National Transportation Safety Board
Aviation Accident Final Report

Location:	Vandalia, OH	**Accident Number:**	NYC05FA028
Date & Time:	12/07/2004, 0140 EST	**Registration:**	N54316
Aircraft:	Piper PA-31-350	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The pilot was conducting a cargo flight in night instrument meteorological conditions, and was cleared for the ILS Runway 6L approach. The pilot reported that he was established on the localizer, and the control tower stated that the touchdown and mid-point "RVR" was 1,800 feet, and the roll-out "RVR" was 1,600 feet. The pilot also was instructed, and acknowledged, to make a right turn off the runway, after landing. There were no further communications from the airplane. The airplane's last radar target was observed at an altitude of 1,200 feet msl, and a ground speed of 130 knots. The airplane impacted trees, and came to rest inverted on airport property, on a bearing of 053 degrees, and a distance of 1/2 mile to the runway. Examination of the airplane did not reveal any pre-impact mechanical failures. A weather observation taken at the airport about the time of the accident included, winds from 140 degrees at 9 knots, 1/8 mile visibility, runway 6L visual range variable between 1,800, and 2,000 feet in fog, vertical visibility 100 feet, and a temperature and dew point 54 degrees F. The airport elevation was 1,009 feet msl. Review of the approach diagram for the ILS Runway 6L approach revealed a decision height of 1,198 feet msl, and an approach minimum of 1,800 feet runway visual range (RVR), or 1/2 mile visibility. The pilot had accumulated about 3,800 hours of total flight experience, which included about 350 hours in the same make and model as the accident airplane, and 250 total hours logged in instrument meteorological conditions.

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 adequate altitude\clearance while on approach, which resulted in an in-flight collision with trees. Factors in the accident were the fog and low ceiling conditions.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH

Findings
1. (F) WEATHER CONDITION - FOG
2. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - LOW CEILING
4. (C) OBJECT - TREE(S)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 7, 2004, about 0140 eastern standard time, a Piper PA-31-350, N54316, operated by Tiffin Aire Inc., was destroyed when it impacted terrain, while on approach to the James M. Cox Dayton International Airport (DAY), Vandalia, Ohio. The certificated commercial pilot was fatally injured. Instrument meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the flight that originated from Mc Ghee Tyson Airport (TYS), Knoxville, Tennessee. The cargo flight was conducted under 14 CFR Part 135.

The airplane and operator were based at the Seneca County Airport (1G6), Tiffin, Ohio. According to the chief pilot at Tiffin Aire, the accident pilot departed 1G6, on December 6, 2004, about 2130, and flew to Knoxville, where he picked up a 50 pound package, that was to be delivered to DAY.

Federal Aviation Administration (FAA) air traffic control records revealed that the pilot contacted the Nashville automated flight service station prior to departing Knoxville. The pilot filed an IFR flight plan, and received the current and forecasted weather for DAY. The airplane departed Knoxville, about 0020.

Review of air traffic control (ATC) voice and radar data, revealed that at 0121, the airplane was at 5,000 feet, when the pilot contacted Dayton Approach. At 0135, the pilot was provided a vector to intercept the runway 6L localizer, and was cleared for the ILS Runway 6L approach. At 0137, the pilot reported to the Dayton air traffic control tower that he was on the localizer. The controller acknowledged the pilot, and stated that the touchdown and mid-point "RVR" was 1,800 feet, and the roll-out "RVR" was 1,600 feet. The pilot also was instructed and acknowledged to make a right turn off the runway, after landing. There were no further communications from the airplane. The airplane's last radar target was observed at an altitude of 1,200 feet msl (about 200 feet agl), and a ground speed of 130 knots.

At 0146, the air traffic control tower was advised that an airplane had crashed and was on fire.

The accident occurred during the hours of night approximately 39 degrees, 53 minutes north latitude, and 84 degrees, 15 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a commercial pilot's certificate with an airplane single and multi engine land, and instrument ratings. He also held a certified flight instructor certificate for airplane single engine land, with an instrument rating.

The pilot was hired by Tiffin Aire, and completed his initial training for the PA-31-350, during March 2002. The company reported that the pilot had accumulated about 3,800 hours of total flight experience, which included about 350 hours in the same make and model as the accident airplane. He had also accumulated about 500 hours of "night" flight experience, and 250 hours under "actual" instrument flight conditions.

The pilot satisfactorily completed an airman proficiency check on September 24, 2004. He had accumulated about 100 hours of total flight experience, which included about 60 hours in the PA-31-350, during the preceding 90 days, and 30 hours of total flight experience, which

included 20 hours in the PA-31-350, during the preceding 30 days; prior to the accident.

His most recent FAA second class medical certificate, was issued on August 14, 2004.

AIRCRAFT INFORMATION

The airplane had been operated for about 70 hours since its most recent annual inspection, which was performed on October 5, 2004.

METEOROLOGICAL INFORMATION

A weather observation taken at DAY, at 0156, reported: wind from 140 degrees at 9 knots, 1/8 mile visibility, runway 6L visual range variable between 1,800, and 2,000 feet in fog, vertical visibility 100 feet, temperature and dew point 54 degrees F, altimeter 29.79 in/hg.

AERODROME INFORMATION

The James M. Cox Dayton International Airport was located at an elevation of 1,009 feet msl. Runway 6L, was 10,900 feet-long, 150 feet-wide, and constructed of grooved asphalt and concrete. In addition, runway 6L, was equipped with an ALSF-II approach lighting system.

The pilot of another PA-31-350, also operated by Tiffin Aire, landed on runway 6L shortly before the accident. He reported that he observed the approach lights at an altitude of about 300 feet. He further stated that he did not see any sequenced flashing lights, and noted that the approaches lights were "all solid."

According to the airport supervisor, a post accident check of the lighting system revealed that 2 of the 15 sequence flashing lights were not operating. In addition, four random steady lights were also not working. The supervisor added that the lighting system, as inspected after the accident, still met "Category II" landing parameters.

Review of the approach diagram for the ILS Runway 6L approach revealed a decision height of 1,198 feet msl, and an approach minimum of 1,800 feet runway visual range (RVR), or 1/2 mile visibility.

WRECKAGE INFORMATION

The airplane impacted trees, and came to rest inverted on airport property, on a bearing of 053 degrees, and a distance of 1/2 mile to the runway. Except for the aft 7 feet of the empennage, and portions of the right wing, the majority of the airplane was consumed by a post crash fire.

Numerous small tree limbs were strewn on a heading of about 050 degrees, from the initial tree strike, across a road, and toward the airport perimeter fence. The tree was about 70 feet tall, and a portion of the airplane was observed suspended in the tree. Small pieces of sheet metal, including a piece consistent with a wing leading edge, were observed on the ground, near the tree. A debris path that measured approximately 645 feet extended from the tree strike, to where the airplane came to rest. A ground contact scar was observed approximately 285 feet prior to the wreckage. In addition, the left engine was located approximately 92 feet prior to the wreckage.

The right engine was partially separated from the right wing. Approximately 9 feet of the inboard right wing was observed; a portion of which contained an 18 inch wide "u" shaped aft compression on the leading edge. The outboard portion of the right wing was not present where the airplane came to rest.

A 10 inch "u" shaped aft compression was observed on the leading edge of the right horizontal stabilizer. The outboard 17 inches of the right horizontal stabilizer was separated. Also, an additional 12 inches of the right elevator had separated at a 45 degree angle. The top portion of the rudder and vertical stabilizer were deformed.

Flight control continuity was observed from the elevator, rudder, and left aileron control surfaces, to the forward cockpit area. The right aileron control cables were intact from the right wing, to the forward cockpit area.

The landing gear was in an extended position, and the flap actuator corresponded to a 20 degree flap setting.

Both engines were moved to a hangar for further examination. The engines were rotated by hand via their respective propellers, which remained attached. Thumb compression was attained on all cylinders, and valve continuity was confirmed. Both magnetos from the right engine produced spark on all towers when rotated by hand. The left magneto, on the left engine was fire damaged; however, the right magneto produced spark on all towers. The oil suction, fuel servo inlet, and the oil filter screens were removed from both engines, and were absent of contamination. The left engine vacuum pump was fire damaged; however, the vacuum pump drive was observed to rotate. The right engine vacuum pump drive also rotated; and disassembly of the vacuum pump revealed that the vanes and rotor were intact. A borescope inspection of all engine cylinders did not reveal any discrepancies.

All blades from both propellers contained some chordwise scratches, and leading edge damage. Several tree branches, with diameters up to about 3 inches, were observed near the initial tree strike. The branches contained fresh 45-degree cuts, and black paint transfer on the cut surfaces.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot, on December 7, 2004, by the Montgomery County Medical Examiners Office, Dayton, Ohio.

The toxicological testing report from the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, was negative for drugs and alcohol for the pilot.

ADDITIONAL INFORMATION

Wreckage Release

The airplane wreckage was released on December 15, 2004, to a representative of the owner's insurance company.

Pilot Information

Certificate:	Flight Instructor; Commercial	**Age:**	53, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	08/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	07/01/2004
Flight Time:	3800 hours (Total, all aircraft), 350 hours (Total, this make and model), 3400 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N54316
Model/Series:	PA-31-350	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	31-7405436
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	10/01/2004, Annual	**Certified Max Gross Wt.:**	7000 lbs
Time Since Last Inspection:	70 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	9900 Hours at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	TIO-540-J2B
Registered Owner:	TIFFIN AIRE INC	**Rated Power:**	350 hp
Operator:	TIFFIN AIRE INC	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	DTXA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	DAY, 1009 ft msl	**Distance from Accident Site:**	
Observation Time:	0156 EST	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	0.13 Miles
Lowest Ceiling:	Indefinite (V V) / 100 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	12°C / 12°C
Precipitation and Obscuration:	Moderate - Fog		
Departure Point:	Knoxville, TN (TYS)	**Type of Flight Plan Filed:**	IFR
Destination:	Vandalia, OH (DAY)	**Type of Clearance:**	IFR
Departure Time:	0020 EST	**Type of Airspace:**	

Airport Information

Airport:	Dayton International (DAY)	**Runway Surface Type:**	Asphalt
Airport Elevation:	1009 ft	**Runway Surface Condition:**	Wet
Runway Used:	6L	**IFR Approach:**	ILS
Runway Length/Width:	10900 ft / 150 ft	**VFR Approach/Landing:**	None

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:**	39.889722, -84.253333

Administrative Information

Investigator In Charge (IIC):	Luke Schiada	**Report Date:**	08/29/2006
Additional Participating Persons:	Jeff Bowling; FAA Cincinnati FSDO; Cincinnati, OH George Hollingsworth; Piper; Staunton, VA Mike Childers; Lycoming; Elizabethton, TN		
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.ntsb.gov/pubdms/.		