



National Transportation Safety Board Aviation Accident Final Report

Location:	New Albany, Indiana	Accident Number:	CEN10FA233
Date & Time:	May 2, 2010, 20:16 Local	Registration:	N135CC
Aircraft:	JetProp DLX Piper PA46	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated pilot was issued a clearance to descend to 4,000 feet for radar vectors to a nonprecision instrument approach in instrument meteorological conditions (IMC). The last 1 minute 23 seconds of radar data indicated the airplane leveled at 4,000 feet for about 35 seconds and then varied between 3,800 feet and 3,900 feet for the remainder of the flight for which data was available. During this timeframe, the airspeed decreased from 131 knots to 57 knots. Witnesses observed the airplane descending in a spin, and one reported hearing the engine running. Recorded engine data showed an increase in engine power near stall speed, which was likely the pilot's response to the low airspeed. The airplane damage was consistent with a low-speed impact with some rotation about the airplane's vertical axis. The pilot did not make any transmissions to air traffic control indicating any abnormalities or emergency. Postaccident examination of the airplane revealed no anomalies that would have precluded normal operation. During training on the accident airplane, the instructor recommended that the pilot get 25 to 50 hours of flight in visual meteorological conditions before flying in IMC in order to gain more familiarity with the radios, switches, and navigation equipment. The pilot only had 14 hours of flight time in the accident airplane before the accident flight, however it could not be determined whether this played a role in the accident.

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 in instrument meteorological conditions, which resulted in an aerodynamic stall.

Findings

Aircraft	Airspeed - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Environmental issues	(general) - Effect on operation

Factual Information

HISTORY OF FLIGHT

On May 2, 2010, about 2016 eastern daylight time (EDT), a JetProp DLX Piper PA-46-350P, N135CC, sustained substantial damage on impact with terrain near New Albany, Indiana. Instrument meteorological conditions prevailed at the time of the accident. The private pilot and passenger were fatally injured. The 14 CFR Part 91 personal flight was operating on an instrument rules (IFR) flight plan. The flight departed from Barkley Regional Airport (PAH), Paducah, Kentucky, about 1836 central daylight time (CDT) and was en route to Bowman Field Airport (LOU), Louisville, Kentucky.

About 1800 CDT, an employee of a fixed base operator at PAH stated that he directed the parking of the airplane. The pilot requested 40 gallons of fuel per side. The employee did not see any leaks from the airplane, and the airplane looked to be in “real good shape.”

About 1801-1805 CDT, the Washington Automated Flight Service Station, WSO30 position, provided a weather briefing to a caller who had represented N135CC. The caller requested to be provided with “just a metar” at Louisville so he could see if he needed to go under visual flight rules (VFR) or IFR. When asked by the briefer if the caller was leaving soon, the caller said “yes.” The conversation continued and WSO30 stated:

“uh looks like you’ll have to go i f r *(louisville’s) callin it wind one seventy at five nine miles light rain ceiling nine hundred broken one thousand one hundred overcast temperature an dew point both twenty one... however at standiford they have six miles moderate rain an mist uh one thousand three hundred broken an one thousand nine hundred overcast”

The caller then filed an IFR flight plan with a “filed off” time of “twenty minutes thirty minutes,” an altitude of “two one zero,” direct to “louisville bowman,” and a time en route of 45 minutes. The alternate airport was Louisville International Airport-Standiford Field (SDF), Louisville, Kentucky.

WSO30 stated, “an ya got the airmet sierra for i f r ceilings below a thousand visibilities below three precipitation an *(mist) an uh conditions are forecast to continue through o three hundred both for turbulence an the i f r”

At 1826 CDT, N135CC requested an IFR clearance to LOU from PAH air traffic control. The clearance was, “cleared to bowman airport at filed maintain three thousand expect flight level two one zero within one zero minutes....” At 1833 CDT, N135CC was cleared for takeoff.

A transcription of transmissions by N135CC and Louisville/Standiford Air Traffic Control Tower, Departure One Radar, at the following times, states, in part:

2002:30 EDT, N135CC, “louisville approach jet prop one three five charlie charlie with you one three thousand for one one thousand”

2002:36 EDT, DR1, "november one three five charlie charlie lousiville approach information romeo is current at bowman expect a v o r approach runway two four

2002:43 EDT, N135CC, "five charlie charlie has romeo now sir

2002:46 EDT, DR1, november five charlie charlie roger

2004:26 EDT, DR1, november five charlie charlie descend and maintain seven thousand

2004:30 EDT, N135CC, (unintelligible) thousand five charlie charlie

2009:20 EDT, DR1, november five charlie charlie descend and maintain four thousand

2009:23 EDT, N135CC, four thousand for five charlie charlie

2010:35 EDT, DR1, november five charlie charlie fly heading zero five zero it'll be vectors north of Louisville international

2010:39 EDT, N135CC, zero five zero on the heading five charlie charlie

2014:17 EDT, DR1, november five charlie uh sierra is now current at bowman they just went i f r uh i believe the ceiling was eight hundred it'll be coming out here shortly on my system you can go ahead and pick up uh sierra if you like

2014:30 EDT, N135CC, five charlie charlie getting sierra

2016:54 EDT, DR1, (unintelligible) five charlie charlie uh fly heading zero six zero descend and maintain three thousand

There were no further recorded transmissions by N135CC.

A witness reported that the airplane approached from the southeast with a "loud" engine sound. The airplane then went "upside down" and entered a "spiral nose-dive." The witness also reported that there was no smoke or fire from the airplane.

PERSONNEL INFORMATION

The pilot, age 59, held a private pilot certificate with airplane single-engine land, glider, and instrument airplane ratings. On November 13, 1986, he was issued a private pilot certificate with a glider rating. On January 28, 1994, he was issued an airplane single-engine land rating. On April 28, 1998, he was issued an instrument airplane rating.

According to Federal Aviation Administration (FAA) records, on March 13, 2007, the pilot was involved in a runway incursion at Tucson International Airport, Tucson, Arizona. The pilot received an air traffic control clearance to taxi to runway 11L, which he read back correctly. The pilot stated that although he read the clearance as given, he taxied onto runway 11L expecting an immediate takeoff as he was aware of and saw air traffic on final approach for the same

runway. The pilot was piloting a PA-46, N870FS, at the time of the runway incursion.

On March 8, 2010, the pilot began JetProp Factory Training, which included 7 flights and 8.5 hours of flight time in the accident airplane.

The president of JetProp stated that most of its customers received 5-10 hours of flight training, the amount of which depends on their ability. Most customers convert the airplane they have been flying so their panels are virtually the same. The pilot purchased an existing JetProp to train in, so the airplane and panel were new to him. The pilot was an average pilot with fairly good pilot skills, but he was always hunting around the panel for radios, switches, and navigation equipment. Because of this, it was recommended to the pilot that he should accumulate 25-50 hours under VFR before flying in instrument meteorological conditions without a safety pilot, to which the pilot agreed.

The JetProp Factory Training endorsement in the pilot's logbook was dated March 11, 2010. From March 12 to April 25, 2010, there were 5 entries logging flights of the accident airplane, of which only three entries had an associated flight time, which totaled 5.6 hours.

The pilot's total flight time, based upon logbook entries, was about 2,493.7 hours, which included entries for a Piper PA-46, N870FS.

AIRCRAFT INFORMATION

The airplane was manufactured in 1999 as a Piper PA-46-350P, serial number 4636192, and was modified by Rocket Engineering Corp. under supplemental type certificate (STC) ST00541SE at a total time and Hobbs time of 354.8 hours, dated January 21, 2002. Under STC ST00541SE, the design change was for the installation of a Pratt & Whitney PT6A-34. The airplane was equipped with a Hartzell HC-E4N-3M, 4-blade composite propeller. Piper Aircraft had not provided any PA-46-350P engineering and/or flight test data to Rocket Engineering Corp. for its STC ST00541SE.

An Aircraft Registration Application by Deeems Holdings, LLC was signed by the pilot on March 8, 2010.

The airplane received its last annual inspection, dated May 21, 2009, at a Hobbs and total time of 1,396 hours. The engine received its last annual inspection, dated May 21, 2009, at a Hobbs time of 1,396 hours and a total time of 1,041.2 hours. According to aircraft and engine logbook entries, dated March 8, 2010, the Hobbs time was 1,388 hours.

A FlightSafety International JetProp DLX Pilot Training Manual recovered from the airplane states that the airspeed indicator green arc (normal operating range) is 68-172 knots indicated airspeed (KIAS) and the white arc (flaps down) is 57-117 KIAS.

METEOROLOGICAL INFORMATION

The LOU automated surface observing system (ASOS), located about 10.7 nautical mile (NM) and 80.4 degrees from the accident site at an elevation of about 546 feet mean sea level (MSL),

recorded at:

2014 EDT: wind - 180 degrees from 5 knots; visibility 10 statute miles (SM); light rain; broken - 800 feet above ground level (AGL); overcast - 1,300 feet AGL; temperature - 21 degrees Celsius (C); dew point - 21 degrees C; altimeter - 29.68 inches of mercury; remarks - rain began at 2008, ceiling varied from 600-1,100 feet AGL.

The SDF ASOS, located about 6.9 NM and 99.8 degrees from the accident site at an elevation of about 501 feet MSL, recorded at:

1856 EDT: wind - 200 degrees at 6 knots; visibility - 10 SM; overcast - 1,100 feet AGL; temperature - 21 degrees C, dew point - 20 degrees C; altimeter setting 29.68 inches Hg; remarks - rain ended 1823.

2054 EDT: wind - 030 degrees at 5 knots; visibility - 10 SM; light rain; broken - 1,200 feet AGL, overcast - 1,900 feet AGL; temperature - 21 degrees C, dew point - 20 degrees C; altimeter - 29.69 inches Hg.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was located 38 degrees 11 minutes 52 seconds North, 85 degrees 53 minutes 13 seconds West at an elevation of 337 feet. The airplane was on a field in an upright position with a tail to nose heading of about 329 degrees. Ground scarring was limited to an approximate area surrounding the main wreckage, which consisted of the fuselage, wings, empennage, and engine. The area surrounding the main wreckage had a smell consistent with Jet A fuel.

The left wing and right wings were attached to the fuselage. The left wing tank was broken open and deformed outwards above and along the leading edge. The right wing was separated about mid-span and displaced aft. The right wing flap was attached to both right wing sections.

The empennage was separated from the fuselage near the aft pressure bulkhead. The vertical stabilizer was attached by its spar, and the remaining section of vertical stabilizer was displaced towards the right side of the fuselage as viewed from tail to nose.

Flight control continuity from the control surfaces to the cockpit controls was confirmed. The flaps, cockpit flap indicator, and handle were in the 10 degree extended position. The elevator trim jack screw was extended by about 10 threads, which equated to about 1/3 full nose-up trim.

The cockpit landing gear selector was in the down position. The landing gear was not in the retracted and locked position and when the airplane was lifted during recovery, the landing gear extended.

The fuel selector was positioned to the left tank. There was usable fuel quantity in the right tank and an unusable fuel quantity in the left tank. A liquid consistent in the color and smell of Jet A was present in the engine driven fuel pump.

The cockpit ignition switch was in auto position. The generator switch was in on position. The fuel pump switch was in the pump 2 position.

The top and bottom sections of the cabin entry door had their handles in the latched position. The top section had its two engagement hooks extended.

A crew oxygen bottle was found within the cabin, and its gauge indication was above the green band labeled full.

The Hobbs meter was destroyed.

Three of the four propeller blades were separated from the shank. One propeller blade was intact and the other was recovered along a road adjacent to the accident site. The remaining two propeller blades were not located. The fracture surfaces and location of the three separated propeller blades was consistent with impact damage. All four of the propeller blades/counterweights were of a similar blade angle estimated to be between low pitch and feather positions. The mounting bolts and engine attachment were intact. There were no impact marks to indicate preimpact blade angle. There were no anomalies that would have precluded normal operation.

A disassembly examination of the engine, a PT6A-34, serial number RB0137, revealed impact damage to the external engine housing. There was no evidence of fire. The engine compressor turbine, power turbine guide vane ring, interstage baffle, power turbine shroud, and power turbine displayed circumferential scoring consistent with rotation at the time of impact. There were no preimpact anomalies that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot was issued a third class airman medical certificate on March 31, 2010, with the following limitations: “must wear lenses for distant, have glasses for near vision”.

An autopsy of the pilot was performed on May 3, 2010, and reported the cause of death was multiple blunt force injuries sustained in a small passenger aircraft mishap.

The FAA’s Final Forensic Toxicology Fatal Accident Report of the pilot stated: no carbon monoxide detected in blood, no cyanide detected in blood, no ethanol detected in blood, no drugs listed detected in blood.

TESTS AND RESEARCH

Autopilot Examination

The KFC 225 autopilot system underwent a component examination at Honeywell, Olathe, Kansas, under the supervision of the FAA. The components were: configuration module, flight control computer, pitch servo, primary servo (roll servo), and the servo mount (roll).

The configuration module indicated that the software load was for a KFC 225 installation on a Piper PA-46-350P. The module also recorded roll monitor fail and yaw fail errors about 51 minutes and 36 seconds and 51 minutes and 38 seconds, respectively, after power was applied to the flight computer. The roll monitor fail message is logged when the aircraft experiences roll rates in excess of +/- 14 degrees per second or a roll attitude of +/- 45 degrees. The autopilot automatically disconnects when the roll monitor is tripped, which is logged as a roll monitor fail, and all of the flight director functions are disengaged. The yaw fail message is logged when the yaw rate is in excess of 12 degree per second. When yaw fail is logged, YD mode becomes inactive without affecting the other autopilot modes.

The flight control computer was connected to a system test panel and passed the preflight test. The unit passed all functional tests that included NAV/HDG/APR/VS mode engagement, altitude preselect, ARM, trim sense, auto trim, and course/heading operation.

The pitch servo sustained impact damage and portions of its bearing were damaged/not recovered. The inside of the pitch servo cover contained two markings consistent in color with that of the motor counterweight rubbing on the cover. In preparation for functional testing, the bearing was replaced and the motor counterweight was realigned. The servo then underwent final acceptance tests and no discrepancies were noted.

The primary servo (roll servo) was connected to a system test panel and passed preflight testing. The clutch engagement and disengagement was satisfactory. The servo passed functional checks. No discrepancies were noted.

The servo mount (roll) clutch was tested in the clockwise and counter-clockwise directions. The clutch slipped at approximately 31 inch per pound in both directions. STC installation manual cites the limit for clutch slip at 22 +/-2 inches per pound.

Stall Computer Examination

The stall warning computer was examined at Safe Flight Instrument Corporation, White Plains, New York under the supervision of the FAA. The computer was tested to and passed the acceptance/functional test procedure (ATP) with a small tolerance variation which may have due to adjustment for aircraft specific capability. The lift transducer associated with the stall vane could not be tested due damage from recovery.

Engine Trend Monitor (ETM)

Engine trend monitor (ETM) data was downloaded at Shadin Avionics, St. Louis Park, Minnesota, under the supervision of the FAA. The ETM download recorded 16 records dated May 2, 2010. The record times were not correlated and the record of the last takeoff report recorded a time of 15:33:25. The last three records consisted of a power check, a shaft horsepower exceedance, and a torque exceedance. The power check report recorded:

Time: 1549:14

Outside air temperature (OAT) – 0 degrees C

Pressure altitude – 17,510 feet

Indicated airspeed (IAS) – 164 knots
Propeller Speed (Np) – 2,164 rpm
Torque – 711 ft-lb
Fuel flow – 30.7 gallons per hour (GPH)
Interstage turbine temperature (ITT) – 611 degree C
Gas generator speed (Ng) – 90.6 percent

The shaft horsepower exceedance recorded:

Time: 1614:25
OAT – 16 degrees C
Pressure altitude – 4,270 feet
IAS – 77 knots;
Maximum shaft horsepower – 596.2 horsepower
Exceedance duration – 1 second
ITT – 697 degrees C
Ng – 98.9 percent
Np – 2,158 rpm
Torque – 1451 ft-lb
Fuel flow – 40.4 GPH

The torque exceedance recorded:

Time: 1614:25
OAT – 16 degrees C
Pressure altitude – 4,270 feet
IAS – 77 knots
Maximum torque – 1,451 ft-lb
Exceedance duration – 5 seconds
ITT – 697 degrees C
Ng: 98.9 percent
Np: 2,158 rpm
Fuel flow - 40.4 GPH

Radar Data

Radar data for a time period from about 20:14:27 EDT to 20:15:00 EDT recorded N135CC at an altitude of 4,000 feet, a decreasing ground speed from about 131 knots at the beginning of the period to about 116 knots at the end of the period, and an approximate northeasterly ground track. From about 2015:04 EDT to 20:15:50 EDT , the altitude range was 3,900 feet and 3,800 feet, and the airspeed decreased from about 119 knots at the beginning of this period to about 57 knots.

History of Flight

Enroute-change of cruise level	Miscellaneous/other
Enroute-cruise	Aerodynamic stall/spin (Defining event)
Enroute-cruise	Attempted remediation/recovery
Enroute-cruise	Loss of control in flight
Enroute-descent	Collision with terr/obj (non-CFIT)

Other flight crew Information

Certificate:	Private	Age:	59, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	March 31, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	December 15, 2009
Flight Time:	2494 hours (Total, all aircraft), 14 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	JetProp DLX Piper	Registration:	N135CC
Model/Series:	PA46 350P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	4636192
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	May 21, 2009 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:	1396 Hrs	Engines:	1 Turbo prop
Airframe Total Time:	1396 Hrs as of last inspection	Engine Manufacturer:	Pratt & Whitney
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	PT6A-34
Registered Owner:		Rated Power:	
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Day
Observation Facility, Elevation:	LOU,546 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	20:14 Local	Direction from Accident Site:	80°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	Broken / 800 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.68 inches Hg	Temperature/Dew Point:	21 °C / 21 °C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Paducah, KY (PAH)	Type of Flight Plan Filed:	IFR
Destination:	Louisville, KY (LOU)	Type of Clearance:	IFR
Departure Time:	18:36 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	38.197776,-85.886947

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Kenneth Ball; Federal Aviation Administration; Indianapolis, IN Tom McCreary; Hartzell Propeller Inc.; Piqua, OH Shawn Isham; Parker Aerospace; Elyria, OH Michael McClure; Piper Aircraft, Inc.; Vero Beach, FL Thomas Berthe; Pratt & Whitney; South Burlington, VT Brian McMillan; Shadin Avionics; St. Louis Park, MN Bill Gill; Honeywell; Olathe, KS Joe Gordon; Safe Flight Instrument Corporation; White Plains, NY
Original Publish Date:	June 28, 2012
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=75910

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).