



National Transportation Safety Board Aviation Accident Final Report

Location:	Vigo Park, TX	Accident Number:	FTW03LA209
Date & Time:	08/28/2003, 1700 CDT	Registration:	N394R
Aircraft:	Pilatus PC-6/C-H2	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

During cruise flight, the 33,000-hour pilot stated that the airplane encountered "extreme clear air turbulence followed by three jolts in rapid succession." He "heard a loud pop as he jerked the throttle to the flight idle position." As the airspeed was slowing, the pilot attempted to add power. The "throttle would not move from the flight idle position and the propeller went into BETA." The airplane pitched downward as the pilot continued to try and "push the throttle lever forward." The airplane established "a rate of descent in excess of 10,000 feet per minute at a near vertical attitude." The pilot initiated an evacuation of the airplane and deployed his parachute (the pilot was wearing a sport parachute during the flight). Subsequently, the airplane impacted terrain. During a post accident examination, no mechanical anomalies were noted on the airframe, propeller, or engine that could have caused the accident. The reason for the loss of propeller pitch control could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of propeller pitch control for undetermined reasons.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings

1. WEATHER CONDITION - TURBULENCE,CLEAR AIR

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE

Findings

2. PROPELLER CONTROL - LOSS,TOTAL
3. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. BAIL-OUT/EMERGENCY EJECTION - PERFORMED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

5. TERRAIN CONDITION - GROUND

Factual Information

On September 28, 2003, approximately 1700 central daylight time, a Pilatus PC-6/C-H2 turbine powered single-engine airplane, N394R, registered to and operated by the pilot, was destroyed when it impacted terrain following an uncontrolled descent, near Vigo Park, Texas. The commercial pilot, who was the sole occupant of the airplane, was not injured. Visual metrological conditions prevailed, and no flight plan was filed for the 14 Code of Federal Regulations Part 91 personal flight. The cross-country flight originated from the Bishop Airport, near Decatur, Texas, at 1630, and was destined for the Dalhart Municipal Airport, near Dalhart, Texas.

The 33,000-hour pilot reported in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) that while in cruise flight, at 12,000 feet msl, approximately 30 miles southwest of Amarillo, Texas, the airplane "encountered extreme clear air turbulence, with three jolts in a rapid succession." On the third jolt, the pilot "heard a loud pop as he jerked the throttle to the flight idle position to slow down." As the airspeed reduced to approximately 100 knots, he attempted "to add power, but the throttle would not move out of the flight idle position." The pilot stated that the "prop[eller] went into beta as the nose pitched down." He continued to attempt to move the power lever forward, but it would not move off the flight idle position. At this point, the rate of descent was approximately 10,000 feet per minute (FPM), approximately 10 seconds into the "event." The pilot got out of the seat to see if he could gain more leverage from behind the throttle. Once in position, he had to let go of the control yoke with his left hand. Subsequently, the airplane went from "approximately 60 degrees nose down to vertical." The pilot further stated he was experiencing negative "g's" from letting the control yoke go and the rate of descent was "in excess of 12,000 fpm" approximately 20 seconds into the "event." The pilot, who was wearing a sport parachute, elected to bail out of the airplane and deploy his parachute. The airplane impacted soft terrain and came to rest in the upright position. Note: the pilot was wearing a sport parachute during the flight.

Examination of the wreckage by an FAA inspector, who responded to the accident site, revealed both wings were separated, and the fuselage was severely crushed.

The 1966 model Pilatus PC-6/C-H2 airplane was a high wing, tailwheel-equipped, fixed gear, semimonocoque design airplane, configured for skydiving operations. The airplane was powered by an Allied Signal / Garrett TPE 331-1-101F turbine engine, rated at 665 horsepower. The engine was equipped with a Hartzell HC-B3TN-5 hub and three T10282N+4 propeller blades.

Examination of the airplane maintenance logbooks revealed the last annual inspection was performed on June 24, 2003 at an airframe total time of 15,120.7 hours. The engine was installed on the aircraft on May 23, 1997. According to the aircraft type certificate, the propeller assembly originally certified on the airplane model was a Hartzell HC-B3TN-5 hub with T10178C propeller blades (101.5 inch diameter blades). On June 6, 1998, a Hartzell HC-B3TN-5 hub with T10282+4 blades (106.5 inch diameter blades) was installed on the aircraft per an FAA Form 337. The airplane logbook indicated that the reverse blade angle set to -9.5 degrees. The propeller manufacturer stated that other applications that use the T10282+4 blades have a maximum reverse blade angle of -8.0 degrees.

The wreckage was recovered by the landowner to a secure barn on his property. On January 8, 2004, representatives from Pilatus Aircraft Ltd., and Hartzell Propeller, Inc. examined the

wreckage under the supervision of an FAA inspector.

Examination of the cockpit revealed the power lever was found in the full reverse position and the engine speed control was found in the max position. The FAA inspector reported that the power lever was in the "flight idle" position at the accident site. The throttle control lever could be moved freely between reverse and idle. Deformation of the firewall prevented further movement. The engine speed control could be moved freely. The emergency shut-off / feather lever was found in the retracted (off) position. The emergency fuel system was in the "open" position. The cockpit floor was severely crushed and deformed.

All engine control cables were found separated between the firewall and engine. It was unknown if the cables were cut during the wreckage recovery or from impact. The beta cam installed was found to be the original cam for the engine model.

The outboard 5-feet of the left wing exhibited heavy crushing and was bent upwards at a 45-degree angle. The wing lift strut remained attached to the wing. The inner section of the left wing displayed signatures consistent with being torn from the fuselage with forward momentum. The left aileron was bent approximately 80-degrees in a "V" shape. The right wing was separated approximately 5-feet outboard of the wing attach point. Leading edge crushing was observed throughout the length of the right wing.

The empennage remained intact and was undamaged. The horizontal and vertical stabilizers remained intact, and respective flight control surfaces and cables remained attached.

The propeller piston/cylinder/spring assembly was found separated from the propeller. The feather springs were disengaged and separated from the spring retainer. All three blades remained attached the blade clamps and hub assembly. The pitch change links were separated, allowing the blades to rotate freely in the hub. The propeller mounting flange and attaching hardware was found intact. The engine shaft was partially dislodged from the engine case. All three propeller pitch control links were bent and deformed. The screw holes were elongated. The cylinder was separated from the hub assembly.

All three propeller blades were bent aft with rotational scoring on the camber side. Two of the three blades were twisted toward low pitch. Two of the blades had deformation and bending at the trailing edge on the outboard 1/4 portion of the blades. The blade length from the 30-inch reference strip to the tip of the blade was 23-1/4 inches.

The reason for the loss of propeller pitch control could not be determined.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial; Flight Engineer	Age:	61, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	Glider	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	08/04/2003
Occupational Pilot:		Last Flight Review or Equivalent:	08/04/2003
Flight Time:	33000 hours (Total, all aircraft), 10004 hours (Total, this make and model), 25000 hours (Pilot In Command, all aircraft), 175 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Pilatus	Registration:	N394R
Model/Series:	PC-6/C-H2	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	599
Landing Gear Type:	Tailwheel	Seats:	10
Date/Type of Last Inspection:	06/24/2003, Annual	Certified Max Gross Wt.:	4850 lbs
Time Since Last Inspection:		Engines:	1 Turbo Prop
Airframe Total Time:	15120.7 Hours as of last inspection	Engine Manufacturer:	Allied Signal
ELT:	Installed	Engine Model/Series:	TPE331-1-101F
Registered Owner:	On file	Rated Power:	665 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	AMA, 3607 ft msl	Distance from Accident Site:	35 Nautical Miles
Observation Time:	1653 CDT	Direction from Accident Site:	320°
Lowest Cloud Condition:	Thin Broken / 9000 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 11000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	16 knots / 24 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.94 inches Hg	Temperature/Dew Point:	29° C / 14° C
Precipitation and Obscuration:			
Departure Point:	Decatur, TX (76T)	Type of Flight Plan Filed:	None
Destination:	DALHART, TX (DHT)	Type of Clearance:	None
Departure Time:	1530 CDT	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	34.766389, -101.296389

Administrative Information

Investigator In Charge (IIC):	Alexander Lemishko	Report Date:	07/29/2004
Additional Participating Persons:	Gordon D Morris; FAA Flight Standards District Office; Lubbock, TX Tom McCreary; Hartzell Propeller Inc.; Piqua, OH Karl G Trautman; Pilatus Aircraft Ltd.; Stans, Switzerland,		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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