



National Transportation Safety Board Aviation Accident Final Report

Location:	GRAFORD, TX	Accident Number:	FTW98FA117
Date & Time:	02/03/1998, 2138 CST	Registration:	N15566
Aircraft:	Piper PA-34-200	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane was dispatched to pick up a stranded flightcrew that landed at the destination airport, 70 miles from home base. Fog had formed in the area. The airplane circled the airport, above the fog layer, but was unable to land due to the fog. After circling the airport, the airplane was heard proceeding east bound until the sound of the engines disappeared. An ELT signal was received by another airplane on the 290 degree radial, 19 miles from the Milsap VOR. There were no reported eyewitnesses. The wreckage was located the next morning on the eastern ledge of a granite ridgeline of a north-south oriented hill rising approximately 200 feet above the surrounding terrain. The wreckage was scattered for 270 feet on a heading of 240 degrees. Signatures at the initial point of impact indicate that the airplane contacted trees and terrain in controlled flight in a slight left wing down attitude. Flight control continuity was established. The landing gear and flaps were found in the retracted position.

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 clearance with the ground. Factors were the dark night, the rising terrain, and the ground fog obscuring the ground.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CRUISE

Findings

1. (F) WEATHER CONDITION - FOG
2. (F) LIGHT CONDITION - DARK NIGHT
3. (F) TERRAIN CONDITION - RISING
4. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On February 3, 1998, at 2138 central standard time, a Piper PA-34-200 twin engine airplane, N15566, was destroyed upon impact with terrain while in cruise flight near Graford, Texas. The non-instrument rated private pilot and his passenger were fatally injured. The airplane was owned by two private individuals, and was being operated by Aero Dynamics, Inc., of Arlington, Texas, under Title 14 CFR Part 91. Dark night visual meteorological conditions prevailed for the 70 nautical mile personal flight for which a flight plan was not filed. The flight originated from the Arlington Municipal Airport (F54), at approximately 2105, with the Possum Kingdom Airport (F35), as its intended destination.

The operator reported that the airplane was dispatched to the Possum Kingdom Airport (F35) to pick up a flight crew from the same flight school that arrived at the Possum kingdom Airport at approximately 2020 in the evening after their single engine airplane developed mechanical problems and elected to land at the Possum Kingdom Airport. The flight crew of the airplane that made the precautionary landing consisted of a flight instructor and a student pilot. The flight instructor reported to the NTSB investigator in charge that prior to his landing at F35, he observed stratus clouds over Possum kingdom Lake, moving toward the airport.

The flight instructor reported that he spoke on the phone with the passenger on the accident flight at 2030 when he first reported the engine problems to the operator. The person that answered the telephone call was the son of the operator, who also worked with his father as an aircraft mechanic. He told the flight instructor that he was going to notify his father immediately and they would be coming out as soon as possible to pick them up in their [Piper] Seneca. The flight instructor cautioned the passenger about the rapidly deteriorating weather in the vicinity of the airport.

At about 2100, the flight instructor ventured outside to try to determine the nature of his airplane's mechanical problem. The flight instructor reported that by this time the stratus layer had moved in from the west, so he went back inside to call the recovery aircraft to advise them not to come due to the inclement weather in the area. The instructor added that by the time he called the FBO office at the Arlington Airport, he was informed that the airplane had departed 3 or 4 minutes earlier.

At 2130 the flight instructor, who was "very familiar with the Piper Seneca," reported hearing the "unmistakable sound of the PA-34's engines" as the airplane circled above the airport. The airplane was not visible through the overcast sky. The flight instructor on the ground attempted to contact the circling airplane on both Possum Kingdom's and Arlington's frequencies.

The flight instructor added that judging by the sound of the engines, the airplane crossed over the airport on a west bound heading, turned south bound, followed by another turn toward the east. The noise of the engines "began fading as the airplane proceeded eastbound until it disappeared all together." The flight instructor assumed that in view of the prevailing weather at the airport, the crew of the recovery airplane elected to return to the Arlington Airport. After several calls to the Arlington Airport, starting 30 minutes after the airplane circled the airport, the flight instructor became concerned and advised the school's chief pilot.

The school's chief pilot elected to fly a Cessna 172 toward the Possum Kingdom Airport to attempt to locate the overdue twin engine Piper. As he approached the Possum Kingdom Airport, the chief pilot "received a very strong ELT signal" on the 290 degree radial from the Milsap VOR, at 19 to 20 DME miles.

A Bell 206 helicopter was enlisted to assist in the search of the airplane. The helicopter became airborne around 0400; however, the crew was not able to fly west bound beyond 20 miles west of Fort Worth, Texas, due to the fog. that obscured the sky. The same helicopter renewed the search prior to 0700 and located the wreckage at 0835. There were no reported eyewitnesses to the accident.

PERSONNEL INFORMATION

The 64 year old pilot-in-command was a non-instrument rated private pilot rated in single and multi engine land airplanes. His last third class medical certificate was issued on July 10, 1997. His medical had a waiver for glasses for near vision. At the time of his last physical, the private pilot listed in the FAA application form that he had accumulated a total of 9,000 hours, with 90 hours in the preceding 90 days. The pilot was an FAA certified airframe and power plant mechanic (certificate number 467582956) with inspection authorization.

The 25 year old passenger was seated on the left seat. According to FAA records, the passenger held a current student pilot's certificate, issued June 19, 1997. At the time of his medical examination he had logged 8 hours of flight.

AIRCRAFT INFORMATION

The 1973 model Piper PA-34-200 "Seneca," serial number 34-7350076, was equipped with two normally aspirated Lycoming IO-360 engines featuring counter rotating propellers. The engine serial number for the LIO-360-C1E6 engine was L-549-67A for the right engine and L-9856-51A for the left engine. The 2-bladed propellers were manufactured by Hartzell. The model numbers were HC-C2YK-2CEF-FC766A-0 for the left propeller and HC-C2YK-2CLEF/FJC766A-0 for the right counter rotating propeller.

The last annual inspection was completed on August 29, 1997, at 4,693.5 airframe hours. The last inspection performed was a 100 hour inspection performed on December 12, 1997. Total time on the airframe was 4,967.0 hours. Both engines underwent a major overhaul on March 18, 1991, at 1,944 airframe (Hobbs) hours. At the time of the last 100 hour inspection, the right engine had 1,209.4 hours and the left engine had 1,298.0 hours since the last major overhaul. The manufacturer's recommended time between overhauls is 1,600 hours.

A review of the airframe and engine records by the FAA inspector, did not reveal any anomalies or uncorrected maintenance defects prior to the flight. The airframe and engines were found to be in compliance with applicable airworthiness directives.

METEOROLOGICAL INFORMATION

The closest weather reporting station to the accident site was Mineral Wells (MWL). Mineral Wells is located 15 nautical miles east (106 degree) from the accident site. At 2150 CST, the station reported scattered clouds at 25,000 feet, a visibility of 10 miles, winds from the north (360 degrees) at 7 knots. The altimeter was reported as 30.08 inches Hg, with a temperature of 41 degrees and a dew point of 38 degrees Fahrenheit.

Weather reports for Wichita Falls, Fort Worth, and Abilene, are also enclosed in this report.

WRECKAGE AND IMPACT INFORMATION

The wreckage of the airplane was located by a helicopter on the eastern ledge of a granite ridgeline of a north-south oriented hill rising approximately 200 feet above the surrounding terrain. The wreckage was scattered for 270 feet on a measured heading of 240 degrees. The main wreckage came to rest on a measured heading of 040 degrees. The coordinates for at the accident site were 32 degrees 54.84 minutes north and 98 degrees 19.65 minutes west. The elevation of the accident site was estimated at 1,100 feet. The elevation of the airport of departure (F54) was 630 feet. The area in the general vicinity of the accident site is locally known as the McMurray Ranch.

Signatures at the initial point of impact indicate that the airplane contacted trees and terrain in controlled flight in a slight left wing down attitude. Portions of the right wing and particles of green glass identified as the navigation light for the right wing were found on the right side of the wreckage path. A portion of the leading edge of the left wing was found wrapped around the trunk of the tree located on the left side of wreckage path. Particles of red navigation light lenses and the fiberglass fairing for the left wing tip were found near the tree.

Both wings were destroyed by impact and were found separated from the airframe.

Both engines were found separated from their respective engine mounts. Both engines sustained severe impact damage, with most of its accessories either separated or found partly attached to the engine. The magnetos for both engines were accounted for. The crankcase on both engines was found fractured by impact damage.

The vacuum pumps for both engines were found separated from their respective engines; however, the non-metal drive was found intact. The vacuum pump for the right engine was not found during the initial investigation; however, it was later located by the recovery crew.

Both propellers were found separated from the propeller crankshaft at the propeller flanges. The propellers remained attached to their respective hubs. The propeller blades on both propellers sustained heavy leading edge damage, rotational marks and exhibited "S" bending. Small portions of the tips were found missing from each of the 4 propeller blades. The left propeller assembly came to rest atop the trees. The propeller spinners separated from their respective hubs and exhibited severe impact damage.

Several tree branches and tree trunks in the initial wreckage path exhibited slash marks.

The 3-position fuel selectors located in the console were destroyed by impact damage. No fuel was found at the accident site; however, fuel was found during the engine examination in the fuel system of each engine. Both 49 gallon integral wing fuel tanks were compromised by impact damage.

Flight control continuity was established from the empennage to the forward portion of the fuselage. The landing gear handle was found in the retracted position. The lever for the mechanical actuated wing flaps was destroyed; however, damage to portions of the wing flaps that were found was consistent with the flaps being in the retracted position.

All aircraft flight control surfaces were accounted for at the accident site. The rudder pedals on the pilot's side remained attached, the ones for the copilot side were separated. The handles on both control yokes were found fractured. The power lever quadrant sustained severe impact damage and all control cables were found separated from the levers.

The airplane was found to be equipped with a Mitchell auto pilot system. The operational status of the auto pilot at the time of the impact could not be established due to damage sustained.

The instrument panel was fragmented and most flight and engine instruments were destroyed by impact damage. The only instrument readings available were: The altimeter (destroyed) was found set at 30.08 inches Hg. The OBS for the #2 VOR was found set on 070 degrees. The ammeter was reading 40 amps. The suction gages were reading zero. The propeller de-ice ammeter was reading 17 amps.

Examination of the wreckage did not reveal any evidence of airframe or engine pre-impact mechanical malfunction.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies and toxicological tests were requested on both occupants of the airplane. Judge J. K. Slay, Justice of the Peace for Palo Pinto County requested the autopsies. The autopsies were performed on February 5, 1998, by Medical Examiners of the Southwest Institute of Forensic Sciences, in Dallas, Texas. Toxicological tests were negative.

SURVIVAL ASPECTS

The airplane was equipped with a Narco 10 ELT. The ELT survived the accident and assisted in the location of the wreckage.

The airplane was equipped with shoulder harnesses for all occupants. The airplane was equipped with 7 seats. The shoulder harness assembly for the left front seat was found entangled around the passenger.

The cockpit of the airplane was fully compromised; however, the occupiable space for the cabin section of the airplane, aft of the pilot and copilot seats, was not compromised.

TEST AND RESEARCH

According to FAA personnel involved with regional air traffic control, the airplane was not picked up by Center ATC radar on the night of the accident. Additionally, no radio transmissions were received by any FAA facilities in the vicinity of the accident.

According to the Fort Worth Flight Service Station, the pilot was not briefed by them prior to the flight, nor was he provided in flight assistance on their local "Flight Watch" frequency.

An examination and teardown of the engines was completed on Wednesday, Feb 11, 1998, at Lancaster, Texas. No defects were found on either engine that would have prevented normal engine operation. See enclosed report for details of the examination.

ADDITIONAL INFORMATION

The wreckage was released to the owner's representative upon completion of the investigation.

Pilot Information

Certificate:	Private	Age:	63, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/10/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	9000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N15566
Model/Series:	PA-34-200 PA-34-200	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	34-7350076
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	12/12/1997, 100 Hour	Certified Max Gross Wt.:	4000 lbs
Time Since Last Inspection:	97 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4882 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	IO-360-C1E6
Registered Owner:	JAMES P. DAVIS/ JOHN WHITMORE	Rated Power:	200 hp
Operator:	FRED H. PATE	Operating Certificate(s) Held:	None
Operator Does Business As:	AERODYNAMICS INC.	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	MWL, 972 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	2150 CST	Direction from Accident Site:	106°
Lowest Cloud Condition:	Scattered / 25000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	5°C / 3°C
Precipitation and Obscuration:			
Departure Point:	ARLINGTON, TX (F54)	Type of Flight Plan Filed:	None
Destination:	, TX (F35)	Type of Clearance:	None
Departure Time:	2105 CST	Type of Airspace:	Class G

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	HECTOR R CASANOVA	Report Date:	09/28/1999
Additional Participating Persons:	MARK WELLBORN; FORT WORTH, TX JAMES P SPEARMAN; FORT WORTH, TX GERALD R JAMES; WILLIAMSPORT, PA MICHAEL C MCCLURE; VERO BEACH, FL		
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/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).