



National Transportation Safety Board Aviation Accident Final Report

Location:	WATERFORD, MI	Accident Number:	CHI99FA047
Date & Time:	12/04/1998, 2045 EST	Registration:	N59902
Aircraft:	Piper PA-31-350	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal

Flight Conducted Under: Part 91: General Aviation - Positioning

Analysis

The airplane collided with the tops of trees during an ILS approach near the middle marker. Witnesses heard the airplane strike the trees and a '...whop, whop, whop sound...' it made as it continued its flight. Other witnesses observed the airplane flying a curved, descending, flight path until the aircraft impacted the ground. Visibility was reported as 1/2 mile at the airport. The on-scene examination revealed no airframe or engine anomalies that would prevent flight. A section of the right propeller and other pieces of airframe were found along the approach path after initial impact with trees. The trees along the flight path were about 30 to 60 feet high. The tops of the taller trees were broken or had fresh cut marks on their limbs. The pilot's blood alcohol level was 216 (mg/dL, mg/hg).

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's descent below the decision height for the instrument approach.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings

1. OBJECT - TREE(S)
2. ALTITUDE/CLEARANCE - LOW - PILOT IN COMMAND
3. IMPAIRMENT(ALCOHOL) - PILOT IN COMMAND
4. DECISION HEIGHT - NOT COMPLIED WITH - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings

5. REMEDIAL ACTION - INADEQUATE - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 4, 1998, at 2045 eastern standard time (est), a Piper PA-31-350, N59902, piloted by an airline transport pilot, was destroyed during a collision with trees, and a subsequent impact with the ground and a post-impact fire. The airplane was flying an instrument landing system (ILS) approach to runway 09R at the Pontiac/Oakland County International Airport, Pontiac, Michigan. The positioning flight was operating under the provisions of 14 CFR Part 91, and was operating on an instrument flight rules (IFR) flight plan. The pilot was fatally injured. The flight departed Lansing, Michigan, exact time unknown.

The pilot of N59902 contacted the Pontiac /Oakland county International Airport's air traffic control tower local controller (local control) at 2044:08 est. At that time the pilot said his airplane was "...established on the ILS." The local controller advised the pilot of the altimeter setting and advised the pilot that "...several aircraft have reported they can see the approach lights but it's real tough finding the runway lights." At 2044:34 the pilot said he would "...check it out for [the local controller]." The local controller gave N59902's pilot the runway wind conditions at 2044:36. The pilot's last transmission was, "Roger that nine oh two." This transmission was made at 2044:42. At 2048:13 the local controller asked N59902's pilot, "Navajo niner zero two you on the ground safely." There were no other transmissions from the pilot of N59902.

A witness near the accident site said he heard airplanes "...coming in for... landing, heading east." He said he heard one airplane coming closer and "...heard it hit something... the engine continued to run with a whop, whop, whop sound, as if the propeller struck something. This sound continued for about 3-5 seconds then the plane crashed with a bright orange glow lighting up the sky." A second witness confirmed this witness' statement. Other witnesses observed the airplane flying a curved flight path before impacting the ground.

PERSONNEL INFORMATION

N59902's pilot received his airline transport pilot certificate on November 19, 1997. He obtained a first class medical certificate on November 9, 1998. There were no limitations on his medical certificate. The pilot passed a 14 CFR Part 135.297 pilot-in-command instrument proficiency check on September 28, 1998, while piloting a Piper PA-34-200T.

According to records provided by the pilot's employer, the pilot information sheet showed the pilot had a total and pilot-in-command time of 1,700 and 1,000 hours respectively. Company pilot records showed the pilot did not fly on December 3, 1998. The company flight records are appended to this report.

AIRCRAFT INFORMATION

N59902's maintenance records showed it had an annual inspection on August 31, 1998, with a total airframe time of 7,758.9 hours. N59902's left and right engines' had 132.6 and 150.8 hours respectively since overhaul at the annual inspection. The two cockpit altimeters were pressure tested on October 1 and 6, 1997, as required by 14 CFR Part 91.411. The transponder was tested as required by 14 CFR Part 91.413 on September 30, 1997. Excerpts of the maintenance records showing these tests are appended to this report.

WRECKAGE AND IMPACT INFORMATION

N59902's wreckage was about one nautical mile west, southwest of runway 09 Right's approach threshold. The impact area was an empty field behind single-family homes. Small trees located about 30 to 50 feet north and northeast of the ground scars north end had branches that were cut at angles between 10 and 20 degrees to the branches' bark surface. Examination of the branches cut surfaces revealed they were moist and flexible.

Impact scars and craters showed the airplane was on an approximate 290 degree heading. The middle crater was about 20 inches deep and had various-sized pieces of plexiglas and what were airframe components that were crushed and torn. The pilot cockpit entrance door was located about 15 feet south of the center crater. The wreckage was positioned about 40 feet southeast of the impact scars and craters. Its heading was 360 degrees. A site drawing is appended to this report.

The airframe was burnt from the empennage forward. The only recognizable airframe components were the empennage, the left and right wing's outboard sections, and the right aileron. The outboard section of the right wing was found about 20 feet east of the burnt airframe. Both wing sections were also fire damaged. The right aileron was found about 40 feet northeast of the burnt airframe. The leading edges of both outboard wing sections were crushed aft.

The left stabilizer and elevator's tips were bent down about 30 degrees. The bend began at the elevator's outboard hinge point. The tip of the vertical stabilizer was bent about 10 degrees to the right. The rotating beacon assembly that is located on the tip was missing.

The left and right engine's cylinders had thumb compression when the crankshafts were rotated. Cylinder number six on the right engine was the exception. Thumb compression was not obtained on this cylinder. The left engine vacuum pump's rotor and vanes were intact. The right engine's vacuum pump's rotor was cracked and its vanes were intact. The oil, oil screens, and oil filters were clean for both engines. The right and left wing root in line fuel filters were clean. The fuel servos were fire damaged. Both fuel servo fuel screens had small pieces of a white Teflon-like tape strands on them. Other than the strands of tape, the screens were clean.

The right engine's turbocharger system was heat damaged. The waste gate was about 3/4 open and would not move. The turbo charger impeller blade's ends were scored. There were many scratches in the compressor housing. The left engine's waste gate was in the full open position and free to move. The turbocharger's compressor impeller blade tips were bent opposite the direction of rotation. The blades had varying degrees of scoring on their surfaces. The impeller is free to rotate.

The left engine's spark plug electrodes varied in color. Their color varied from a medium gray to dark brown. The right engine's spark plug electrodes varied in color. Their color range went from a medium brown to dark brown. The ignition leads and hoses on both engines were fire damaged. The post-impact fire destroyed the magnetos. The fuel pumps for both engines were fire damaged and could not be rotated.

One of the left propeller's blades suffered heat damage. About 1/2 of this blade was missing. The blade was bent aft. The second blade suffered heat damage. About six inches of its tip was missing. The third blade had fore and aft bending along its span. All the blades and propeller hub were blackened. The spinner dome was crushed over the hub and blade counterweights.

One of the right propeller blades had about 10 inches of its tip separated from the blade. Two pieces of propeller blade found in a wooded area previously described matched the shape of the

propeller's end. This blade was bent aft about 30 degrees at the midspan location and had span wise twisting. The second propeller blade was bent aft about 30 degrees at the midspan location. Sections of the leading edge were melted. The third blade was bent forward. Its tip was missing. Chordwise scoring was found on the camber side of the blade.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Medical Examiner, Oakland County, Pontiac, Michigan performed an autopsy on the pilot.

The Federal Aviation Administration (FAA), Oklahoma City, Oklahoma, prepared a Forensic Toxicology Fatal Accident Report.

The toxicology report indicated the following results:

* 216 (md/gL, mg/hg) Ethanol detected in Blood * 150 (md/gL, mg/hg) Ethanol detected in Muscle Fluid * 159 (md/gL, mg/hg) Ethanol detected in Brain Fluid * 277 (md/gL, mg/hg) Ethanol detected in Urine

ADDITIONAL INFORMATION

An FAA Principal Operations Inspector (POI) interviewed four individuals who spoke to the pilot before the accident flight. According to the POI's statement, "All the... individuals engaged in casual conversation with the pilot about the weather conditions... and the Christmas holidays. No unusual behavior was observed in speech or appearance."

N59902's approach flight path was located over a lake and tree covered land. The runway 09R's ILS middle marker is located about 150 feet east of the lake's eastern shoreline. The terrain elevation at that location is about 964 feet above mean sea level (msl). A search of the ground on either side of runway 09R's localizer course revealed trees that were between 30 and 60 feet high. These trees were about 200 feet south of the localizer course. The tops of many trees that paralleled the localizer course were cut and broken. The surfaces of the cut branches that could be examined were smooth, moist and the wood fragments were flexible.

During the ground search among the damaged trees two pieces of a propeller tip were found. These pieces subsequently matched the fractures found on one blade of the right propeller. Three vortex generators were found on ground path that paralleled the localizer course. Also found along this path were a piece of clear plexiglas and fragments of what was subsequently identified as right engine cowling components. The terrain elevation along this path was about 966 feet msl.

Pontiac/Oakland County International Airport's field elevation is 980 feet msl. Runway 09R's Runway End Elevation is 980 feet msl. Runway 09R's ILS decision height is 1,180 feet msl.

Parties to the investigation were the Detroit Flight Standards District Office, Belleville, Michigan, the New Piper Aircraft Company, Arlington, Texas, and Textron Lycoming, Belleview, Florida.

The wreckage was released to a representative of the owner.

Pilot Information

Certificate:	Airline Transport; Commercial	Age:	33, Male
Airplane Rating(s):	Multi-engine Land; Single-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 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	11/09/1998
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	1866 hours (Total, all aircraft), 129 hours (Total, this make and model), 1000 hours (Pilot In Command, all aircraft), 81 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N59902
Model/Series:	PA-31-350 PA-31-350	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	31-7652125
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	08/31/1998, Annual	Certified Max Gross Wt.:	7000 lbs
Time Since Last Inspection:		Engines:	Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	TIO-540-J2BD
Registered Owner:	L AND W FLYING SERVICES, INC.	Rated Power:	350 hp
Operator:	L AND W FLYING SERVICES, INC.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	LVWA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	PTK, 980 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	2052 EST	Direction from Accident Site:	90°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	0.5 Miles
Lowest Ceiling:	Overcast / 100 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	8° C / 8° C
Precipitation and Obscuration:			
Departure Point:	LANSING, MI (LAN)	Type of Flight Plan Filed:	IFR
Destination:	(PTK)	Type of Clearance:	IFR
Departure Time:	2020 EST	Type of Airspace:	Class D

Airport Information

Airport:	PONTIAC/OAKLAND CO. INTL (PTK)	Runway Surface Type:	
Airport Elevation:	980 ft	Runway Surface Condition:	
Runway Used:	9R	IFR Approach:	ILS
Runway Length/Width:		VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	FRANK S GATTOLIN	Report Date:	11/29/2000
Additional Participating Persons:	PATRICK RYAN; BELLEVILLE, MI MICHAEL C MCCLURE; ARLINGTON, TX EDWARD ROGALSKI; BELLEVIEW, 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 pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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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](#).