



National Transportation Safety Board Aviation Accident Final Report

Location:	Rantoul, Illinois	Accident Number:	CEN11FA500
Date & Time:	July 24, 2011, 09:20 Local	Registration:	N46TW
Aircraft:	Piper PA 46-350P	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness reported that the pilot was in a "hurry because a storm front was coming." Another witness reported that the airplane took off and started to turn to the south. He stated that a weather front was arriving at the airport and that strong wind from the northwest appeared to "push the tail of the plane up and the nose down." The airplane descended, impacted power lines and terrain, and subsequently caught fire. The witness indicated that the airplane's engine was producing power until impact.

On the day before departure, the pilot obtained a computerized weather briefing and filed a flight plan; none of the weather briefing products were current at the time of the accident. On the morning of the accident, the area forecast outlook indicated expected thunderstorms during the morning hours in the vicinity of the accident site. Recorded weather information at the departure airport, about the takeoff time, indicated lightning in the distant north and northwest. Recovered pictures taken during passenger boarding and while taxiing to the runway depicted a defined shelf, rotor, or arc cloud, which marked the boundary of the low-level outflow of a storm that was approaching the airport. Dark conditions under the clouds are consistent with approaching precipitation. An on-scene examination revealed no preimpact anomalies with the engine or airframe.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot did not maintain airplane control during takeoff with approaching thunderstorms. Contributing to the accident was the pilot's decision to depart into adverse weather conditions.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Aircraft control - Pilot
Environmental issues	Thunderstorm - Awareness of condition
Environmental issues	Thunderstorm - Decision related to condition
Environmental issues	Thunderstorm - Contributed to outcome

Factual Information

HISTORY OF FLIGHT

On July 24, 2011, about 0920 central daylight time, a Piper PA-46-350P, N46TW, owned and operated by a private pilot, sustained substantial damage when it impacted powerlines and terrain during takeoff from runway 27 at the Rantoul National Aviation Center Airport-Frank Elliott Field (TIP), near Rantoul, Illinois. A post impact ground fire occurred. The personal flight was operating under 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed at the time of the accident. An instrument flight rules (IFR) flight plan was on file. The pilot and two passengers sustained fatal injuries. The flight was originating from TIP at the time of the accident and was destined for Sarasota/Bradenton International Airport (SRQ), near Sarasota, Florida.

A witness, who worked at the fixed base operator, stated that the pilot performed the preflight inspection of the airplane in a hangar. An estimated 80 pounds of luggage was loaded behind the airplane's rear seat. The witness said that the pilot's wife told the pilot that she had to use the restroom. The pilot reportedly replied to her to "hurry because a storm front was coming." The witness said that the engine start was normal and that both passengers were sitting in the rear forward-facing seats when the airplane taxied out.

A witness at the airport, who was a commercial pilot, reported that he observed the airplane takeoff from runway 27 and then it started to turn to the south. He indicated that the landing gear was up when the airplane was about 500 feet above the ground. The witness stated that a weather front was arriving at the airport and that the strong winds from the northwest appeared to "push the tail of the plane up and the nose down." The airplane descended and impacted powerlines and terrain where the airplane subsequently caught on fire. The witness indicated that the airplane's engine was producing power until impact.

PERSONNEL INFORMATION

The pilot, age 56, held a Federal Aviation Administration (FAA) private pilot certificate with airplane single-engine land and instrument airplane ratings. FAA records showed that the pilot's last medical examination was completed on February 25, 2010, when he was issued a third-class medical certificate with a limitation for corrective lenses. The pilot reported that he had accumulated 1,850 hours total flight time at the time of the application for that medical certificate.

AIRCRAFT INFORMATION

N46TW, a Piper PA-46-350P, serial number 4622071, was an all-metal airplane with semimonocoque fuselage and conventional design. The airplane was equipped with a pressurized cabin, wing flaps, spoilers, a constant speed propeller, and retractable tricycle landing gear. The airplane was configured to seat six occupants, including two cockpit

positions and four cabin positions. The airplane had a certified maximum takeoff weight of 4,318 pounds.

The airplane was powered by a 350-horsepower Textron Lycoming TIO-540-AE2A, turbocharged, horizontally opposed, fuel injected, reciprocating engine, with serial number L-12770-61A. The engine was shipped from its manufacturer on May 4, 2007. The engine was originally installed on N534P. It was removed and was installed on the accident airplane on June 11, 2011. An engine logbook endorsement showed that the accident engine had accumulated a total of 200.7 hours since new at the time of its installation on the accident airplane. The airplane had a Hobbs meter reading of 609.5 hours and the airplane had accumulated 2580.5 hours of total time at the time of the engine installation.

Airplane logbook entries documented that the airplane's propeller was a three-bladed Hartzell HC-13YR-1E model with hub serial number HK1295B. Its blades' serial numbers were 1129, 1130, and 1132.

The airplane's last annual inspection was completed on February 4, 2011. An airplane logbook endorsement showed that the airplane had accumulated 2,560.4 hours of total time at the time of the annual inspection and the airplane had a Hobbs meter reading of 589.4 hours.

METEOROLOGICAL INFORMATION

The individual representing N46TW, presumed to be the accident pilot, obtained a Direct Users Access Terminal computerized weather briefing and filed an IFR flight plan at 1449 on July 23, 2011 for a 0830 departure on July 24, 2011. None of the weather briefing products obtained during the briefing remained current at the time of the accident. The area forecast outlook for northern Illinois expected thunderstorms during the morning hours on the day of the accident.

At 0915, the recorded weather at TIP was: wind 300 degrees at 14 knots gusting to 21 knots; visibility 10 statute miles; sky condition scattered 5,000 feet, scattered 10,000 feet; temperature 29 degrees C; dew point 24 degrees C; altimeter 30.06 inches of mercury; remarks lightning in the distant north and northwest.

The National Weather Service Storm Prediction Center issued a Mesoscale Discussion at 0615 for an area of potential heavy rain across northern Illinois.

One of the passengers took pictures of the approaching weather system prior to boarding and while taxiing to runway 27. The pictures were sent about 0914 to another party. These pictures were provided and are included in the Meteorological Factual Report produced by a NTSB Senior Meteorologist. Those photos depicted a defined shelf, rotor or arc cloud marking the boundary of the low-level outflow of the storm that was approaching the airport. Dark conditions under the clouds were consistent with approaching precipitation. The Senior Meteorologist's report is appended to the docket associated with this investigation.

AIRPORT INFORMATION

TIP was a public, non-towered airport located near Rantoul, Illinois, at a surveyed elevation of 737 feet. The airport featured two runways: 18/36 and 9/27. Runway 27 had an asphalt runway surface, and it was 5,000 feet long by 75 feet wide.

WRECKAGE AND IMPACT INFORMATION

Powerlines were found separated and laying on the ground on the north side of a field, which was located about one-half mile south of runway 27 near the intersection of South Century Boulevard and Tuskegee Avenue. The airplane came to rest on that field immediately south of the powerlines. A debris path started and was present from the separated powerlines up to wreckage. The distance of that path was about 177 feet long and it was about 75 feet wide. The magnetic heading of the path from the separated lines to the main wreckage was about 150 degrees. The field's grass along this path was charred.

One propeller blade separated from its hub and came to rest on Tuskegee Avenue about 30 feet east of the start of the debris path. The remaining two blades were found embedded in terrain about 35 feet and about 38 feet south of the start of the path. A navigation light cover was found about 88 feet south of the path's start. The engine and forward fuselage came to rest on their left sides near the end of the path about 177 feet south of the path's start. The left wing separated from the fuselage and was found in the debris path about 15 feet northwest of the fuselage. The right wing was found on the east side of the fuselage. The empennage came to rest southwest of the fuselage. Sections of both wings and sections of the fuselage were discolored, deformed, and melted.

An on-scene examination of the wreckage was conducted. Engine control cables were traced from the cabin to the engine. Flight control cables were traced from the location of the cabin controls to their respective control surfaces bellcranks. All flight control cable separations exhibited a broomstraw appearance consistent with overload failures. The main landing gears were in their wheel wells. The nose landing gear was located under the engine. The flap jackscrew exhibited 16 exposed threads, consistent with a 10-degree flap setting. The elevator trim had seven visible threads, consistent with a neutral trim setting. The fuel tank selector valve and its linkage were deformed and partially melted. The linkage position was consistent with the selection of the right fuel tank. The cabin door's locking pins were found extended. A section of powerline was found in the area of the right wing root.

The engine's accessories were discolored and deformed. The engine accessories were removed. The engine crankshaft was rotated when a hand tool rotated an accessory gear. All cylinders, with the exception of the number two cylinder, produced a thumb compression when the crankshaft was rotated. Valve covers were removed and some melted, aluminum-colored, media was found around the lower portion of the number two cylinder's exhaust rocker. The melted media was removed and the crankshaft was rotated. Normal valve train operation was observed. The number two cylinder's intake spring did not return its valve to its seated position. A lever was used to lift the valve into its seated position and the cylinder produced a thumb compression. The turbocharger was discolored, deformed, and melted. No engine or

airframe pre-impact anomalies were detected.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Champaign County Coroner's Office. The pilot's cause of death was listed as multiple blunt force injuries.

The FAA Civil Aerospace Medical Institute prepared a Final Forensic Toxicology Accident Report. The report was negative for the tests performed.

FIRE

The charring and deformation of the wreckage that was observed on-scene was consistent with a post impact ground based fire collocated with the debris path.

ADDITIONAL INFORMATION

As a result of the hazardous nature of thunderstorms and the related gust front the FAA has published several common practices or “do’s and don’ts” concerning thunderstorm flying, which are published in Advisory Circular (AC)00-24B and the Aeronautical Information Manual (AIM) under Chapter 7 Safety of Flight, section 7-1-29. Those avoidance rules, in part, included:

- 1. Don’t land or takeoff in the face of an approaching thunderstorms. A sudden gust front of low level turbulence could cause loss of control. ...

History of Flight

Takeoff	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	Age:	56, Male
Airplane Rating(s):	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 3 With waivers/limitations	Last FAA Medical Exam:	February 25, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	1850 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N46TW
Model/Series:	PA 46-350P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	4622071
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	February 4, 2011 Annual	Certified Max Gross Wt.:	4318 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2560.4 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed	Engine Model/Series:	TIO-540-AE2A
Registered Owner:		Rated Power:	350 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Dawn
Observation Facility, Elevation:	TIP, 737 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	09:15 Local	Direction from Accident Site:	360°
Lowest Cloud Condition:	Scattered / 5000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	14 knots / 21 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.05 inches Hg	Temperature/Dew Point:	29° C / 24° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rantoul, IL (TIP)	Type of Flight Plan Filed:	IFR
Destination:	Sarasota, FL (SRQ)	Type of Clearance:	None
Departure Time:	09:20 Local	Type of Airspace:	

Airport Information

Airport:	Rantoul National Aviation Cntr TIP	Runway Surface Type:	Asphalt
Airport Elevation:	737 ft msl	Runway Surface Condition:	
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	5000 ft / 75 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	2 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	40.285278, -88.153053(est)

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	William L Cooley; Federal Aviation Administration; Springfield, IL John Butler; Lycoming; Arlington, TX Ron Maynard; Piper Aircraft, Inc.; Vero Beach, FL
Original Publish Date:	May 21, 2012
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=81200

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](#).