Aviation Investigation Final Report

Location:	St. Louis, Missouri	**Accident Number:**	CEN09LA389
Date & Time:	June 25, 2009, 12:45 Local	**Registration:**	N701PT
Aircraft:	Piper PA-31T1	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The pilot reported that his final approach was high and fast, and that the airplane touched down with excessive speed about halfway down the runway. Witness accounts also indicated that the airplane initially touched down about halfway down the runway at a higher than normal landing speed. One witness noted that the airplane bounced after the initial touchdown, during which the landing gear collapsed aft. The airplane then touched down a second time with about 250 feet of runway remaining. The airplane then proceeded to overrun the departure end of the runway, go down an embankment and into a cornfield. The airplane sustained substantial damage to both wings and the fuselage primary structure. A post-accident inspection of the airplane confirmed that the landing gear was fully extended, but displaced aft due to impact forces. Flight control continuity was established from the individual flight control surfaces to their respective cockpit controls. Mechanical continuity was also confirmed from the cockpit power levers and propeller controls to their respective components. No pre-impact anomalies were identified that would have precluded the normal operation of the airplane. The airplane's pilot operating handbook indicated that the required landing distance on a level hard-surfaced runway, without a headwind and without propeller reversing capability, was about 1,400 feet. The required landing distance with propeller reversing capability was about 825 feet.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to establish and maintain a stabilized final approach which resulted in a hard landing and runway overrun.

Findings

Aircraft	Airspeed - Not attained/maintained
Aircraft	Descent/approach/glide path - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Capability exceeded

Factual Information

History of Flight

Landing-flare/touchdown	Hard landing (Defining event)
Landing-flare/touchdown	Landing gear collapse
Landing-flare/touchdown	Abnormal runway contact
Landing-landing roll	Runway excursion

On June 25, 2009, approximately 1245 central daylight time, a Piper PA-31T1 (Cheyenne I), N701PT, piloted by a private pilot, was substantially damaged when it overran runway 16 (4,500 feet by 75 feet, dry concrete) at the Creve Coeur Airport (1H0), near St. Louis, Missouri. Visual meteorological conditions prevailed at the time of the accident. The personal flight was operating under the provisions of 14 Code of Federal Regulations Part 91 without a flight plan. The pilot and his passenger were not injured. The flight departed from the Spirit of St. Louis Airport (KSUS), near St. Louis, Missouri, at approximately 1230.

According to the pilot, the purpose of the flight was to reposition the airplane to 1H0 for scheduled maintenance to be performed. The local area flight, from KSUS to 1H0, reportedly took 5-10 minutes to enter the traffic pattern at the destination airport. As the pilot prepared to enter the traffic pattern for runway 34, the passenger told him that runway 16 had been the active runway earlier in the day. The pilot subsequently changed the airplane's flight path to enter a downwind leg for runway 16. While on downwind, approximately abeam the runway 16 identifier markings, he reportedly lowered the landing gear and extended the flaps to 3/4 travel. The pilot stated that his final approach was "high and fast" and that the airplane touched down with excessive airspeed halfway down the runway. To reduce the landing roll distance, he retracted the flaps and attempted to set the propellers into reverse thrust. He noted that he was unable to lift the power levers out of the flight idle position and into reverse thrust. The airplane then overran the end of the runway, and came to rest in a cornfield approximately 434 feet from the departure threshold. The landing gear collapsed aft during the landing attempt, which resulted in substantial damage to both wings and the fuselage primary structure. The right engine was torn from its fuselage structural mounts.

Witness accounts indicated that the airplane initially touched down about halfway down the runway at a higher than normal landing speed. One witness reported that the airplane bounced after touchdown, damaging the left main and nose landing gear. He noted that the left main landing gear was broken and bent aft, and the nose landing gear was dangling below the airframe. The airplane then touched down a second time, approximately where the runway 34 identifier markings were painted on the runway.

A post-accident examination of the airplane was performed by Federal Aviation Administration inspectors. The main landing gear was found in a fully extended position, but was displaced

aft and up. No ground damage was noted on either main landing gear doors, both of which were found in a closed position. The nose landing gear doors were open and the nose landing gear was found extended, but displaced aft. Flight control continuity was established from the individual flight control surfaces to their respective cockpit controls. Mechanical continuity was also confirmed from the cockpit power levers and propeller controls to their respective components. No pre-impact anomalies were identified that would have precluded the normal operation of the airplane.

The nearest weather reporting station was located at Lambert-St Louis International Airport (KSTL) about 7 miles east of the accident site. The airport was equipped with an Automated Surface Observing System (ASOS). At 1251, the following weather conditions were reported by the KSTL ASOS: wind 250 degrees at 7 knots; visibility 9 miles; few clouds 3,600 feet above ground level (agl), scattered clouds at 12,000 feet agl, and scattered clouds at 20,000 feet agl; temperature 34 degrees Celsius; dew point 23 degrees Celsius; altimeter setting 29.90 inches of mercury.

According to the pilot, the airplane's landing weight was about 7,000 pounds at the time of the accident. Based on the available airport and weather information, the airplane's pilot operating handbook indicated that the required landing distance on a level hard-surfaced runway, without a headwind and without propeller reversing capability, was about 1,400 feet. The required landing distance with propeller reversing capability was about 825 feet.

Pilot Information

Certificate:	Private	**Age:**	77,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:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	August 5, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 14, 2009
Flight Time:	4190 hours (Total, all aircraft), 2807 hours (Total, this make and model), 16 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N701PT
Model/Series:	PA-31T1	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	31T-8004008
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	July 25, 2008 Continuous airworthiness	**Certified Max Gross Wt.:**	8700 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:	6429 Hrs at time of accident	**Engine Manufacturer:**	Pratt Whitney Canada
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	PT6A-135A
Registered Owner:	Natoli Engineering Company, Inc.	**Rated Power:**	500 Lbs thrust
Operator:	Natoli Engineering Company, Inc.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSTL,618 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	12:51 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Few / 3600 ft AGL	**Visibility**	9 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	34°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St. Loius, MO (KSUS)	**Type of Flight Plan Filed:**	None
Destination:	St. Louis, MO (1H0)	**Type of Clearance:**	None
Departure Time:	12:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Creve Coeur Airport 1H0	**Runway Surface Type:**	Concrete
Airport Elevation:	463 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	4500 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	38.726665,-90.508331(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Douglas E Makurat; Federal Aviation Administration - St. Louis FSDO; St. Ann, MO
Original Publish Date:	December 20, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74136