

Aviation Investigation Factual Report

Location:	West Union, Iowa	Accident Number:	CHI05FA080
Date & Time:	March 27, 2005, 14:25 Local	Registration:	N8966W
Aircraft:	Piper PA-28-235	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

HISTORY OF FLIGHT

On March 27, 2005, at 1425 central standard time, a Piper PA-28-235, N8966W, collided with the terrain following a loss of control while taking off on runway 17 (4,248 feet by 50 feet, dry concrete) at the Scott Municipal Airport (3Y2), West Union, Iowa. The private pilot and two passengers were fatally injured. One passenger received serious injuries. The airplane was destroyed by impact forces and a post impact fire. The local flight was originating at the time of the accident.

A witness, the pilot's father, stated he and his son flew to 3Y2 to have dinner with family. He stated they then decided to go to the airport to take family members on local sightseeing flights. He stated he flew the first flight with family members. His son was beginning the second flight of the day with family members when the accident occurred.

The witness stated his son taxied the airplane toward the end of the runway where he heard his son perform an engine run-up. He stated he was not sure if the pilot began the takeoff roll at the end of the runway or from the run-up pad. The run-up pad is located approximately 900 feet from the approach end of runway 17. The witness stated he saw the airplane travel down the centerline, it lifted off, and settled back onto the runway. He stated he then heard the tires squeal and the airplane lifted off again, veering to the left. He stated the airplane's attitude was fairly level at this time and he thought to himself, "Come on [pilot's name], get some airspeed." The witness stated the airplane then banked to the left. The left wing contacted the ground, and the airplane was engulfed in flames.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with a airplane single-engine land rating which was issued on February 10, 2005. He also held a third-class medical certificate which was issued on July 7, 2004. The medical certificate contained the limitation that the pilot must wear corrective lenses.

According to the pilot's logbook, he had a total flight time of 73.3 hours of which 49.5 hours were logged in the accident airplane.

AIRCRAFT INFORMATION

The accident airplane was a 1964 Piper PA-28-235, serial number 28-10543. It was certified as a four-place, normal category airplane. It was a low-wing, single-engine airplane, which incorporated fixed, tricycle landing gear.

The airplane was power by a Lycoming O-540-B4B5 engine, serial number L-8073-40. The carbureted, normally aspirated engine was rated to 235 horsepower.

According to Federal Aviation Administration records, the pilot's father owned the airplane. The records show the airplane was registered to the current owner on August 27, 2004.

All of the maintenance logbooks were inside the airplane at the time of the accident. The logbooks were burned; however, portions of the logbooks were legible. The aircraft logbook showed the last annual inspection was completed on August 25, 2004, at an aircraft total time of 2782.3 hours. The last entry in the aircraft logbook was dated January 10, 2005, and the aircraft total time was listed as 2906.44 hours.

The engine logbook was also located in the wreckage. The last annual inspection was dated August 25, 2004, at a total time of 2782.3 hours, 870.3 hours since major overhaul. This entry noted that all of the cylinders were replaced. There were three additional oil change entries for which the dates were not legible. The last of these entries showed an aircraft time of 2898.3 hours. A maintenance invoice shows this last oil change was accomplished on January 6, 2005.

The tachometer was not located in the wreckage.

METEOROLOGICAL INFORMATION

The closest weather reporting station to the accident site was located at the Decorah Municipal Airport (DEH), Decorah, Iowa, approximately 18 statute miles north of the accident site. The DEH weather at 1455 was reported as wind from 230 degrees at 6 knots, 10 miles visibility, clear skies, temperature 15 degrees Celsius, dew point 3 degrees Celsius, and an altimeter setting of 29.87 inches of Mercury.

WRECKAGE AND IMPACT INFORMATION

A single black tire mark, which started approximately 1,200 feet from the approach end of runway 17, was visible on the runway. The mark began on the right side of the runway centerline continuing for approximately 96 feet, gradually veering to the left of the centerline. Three tire tracks were visible in the grass beginning at the edge of the runway. These tracks continued for approximately 180 feet. The center track ended prior to the two on either side of it. A broken runway light was found just after the point where both side tracks ended. The airplane then cleared a fencerow, which contained a wire fence, small trees, and high brush, prior to impact in the open field.

The airplane impacted the field approximately 200 feet from the east edge of the runway. The ground was scorched beginning at the initial impact and fanning out in a V-shape up to the location of the main wreckage that was located approximately 300 feet from the initial impact.

The flight path from the runway was 120 degrees and the main wreckage came to rest inverted with the nose of the airplane facing a heading of 220 degrees.

The initial terrain impact point contained pieces of red lens cap. This impact was followed by another impact mark, which was approximately 5-inches in depth. A strip of the door seal was found near the second impact mark. The third impact mark contained the green lens cap from the right wing tip.

The entire instrument panel and cockpit area were consumed by fire. The attach fittings on the right seat and rear bench seat were detached from their floor rails which were consumed by the fire. The left seat bottom remained attached to its floor rail with the back of the seat detached. An approximate six-foot long section of the lower portion of the left side of the fuselage was burned, but remained intact. Two 14-pound lead weights were located in the rear fuselage area.

The fuel selector was consumed by fire. A portion of the fuel selector valve was located, but fire and impact damage precluded determining which fuel tank was selected. The flap handle was found with the pin engaged in the second detent. This setting corresponds to 25 degrees of flaps. This setting was also confirmed on the flap chain sprocket and the flap rod lever which was measured to be at 5 $\frac{3}{4}$ inches.

The right wing structure was melted away from the fuselage. The wing tip was crushed upward and the inboard section of the wing was consumed by fire. The aileron remained attached to the wing. The aileron control cables were intact and continuity was established from the wing to the cockpit flight controls. The outboard flap attach point was intact. The inboard section of the flap was crushed and its associated wing attachment was destroyed by fire.

The inboard section of the left wing as well as the entire lower surface of the wing was consumed by fire. The remaining outboard section of the left wing was separated into two sections. The outboard aileron remained attached to the wing by its outboard attachment fitting. The inboard section of the aileron and its associated wing structure were consumed by fire. The left flap was destroyed by impact and fire damage. The aileron control cable continuity was established from the wing to the cockpit flight controls. One of the cables was intact. The other was separated and melted at the point of separation.

The tail was separated from the fuselage just forward of the vertical stabilizer and stabilator. The right side of the vertical stabilizer was burned through the skin. The rudder remained attached to the stabilizer. The right stabilator was consumed by fire. The left stabilator sustained impact damage. Stabilator and rudder control cable continuity was established from the control surfaces to the cockpit controls. The stabilator trim was measured to be 9 threads which corresponded to approximately 6 degrees of nose up trim.

Both main landing gear were consumed by fire. The main gear wheel/brake assemblies

sustained impact and heat damage from the post impact fire. The nose gear was intact.

Inspection of the engine revealed the oil sump, fuel pump, and carburetor were consumed by fire. The magnetos were present, but had sustained severe fire damage. The vacuum pump housing was burned and the drive was melted. Because of the fire damage the engine accessories and the accessory housing were removed to facilitate engine rotation by hand. Molten metal was located around the accessory gears.

The propeller remained attached to the engine. One blade was slightly bent rearward and the outer third of the blade was twisted. The other blade contained an "S" bend beginning at the root of the blade.

All of the spark plug leads sustained fire and impact damage. The spark plugs were removed and normal wear patterns were noted. An inspection of the cylinders using a boroscope revealed the valves were intact and the piston heads exhibited normal wear patterns.

The starter was jammed up against the ring gear with rotational scoring noted on the starter gear housing. The propeller ring gear was pushed back against the engine. The propeller was removed along with the ring gear. The propeller was then reinstalled to facilitate engine rotation by hand. Then engine was rotated by hand and thumb compression was noted on all cylinders along with continuity throughout the engine.

MEDICAL AND PATHOLIGCAL INFORMATION

An autopsy was performed on the pilot by the State of Iowa, Department of Public Health, on March 28, 2004.

Toxicological tests on the pilot were conducted by the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma. Results were negative for all tests conducted.

ADDITIONAL INFORMATION

The pilot's father flew the airplane just prior to the accident flight. He stated he used 40 degrees of flaps during his landing and that he retracted the flaps while taxiing to the ramp. He also stated they usually used two weights, which they kept in a milk crate in the rear of the airplane, when they were flying with just two adults up front. He stated this helped balance the airplane and he got this idea from a PA-28-235 website. The pilot's father stated he remembers seeing the weights in the rear of the airplane prior to taking off from their home airport and that the accident pilot must have put them in the airplane. He stated he thought about taking them out, but didn't as they didn't make that much of a difference in the way the airplane handled. The aircraft occupants during the accident flight consisted of two adults in the front seats and two children in the rear seats.

The PA-28-235 Owner's Handbook states, "Take-offs are normally made with flaps up, to

simplify operating procedure. However, for short field take-offs, and for take-offs under difficult conditions such as in deep grass or on a soft surface, distances can be reduced appreciably by lowering flaps to 25 [degrees] (second notch)."

Parties to the investigation included the FAA, Piper Aircraft, and Textron Lycoming.

Pilot Information

Certificate:	Private	Age:	28,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	July 1, 2004
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 1, 2005
Flight Time:	73 hours (Total, all aircraft), 49 hours (Total, this make and model), 21 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N8966W
Model/Series:	PA-28-235	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	28-10543
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	August 1, 2004 Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-540-B4B5
Registered Owner:	Greg A. Bryan	Rated Power:	235 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	DEH,1157 ft msl	Distance from Accident Site:	18 Nautical Miles
Observation Time:	14:55 Local	Direction from Accident Site:	5°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	15°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	West Union, IA (3Y2)	Type of Flight Plan Filed:	None
Destination:	(3Y2)	Type of Clearance:	None
Departure Time:	14:25 Local	Type of Airspace:	Class G

Airport Information

Airport:	Scott Municipal 3Y2	Runway Surface Type:	Concrete
Airport Elevation:	1232 ft msl	Runway Surface Condition:	Dry
Runway Used:	17	IFR Approach:	None
Runway Length/Width:	4248 ft / 50 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal, 1 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal, 1 Serious	Latitude, Longitude:	42.985279,-91.790557

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Ronnie L Driskill; Des Moines, IA FSDO; Ankeny, IA Aaron L Spotts; Lycoming; Williamsport, PA George Hollingsworth; Piper; Vero Beach, FL
Report Date:	September 13, 2005
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61204

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available <u>here</u>.