was comprised of two sets of ground scars, along with the main wreckage. The first ground scar was oriented on a magnetic heading of 360 degrees, and contained structure from the right wing. The second ground scar started approximately 20 feet past the end of the first, and was oriented on a magnetic heading of 065 degrees. Approximately 15 feet further were four cuts in the ground. The field was covered with grass, and each cut could be folded back for examination. All four cuts were parallel to one another, and approximately the same length as one of the propeller blades from the airplane. The cut marks entered the ground on approximately a 45-degree angle. As each cut progressed, the angle reduced, until it was parallel to the surface, and approximately 8 inches below it. The main wreckage came to rest 120 feet past the start of the debris path on a magnetic heading of 290 degrees.

Examination of the wreckage revealed that the majority of impact damage was to the front of the airplane, and to the right wing. In addition, most of the fabric covering the airplane was consumed in the postcrash fire. On the left wing, approximately 10 percent of the structure was consumed in the postcrash fire, and approximately 80 percent of the fabric. The left wing struts were intact, and connected at both ends. The left aileron bellcrank was attached to the left aileron. The left aileron cable and the left aileron balance cable were attached to the bellcrank. The left aileron stops were in place, and continuity of the left aileron cable was verified from the bellcrank to the pilot controls. Continuity of the balance cable was verified from the left aileron bellcrank to the right aileron bellcrank. The left flap was attached to the wing, and intact. The push pull rod that connected the left flap to the left flap bellcrank was in place. The bellcrank was attached to the wing, and the associated flap retraction spring was in place. The left flap control cable was attached to the bellcrank, and continuity was verified to the flap handle.

Approximately 85 percent of the structure for the right wing, and 95 percent of the fabric was consumed in the postcrash fire. The right wing struts were intact and connected to the wing and airframe mounts. The right aileron was destroyed. The right aileron bellcrank, along with the right aileron stops, displayed fire and impact damage. The right aileron cable was attached to the right aileron bellcrank. Continuity of the right aileron cable was verified from the bellcrank to the pilot controls. The right flap was destroyed. The right flap bellcrank displayed impact and fire damage, and had separated from the right wing. The push pull rod that connected the right flap to the right flap bellcrank had separated from the flap consistent with

impact and fire damage. The right flap retraction spring was elongated, and had separated from the right flap bellcrank. The right flap control cable, along with a section of the right flap bellcrank had separated from the bellcrank. The fracture surface on the section of bellcrank that was still attached to the cable was grayish in color, and partially melted. The fracture surface on the bellcrank was melted. Continuity of the right flap control cable was verified from the end of the cable to the flap handle. Damage to the empennage varied, with the majority of the damage being towards the front. Only fire damage was observed on the aft part of the empennage. Almost 100 percent of the fabric covering the empennage and tail section was consumed in the postcrash fire. The vertical and horizontal stabilizer were intact, along with the elevator and rudder. The only impact damage observed on the tail section was to the outboard part of the right elevator, which was bent up approximately 10 degrees. The rudder bellcrank was attached to the rudder, and both rudder cables were attached to the rudder horn. Rudder cable continuity was verified to both sets of rudder pedals. The elevator bellcrank was attached to the elevator, and both elevator cables were attached. Elevator cable continuity was verified to the pilot controls, and continuity of the stabilizer trim was confirmed. Approximately three threads were showing on the stabilizer trim jackscrew, which was consistent with a nose up trim setting.

The airplane had a front and rear cockpit, and both displayed severe impact and fire damage. The seat in the front cockpit was adjustable. The seat was set to the third position aft, and the lock was engaged. All the system instruments were destroyed. The altimeter displayed 43,860 feet msl, and was set to 30.05 inches of mercury. The engine tachometer read zero, and the time display was destroyed. The throttle in the forward cockpit was in the closed position, and in the aft cockpit, it was partially open. The mixture control was full rich, and the carburetor heat control was "OFF." The flap handle was between the first and second notch. The airplane was not equipped with a mixture control, carburetor heat control, or flap handle in the aft cockpit. The control stick in the front cockpit was bent aft. The shaft for the control stick in the rear cockpit had separated about 2 inches above the aileron and elevator mixing lever.

The engine displayed impact and fire damage, and was removed from the airframe to facilitate an examination. The propeller was attached to the engine crankshaft. The No. 1 propeller blade displayed fire damage, and the outboard half of the blade was consumed in the postcrash fire. The No. 2 propeller blade displayed "S" bends, leading edge gouges, and chordwise scratches.

The top sparkplugs were removed from each of the cylinders. In addition, the No. 3 bottom sparkplug was removed to drain some oil from the cylinder. The No. 1 sparkplug electrode was dark gray in color, and had a light coat of oil on it. The No. 2 sparkplug electrode was dark gray in color, and absent of oil. The No. 3 sparkplug electrode was dark gray in color, and had a heavy coat of oil on it. The No. 4 sparkplug electrode was dark gray in color, and absent of oil. A rotational force was applied to the engine crankshaft. All four pistons and eight valves articulated, and compression was obtained on the No. 1, No. 3, and No. 4 cylinders. Compression was not obtained on the No. 2 cylinder. In addition, compression on the No. 1

cylinder was approximately 10 percent that of No. 3 and No. 4.

Both magnetos displayed impact and fire damage. The ignition lead covers were removed. When a rotational force was applied to the engine crankshaft, the magneto rotors turned, and the left impulse coupling activated. Spark was not obtained on any of the ignition towers. All eight ignition leads displayed impact and fire damage, and continuity could not be established. The engine oil suction and pressure screens were removed, and found covered with carbon deposits.

The fuel selector was set to the left tank, and the gascolator was attached to the firewall. The gascolator bowl had separated from the gascolator and was located in the debris path. No contaminates were observed in the bowl. The carburetor had separated from its mount, and displayed impact and fire damage. The throttle plate was open. The throttle arm was in the close position, and the throttle cable had separated consistent with overload. The mixture arm was in the full rich position, and the mixture control cable had separated consistent with overload. The carburetor bowl was removed from the carburetor. The right float was intact and attached to the float assembly. The left float was intact, but had separated from the float assembly.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot at the Medical Examiners Office in Freehold, New Jersey, on July 2, 2002.

The FAA Toxicology and Accident Research Laboratory in Oklahoma City, Oklahoma, performed a toxicological test on the pilot on September 30, 2002.

ADDITIONAL INFORMATION

Before the flight, the airplane was serviced with 26.1 gallons of fuel from a 1,000-gallon tank. No other airplanes were serviced from that tank on the day of the accident. After the accident, a fuel sample was taken from the tank by an FAA inspector. The sample was bluish in color and no contaminates were identified.

The airplane was released to the owner's representative on July 2, 2002, minus a section of the right flap control cable and a section of the right bellcrank. The retained items were returned to the owner's representative on December 9, 2002.

Pilot Information

Certificate:	Commercial	**Age:**	23,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	April 1, 2002
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 14, 2002
Flight Time:	1100 hours (Total, all aircraft), 61 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N2414P
Model/Series:	PA-18-150	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	18-1289
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 8, 2002 Annual	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:	70 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3286 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O-360-C1A
Registered Owner:	Aerial Sign Company, Inc.	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BLM,100 ft msl	**Distance from Accident Site:**	
Observation Time:	11:55 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 3400 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.15 inches Hg	**Temperature/Dew Point:**	29°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Farmingdale, NJ (BLM)	**Type of Flight Plan Filed:**	None
Destination:	(BLM)	**Type of Clearance:**	None
Departure Time:	11:45 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Monmouth County Executive BLM	**Runway Surface Type:**	Asphalt
Airport Elevation:	100 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	32R	**IFR Approach:**	None
Runway Length/Width:	1200 ft / 14 ft	**VFR Approach/Landing:**	None

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:**	40.194442,-74.128334

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	Jeff Bumer; FAA/FSDO; Teterboro, NJ David C Moore; Lycoming; Ardsley, PA George Hollingsworth; Piper Aircraft; Reston, VA
Original Publish Date:	July 23, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55091