Aviation Investigation Final Report

Location:	Norman, Oklahoma	**Accident Number:**	DFW05FA178
Date & Time:	July 6, 2005, 16:26 Local	**Registration:**	N902J
Aircraft:	Piper PA-34-220T	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airport's tower controller had cleared the 1,118-hour commercial pilot to land on Runway 03 and reported the winds were variable from 090-130 degrees at 8 knots. The pilot responded, "cleared to land if I can get down there." The pilot then experienced a hard bounced landing which resulted in a right propeller strike while approximately 2,248 feet along the 4,747-foot long by 100-foot wide runway. During the pilot's attempted aborted landing, he lost control and impacted the roof of the airport's terminal building. An examination of the wreckage revealed that the landing gear was in the full-extended position and the flaps were in the 25-degree extended position. Continuity was established to all flight controls. No discrepancies were found with the engines or propellers and no pre-impact anomalies were noted with the airframe.

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 airspeed, which resulted in an inadvertent stall/spin. A contributing factor was the pilot's attempted aborted landing following a hard landing and propeller strike.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. FLARE - IMPROPER - PILOT IN COMMAND
2. PROPER TOUCHDOWN POINT - NOT ATTAINED - PILOT IN COMMAND
3. (F) PROPELLER SYSTEM/ACCESSORIES,BLADE - BLADE STRIKE

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: LANDING - ABORTED

Findings
4. (F) ABORTED LANDING - ATTEMPTED - PILOT IN COMMAND
5. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
6. STALL/SPIN - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
7. OBJECT - BUILDING(NONRESIDENTIAL)

Factual Information

HISTORY OF FLIGHT

On July 6, 2005, about 1626 central daylight time, a Piper PA-34-220T twin-engine airplane, N902J, was destroyed during a loss of control following an aborted landing at the University of Oklahoma, Westheimer Airport (OUN) near Norman, Oklahoma. The commercial pilot, sole occupant of the airplane, sustained fatal injuries. The airplane was registered to a private corporation and operated by the pilot. Visual meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the 14 Code of Federal Regulations Part 91 personal flight. The 303 nautical mile cross-country flight originated from the Austin-Bergstrom International Airport (AUS) near Austin, Texas, with OUN as its intended destination.

There were four eyewitnesses who were either in or near the OUN terminal building at the time of the accident.

The OUN terminal building was located about mid-field and 1,093 feet south of Runway 03. The terminal building contained the control tower, line shack, and Ozzie's Diner. The control tower was located in the building's upper southwest corner and the line shack was located at ground level in the southwest corner of the building. Ozzie's Diner was located on the west side with windows facing and running parallel to Runway 03.

Witness one, a private pilot, was in Ozzie's Diner drinking coffee and watching airplanes takeoff and land. He observed the accident airplane descending at an approximate 40-degree nose down angle with the right wing angled towards the ground as if correcting for a crosswind landing on Runway 03. The witness reported that the nose wheel hit the ground first and then the right main wheel "slammed very hard" onto the runway. Subsequently, the airplane bounced back into the air before turning in an easterly direction towards the diner. The airplane continued towards the diner and cleared the building by about 10-15 feet. Seconds later he heard a loud impact noise.

Witness two was on the ramp, approximately 2,200 feet northeast of the terminal building, when he heard a loud scraping sound. Turning towards the runway he observed an airplane flying very low and in a steep right bank heading towards the control tower. Just after the airplane passed the tower, "the right wing dropped drastically and the aircraft fell to the ground."

The third witness was standing in the control tower. The witness reported that he observed the airplane "wobbling side to side" and heard both engines running as the airplane approached the tower. The airplane flew past the northeast side of the tower, missing it by approximately 100 feet, before the right wing dropped and the airplane nosed over and

impacted the corner of the terminal building roof.

Witness four, another private pilot, was in the line shack when he heard engines go to "full power as if a pilot was executing a go-around." Looking out the window he observed the accident airplane flying towards the terminal building with a "nose up attitude of about 35-degrees." He added that, "the pitch and airspeed were both very critical." The witness further reported that both engines were "running at full power and sounded good."

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for single-engine land, multi-engine land, and instrument airplane. His last second-class medical was issued on March 26, 2004.

An examination of the pilot's logbook indicated an estimated total flight time of 1,118 hours. He logged 27 hours in the last 90 days and 11 in the last 30 days. He had an estimated 494 hours in this make and model of airplane.

AIRCRAFT INFORMATION

The 1985-model Piper PA-34-220T, serial number 34-8133048, was a low wing, semi-monocoque airplane, with a retractable landing gear, and was configured for a maximum of six occupants. The airplane was powered by two, direct drive, horizontally opposed, fuel injected, air-cooled, turbo-charged, six-cylinder Continental engines. Each engine was rated at 220 horsepower at 2,800 rpm, and was driving a three bladed constant speed McCauley propeller.

According to the airframe logbook, the airplane's most recent annual inspection was completed on January 17, 2005, with an airframe total time of 2,602.6 hours. At the time of the accident, the airframe had accumulated a total of 2,649.5 hours, 46.9 hours since the last inspection.

The engine logbooks revealed that both engines had been inspected in accordance with an annual inspection on January 17, 2005. At the time of the accident the left engine had accumulated a total of 1,048.6 hours since major overhaul, and the right engine 426.1 hours since major overhaul.

Fueling records at Austin-Bergstrom International Airport (AUS) near Austin, Texas, established that the airplane was last fueled on July 5, 2005, with the addition of 51.1 gallons of 100 low lead (LL) aviation fuel.

METEOROLOGICAL INFORMATION

At 1612, the automated surface observing system at OUN reported wind from 080 degrees at 7 knots gusting to 14 knots, visibility 10 statute miles, clear sky, temperature 90 degrees Fahrenheit, dew point 64 degrees Fahrenheit, and barometric pressure setting of 30.01 inches

of Mercury.

While issuing landing instructions to the pilot, a tower controller at the Westheimer Airport reported that the winds were variable from 090-130 degrees at 8 knots and the altimeter setting was 30.01 inches of Mercury.

COMUNICATIONS

Review of the air traffic control communications revealed that a tower controller at the Westheimer Airport instructed the pilot to make a straight-in approach to Runway 03. The pilot acknowledged, "okay coming around for a straight-in to Runway 03." The pilot was then cleared to land and responded, "zero two Juliet cleared to land if I can get down there." There were no further communications.

AERODROME INFORMATION

The University of Oklahoma Westheimer Airport (OUN) near Norman, Oklahoma, was a controlled airport operating under class D classification airspace. The field elevation for OUN was 1,182 feet mean sea level (msl). Runway 03 was an asphalt runway, 4,747 feet in length and 100 feet wide.

WRECKAGE AND IMPACT INFORMATION

On site documentation of the wreckage was conducted on July 7-8, 2005, by investigators from the National Transportation Safety Board, Federal Aviation Administration, The New Piper Aircraft, and Teledyne Continental Motors.

The main wreckage was located in a flat grassy area along the southwest side of the Westheimer Airport terminal building, approximately 2,640 feet northeast of the approach end of Runway 03. The Global Positioning System (GPS) coordinates recorded at the accident site were 35 degrees 14 minutes North latitude and 097 degrees 28 minutes West longitude, and field elevation of approximately 1,177 feet mean sea level (msl).

Examination of the accident site revealed the roof overhang on the south corner of the terminal building was torn away. A tire tread mark, the red plastic lens cover for the vertical stabilizer mounted anti-collision light, and several pieces of windscreen material, were located on the roof. The airplane came to rest right side up on a heading of 305 degrees in a nose down attitude with the empennage in a tree. There was no post-impact fire.

The forward fuselage was crushed aft into the cockpit area and the forward cabin roof was crushed downward with the forward doorpost completely fractured through. The rooftop, from the windscreen area to the aft fuselage, exhibited heavy scratches and a black material transfer consistent with roofing tar. The nose landing gear was partially extended and was found pushed aft under the forward cabin area.

The cabin was configured for six occupants in the club configuration. All seats were in their respective positions and secure on the seat tracks. Both front seats had seat belts and shoulder harnesses installed. The left seat shoulder harness was found fastened to the lap belt. The landing gear selector switch was damaged and the arm was located on the down side of the detent. The flap handle was positioned in the 25-degree detent. The fuel selectors were found in the "ON" position.

The right wing separated from the fuselage at the wing root area and was found in an inverted position to the right of the fuselage. The wing was in two parts; separated seven feet outboard from the wing root. The right aileron remained attached to the outboard section of the wing by all of its respective hinges and the control and balance cables were attached to the bellcrank and extended inboard to the wing root area. The balance cable was separated near the left wing root and the control cable was separated near the right wing root. Both cable separations exhibited a broomstrawed appearance. The remainder of the control cable extended to the forward cockpit area. The right flap was attached to the inboard section of the wing by the inboard two hinges. The right fuel tank contained a blue fluid consistent with 100 LL aviation fuel. The position of the flap controls was consistent with the right flap being in the 25 degree extended position. The right main landing gear was found in the extended position.

The right engine remained attached to the wing. All four engine mounts were fractured. The air intake and number one cylinder pushrod exhibited impact damage.

The right engine crankshaft was rotated via the propeller. Accessory gear and valve train continuity was established. Compression was developed in each cylinder. A spark was produced from all magneto leads. The top spark plugs were removed and displayed normal operating signatures when compared to the Champion Check-A-Plug (AV-27) comparison chart. The turbocharger was undamaged and was free to rotate. The engine driven fuel pump was removed. The fuel pump drive coupling was undamaged and the driveshaft rotated freely. The oil filter was cut open and no visible metal or debris was noted.

The right propeller remained attached to the engine. The outer ten inches of each of the three propeller blades, were curled aft towards the non-cambered side, were absent of paint on the cambered side, and exhibited deep chordwise scratching. Portions of each of the outer blade tips were ground off.

The horizontal stabilator remained attached to the fuselage by its respective hinges and exhibited wrinkling of the upper skin. The leading edge was crushed aft and exhibited a black tar transfer. Both stabilator control cables were secure to the counterweight tube and continuous to the 'T' bar in the cockpit. The position of the stabilator trim drum was consistent with a two-degree nose down setting.

The vertical stabilizer and rudder were located approximately 45 feet southeast of the main

wreckage. The leading edge was crushed aft and exhibited a black tar transfer. The rudder, along with the rudder trim tab, remained attached to the vertical stabilizer via their respective hinges. The rudder torque tube and sector assembly were secure and both control cables were found separated from the sector. Both cable separations exhibited a broomstrawed appearance. Both cables were intact and continuous from the separations to the rudder bar. The rudder trim tab was found in the neutral position.

The left wing remained attached to the fuselage. The outer two feet three inches of the leading edge was crushed aft towards the main spar. The left aileron and left flap remained attached to the wing via their respective hinges. The left aileron control cable was attached to the bellcrank and was continuous to the forward pulley cluster in the cockpit. The aileron balance cable was separated near the left wing root. The separation exhibited a broomstrawed like appearance. The left fuel tank contained a blue liquid consistent with 100 LL aviation fuel. The position of the flap controls was consistent with the left flap being in the 25 degree extended position. The left main landing gear was found in the extended position.

The left engine remained attached to the wing. All four engine mounts were fractured. The exhaust system, turbocharger, and oil cooler exhibited impact damage.

The left engine crankshaft was rotated via the propeller. Accessory gear and valve train continuity was established. Compression was developed in each cylinder. A spark was produced from all magneto leads. The top spark plugs were removed and displayed normal operating signatures when compared to the Champion Check-A-Plug (AV-27) comparison chart. The turbocharger sustained impact damage, but was free to rotate. The engine driven fuel pump was removed. The fuel pump drive coupling was undamaged and the driveshaft rotated freely. The oil filter was cut open and no visible metal or debris was noted.

The left propeller remained attached to the engine. The first blade was bent aft towards the non-cambered side, at an approximate 45-degree angle, and was twisted towards the leading edge. The cambered side exhibited white paint transfer, a black tar transfer, and chordwise scratching. The leading edge contained several gouges. The second blade was bent at mid-span towards the non-cambered side. The cambered side exhibited a black tar transfer and chordwise scratching. The leading edge contained multiple gouges. The third blade exhibited a gradual curl from the blade root to the tip towards the non-cambered side. The cambered side contained chordwise scratching.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of Chief Medical Examiner for the State of Oklahoma performed an autopsy on the pilot, on July 7, 2005.

The Federal Aviation Administrations, Toxicology Accident Research Laboratory, located in Oklahoma City, Oklahoma, conducted toxicological testing on the pilot.

ADDITIONAL INFORMATION

An examination of Runway 03 revealed 22 consecutive propeller strike marks located approximately 2,248 feet from the approach end and 12 feet 6 inches left of the runway centerline. The strike marks exhibited a left to right scrape pattern and measured a distance of approximately 21 feet from the first mark to the last. The average distance between scrape marks was about 12 inches. These marks were consistent with damage found on the 3 propeller blades for the right engine.

The wreckage was released on January 26, 2006, to a representative of the owner's insurance company.

Pilot Information

Certificate:	Commercial	**Age:**	62,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
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 2 With waivers/limitations	**Last FAA Medical Exam:**	February 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 1, 2004
Flight Time:	1118 hours (Total, all aircraft), 494 hours (Total, this make and model), 27 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N902J
Model/Series:	PA-34-220T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-8133048
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	January 1, 2005 Annual	**Certified Max Gross Wt.:**	4750 lbs
Time Since Last Inspection:	47 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	2650 Hrs at time of accident	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO360 KB 1
Registered Owner:	NDI Airplane LLC	**Rated Power:**	220 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:	OUN,1182 ft msl	**Distance from Accident Site:**	
Observation Time:	16:12 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	80°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	32°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	AUSTIN, TX (AUS)	**Type of Flight Plan Filed:**	IFR
Destination:	NORMAN, OK (OUN)	**Type of Clearance:**	IFR
Departure Time:	14:26 Local	**Type of Airspace:**	

Airport Information

Airport:	UNIVERSITY OF OKLAHOMA WESTHEI OUN	**Runway Surface Type:**	Asphalt
Airport Elevation:	1177 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	3	**IFR Approach:**	Visual
Runway Length/Width:	4747 ft / 100 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.240554,-97.467781

Administrative Information

Investigator In Charge (IIC):	LeBaron, Timothy
Additional Participating Persons:	Michael Boler; Federal Aviation Administration; Oklahoma City, OK John Kent; Teledyne Continental Motors; Mobile, AL Michael McClure; The New Piper Aircraft; Vero Beach, FL
Original Publish Date:	April 25, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61906