

Aviation Investigation Factual Report

Location:	Hagerman, Idaho	Accident Number:	WPR09FA116
Date & Time:	February 15, 2009, 20:45 Local	Registration:	N8810P
Aircraft:	Piper PA-24-260	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

HISTORY OF FLIGHT

On February 15, 2009, about 2045 mountain standard time, a Piper PA-24-260, N8810P, was destroyed following an airframe in-flight breakup while maneuvering near Hagerman, Idaho. The student pilot, the sole occupant, was killed. The airplane was registered to, and operated by a private individual. Visual meteorological conditions (VFR) prevailed at the time of the accident, and no flight plan was filed. The personal cross-country flight was operated in accordance with 14 Code of Federal Regulations Part 91. The flight departed the Caldwell Industrial Airport (EUL), Caldwell, Idaho, about 1900, and was destined for the Bountiful Skypark Airport (BTF), Bountiful, Utah.

According to a written statement submitted to and in a telephone conversation with the Safety Board investigator-in-charge (IIC), a friend (the second airplane's pilot) of the accident pilot reported that he agreed to fly the accident pilot from BTF to EUL (266 nautical miles) in his airplane, a Cherokee 140, in order for the accident pilot could pick up his recently purchased airplane, N8810P. The friend stated that he also agreed to fly N8810P back to BTF for the accident pilot, but only after being checked out by the seller of the airplane; the accident pilot would then return in the Cherokee. The friend stated that while preparing for the checkout the accident pilot said, "Look. I'm fine flying this airplane back. I've more than enough time in it, and all of it more current than your time. I'll just fly it and you fly the Cherokee." The friend reported, "Well, it was [his] airplane at this point. I finally relented and said fine."

The friend revealed that prior to departing EUL he briefed the accident pilot on the weather, since during the flight earlier in the afternoon from BTF to EUL they had encountered an overcast layer in the Mountain Home, Idaho area, located about 58 nautical miles (nm) southeast of EUL. The friend stated that he also advised the accident pilot to stay below 7,000 feet mean sea level (msl) while transitioning the Mountain Home area.

The friend reported that after departing EUL and passing Mountain Home, the accident pilot radioed him stating, "I need to get the door closed. I'm freezing in here. I'm going to set down at Twin Falls." The friend stated that at this time he didn't think the accident pilot was near Twin Falls, but that he was just past Mountain Home. The friend added that both of them were subsequently in contact with the Twin Falls (TWF), Idaho air traffic control tower. The controller was advised of the accident pilot's problem with the door and that he would be landing at Twin Falls. Subsequently, the friend added that after he learned from the accident pilot that he had resolved the door issue, he relayed the information to the controller and advised him that they were both proceeding to Salt Lake City. The friend reported that he then switched over to the air-to-air frequency, related to the accident pilot how good the weather was in the Twin Falls area, and to be sure to climb up to at least 10,000 feet msl to cross over

the mountains on the way to BTF. The friend reported that there were no further en route communications with the accident pilot.

The friend stated that he had stayed at 7,500 feet msl until past Mountain Home, climbed up to 9,000 feet until Glen's Ferry, and then went up to 9,500 feet west of Buhl and Twin Falls. He said that while around Glen's Ferry, he noted how good the visibility was. The friend reported that he continued to BTF in visual flight rule (VFR) conditions, and that there were no weather problems along the route of flight.

Radar data supplied by the 84th RADES/OLAD, McChord Air Force Base, Washington, tracked the accident airplane from EUL southeast to a location about one-guarter mile northeast of the accident site. At 1931:00, about 30 minutes after takeoff and about 58 nautical miles (nm) southeast of EUL, the track made a 180-degree left turn back to the northwest in the direction of EUL at an altitude of 7,400 feet msl. At 1944:12, after having traveled about halfway back toward EUL at 7,900 feet msl, the track made another 180-degree left turn back to the southeast. During the turn the track revealed that the airplane lost 2,000 feet in 23 seconds; the IIC calculated a descent rate during the turn of 5,217 feet per minute (fpm). About 20 minutes later at 2004:46, when the airplane was about 1 nm southeast of the Mountain Home Municipal Airport (U76), Mountain Home, Idaho, it began two left-hand orbits over the city before proceeding southeast. About 24 minutes later when the airplane was about 30 nm southeast of U76 at 8,200 feet msl, the track made a 90-degree left turn to the northeast, followed 33 seconds later by a right 90-degree right turn back to the southeast at 8,500 feet msl. The track indicated that 42 seconds later at 2038:36, the airplane turned further right to a heading of south at 9,000 feet msl, and 46 seconds later at 2039:22 at 9,400 feet msl, the track revealed a southwesterly heading. The track then revealed that in the 14 seconds between 2039:36 to 2039:50, the airplane made a right hand descending turn to a northerly heading from 9,200 feet msl to 7,600 feet msl; the IIC calculated a descent rate during the turn of 6,857 fpm. Twenty seconds later at 2040:10, the last radar return indicated the airplane's track was toward the northeast at 4,800 feet msl, about 1,500 feet above ground level (agl).

The airplane wreckage was located the next morning about 11 nm west of Hagerman, Idaho, and about 68 nm southeast of the departure airport. The area surrounding the wreckage site was sparsely populated with minimal light sources.

There were no reported witnesses to the accident.

PERSONNEL INFORMATION

The student pilot, age 41, possessed a second-class Federal Aviation Administration (FAA) airman medical certificate with no limitations, issued September 18, 2007. A review of the student pilot's logbook revealed that he had accumulated a total flight time of 67.9 hours, 4.3 hours of night time (all dual instruction), 13.3 hours of cross-country time, of which 2.5 hours were solo, and no night cross-country flight time. The last entry in the pilot's logbook, which occurred about 6 months prior to the accident, denoted "Introduction to complex airplane,"

which was conducted in a Piper PA-28-200. Further, the logbook revealed no endorsements for complex aircraft operations or for the solo cross-country accident flight. The pilot recorded no flight time in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

N8810P, a 1965 Piper PA-24-260 Comanche, serial number 24-4166, was an all-metal airplane with semi-monocoque fuselage and empennage construction. The airplane was configured for a maximum seating of four occupants and a maximum gross weight of 3,100 pounds. The airplane was powered by a 260-horsepower, six-cylinder, horizontally opposed, air cooled, fuel injected, Lycoming IO-540-D4A5, serial number RL-1784-48, engine. The airplane's propeller was a two-bladed Hartzell HC-C2YK-1BF model. The airplane was equipped with wing flaps, a constant speed propeller, and a retractable tricycle landing gear. The airplane's most recent annual inspection was conducted on December 16, 2008, at a total time of 4,389.84 hours. The engine had accumulated a total time of 775.34 hours since its most recent major overhaul.

METEOROLOGY

At 2053, the weather reporting facility at the Twin Falls Airport (TWF), Twin Falls, Idaho, located 35 nautical miles southeast of the accident site, reported wind 020 degrees at 3 knots, visibility 10 statue miles, few clouds at 7,000 feet, temperature 1 degree Celsius, dew point -4 degrees Celsius, and an altimeter setting of 29.87 inches of Mercury.

At 2055, the weather reporting facility at Mountain Home Air Force Base (MUO), Mountain Home, Idaho, located 33 nautical miles northwest of the accident site, reported wind 120 degrees at 16 knots, visibility 10 statue miles, broken clouds at 9,000 feet, temperature 2 degrees Celsius, dew point -3 degrees Celsius, and an altimeter setting of 29.87 inches of Mercury.

At 2053, the weather reporting facility at the Jerome Airport (JER), Jerome, Idaho, located 30 nm east-southeast of the accident site, reported wind 030 degrees at 18 knots, visibility 10 statute miles, overcast clouds at 7,500 feet, temperature 3 degrees Celsius, dew point 6 degrees Celsius, and an altimeter setting of 29.88 inches of Mercury.

According to the U.S. Naval Observatory, Department of Astronomical Applications, sunset occurred at 1812, and the end of civil twilight occurred at 1841. Moonrise did not occur until 0139 the following day.

COMMUNICATIONS

About 1 hour after departing EUL, from 2000 to 2021, and while orbiting the city of Mountain Home, the accident pilot was in contact with the Twin Falls air traffic control tower. The conversation focused on the pilot having trouble getting the cabin door closed. The controller was subsequently notified that the pilot had been successful in closing the door and was

proceeding to his destination. (Refer to the transcribed report attached.)

WRECKAGE AND IMPACT INFORMATION

An on-site examination of the wreckage revealed that the airplane experienced an in-flight breakup. All of the airplane's structural components were located at the accident site. Airframe components were found scattered throughout a rectangular area over a measured distance of 4,670 feet long by 450 feet wide on a west to east orientation. The energy path was on a measured magnetic heading of 100 degrees.

The main wreckage consisted of the fuselage with attached cockpit and engine assembly, the cabin area with all four seats, the inboard section of both wings, and the aft fuselage extending aft to, but not including the tail section. All three landing gear and the inboard sections of both flaps were observed in the retracted position. The wreckage came to rest inverted and oriented on a measured magnetic heading of 060 degrees.

All components located west of the main wreckage site consisted primarily of the outboard sections of both left and right wings, the outboard sections of both left and right stabilators, and the airplane's empennage. The left outboard wing section was located about 4,670 west of the main wreckage and observed to be bent and twisted, with the aileron separated at all attach points. The right outboard wing section was located about 2,790 feet from the main wreckage area, and exhibited a lateral crease through its top midsection, with the aileron observed separated at all attach points. The right outboard stabilator was found about 4,403 feet from the main wreckage and exhibited deformation where it had separated from its mating surface. The associated trim tab remained attached to the stabilator. The airplane's left outboard stabilator, located about 3,883 from the main wreckage, was observed bent and twisted, and exhibited a 45-degree crease on its underside from its mid-span outboard to its leading edge. The stabilator's associated trim tab was separated at all attach points. The airplane's tail section, which was found about 1,443 feet from the primary wreckage, was intact with the exception of its left and right outboard stabilator sections. The top of the rudder's right hand side exhibited a downward oriented crease of about 45 degrees. The rudder remained attached to the vertical stabilizer at all attach points. The inboard sections of both the left and right stabilator trim tabs remained attached to their associated stabilators. The tail cone remained attached at the associated vertical stabilizer and horizontal stabilator attach points. The tail cone was observed intact, with the exception of where it had separated from the aft fuselage.

The airframe and engine were recovered from the accident site and transported to a facility for further examination. The airplane was reconstructed, and all components were accounted for.

The inboard 75 1/2 inches of both left and right wings remained attached to the fuselage at their respective attach points. The left and right main fuel tanks, and their associated left and right auxiliary fuel tanks were breached.

Examination of the flight control system revealed that the control cables either remained attached to their respective attach fittings or had separated in a manner consistent with tension overload. In addition, several control cables were cut by the retrievers during recovery of the aircraft wreckage.

The cabin area was destroyed. All four seats were identified and intact. The cabin door was destroyed and not observed. The left seat pilot's control yoke was separated from its control column, while the right seat pilot's control yoke remained attached to its associated control column. The throttle, mixture, and propeller controls were all observed in the full forward position. The entire top of the aft fuselage, from the aft cabin bulkhead to the tail cone, was deformed by downward crushing. The remainder of the fuselage sustained deformation as a result of bending and crushing in the vertical plane.

Examination of the engine included partial disassembly. Engine continuity was established by rotating the crankshaft and achieving thumb compression on cylinders 2, 3, 4 and 6. The number 1 and 5 cylinder's push rods were bent. Both magnetos were removed and produced spark at all leads when rotated by hand. A visual examination of the fuel servo screen, the fuel injectors, and the fuel flow divider were observed free of debris. The examination of the engine assembly and accessories revealed no evidence of a pre-impact mechanical malfunction.

The propeller remained attached to the engine at the propeller flange, and both propeller blades remained attached to their respective propeller hubs. One propeller blade was bent rearward approximately 90 degrees at a point 12 inches from the propeller hub. The other blade was relatively straight.

TESTS AND REASEARCH

Segments of the left wing spar, right wing spar, left stabilator and right stabilator were sent to the National Transportation Safety Board's Materials Laboratory in Washington, D.C., for examination and analysis by a Safety Board mechanical engineer.

An examination of the left wing spar segments revealed two fracture zones, with both fracture faces oriented in a slant plane consistent with an overload event, and a slight upward bend to the upper spar cap. The examination further revealed two fracture zones to the right wing spar segments, both fracture faces oriented in a slant plane consistent with an overload event, and an upward bend to the upper spar cap.

An examination of the left stabilator segments revealed fracture faces on a slant plane, consistent with an overload event, and a distinctive downward bend to the spar and attached skin. Examination of the right stabilator segments revealed fracture faces on a slant plane, consistent with an overload event, and a distinctive downward bend to the spar and attached skin. (Refer to the attached NTSB Materials Laboratory Factual Report No. 09-041.)

A Garmin 496 Global Positioning System (GPS) unit was recovered from the airplane's

wreckage and sent to the Safety Board's Vehicle Recorder Division for examination. The results of the examination by a recorder specialist revealed that the unit had sustained extreme damage due to impact forces, was irreparable, and that no data could be recovered from the component.

PATHOLOGICAL AND TOXICOLOGICAL INFORMATION

Medical records obtained on the pilot document that the student pilot's only application for an Airman Medical and Student Pilot Certificate, dated September 18, 2007, had indicated a diagnosis of high blood pressure treated with enalapril. The application noted no other conditions or medications, and indicated "no" in response to "Mental disorders of any sort: depression, anxiety, etc." Review of the student pilot's personal medical records revealed a history of treatment with bupropion for anxiety and depression since March, 2007. A physician's note 5 days prior to the accident noted that the student pilot was "upset …, very antsy, jittery, stressed … very anxious" and documented that he was taking bupropion extended release 300 mg per day.

An autopsy was performed on the pilot at the Elmore County Coroner's Office, Mountain Home, Idaho, on February 18, 2009. According to the autopsy report, the cause of death was attributed to "blunt force trauma."

Toxicology samples were sent to the Federal Aviation Administration Civil Aeromedical Institute in Oklahoma City, Oklahoma, for analysis. The report indicated the following results:

Testing for Cyanide and Carbon monoxide not performed.

No Ethanol detected in Urine

Bupropion detected in Urine

Bupropion detected in Blood

Bupropion Metabolite detected in Urine

Bupropion Metabolite detected in Blood

Dextromethorphan detected in Urine

Dextromethorphan not detected in Blood.

Dextrophan detected in Urine.

Dextrophan not detected in Blood.

Doxylamine detected in Urine.

Doxylamine not detected in Blood.

ADDITIONAL INFORMATION

Regulations

FAA regulation 14 CFR 61.31 (e) states in part, "Additional training required for operating complex airplanes....no person may act as pilot in command of a complex airplane (an airplane that has a retractable landing gear, flaps, and a controllable pitch propeller) unless the person has received and logged ground and flight training from an authorized instructor in a complex airplane, and has been found proficient in the operation and systems of the airplane; and has received a one-time endorsement in the pilot's logbook from an authorized instructor who certifies the person is proficient to operate a complex airplane."

FAA regulations 14 CFR 61.93 (c) (1) (2) states in part, "A student pilot must have a solo crosscountry endorsement from the authorized instructor who conducted the training, and that endorsement must be placed on that person's student pilot certificate for the specific category of aircraft to be flown, and a student pilot must have a solo cross-country endorsement from an authorized instructor that is placed in the student pilot's logbook for the specific make and model of aircraft to be flown.

Spatial Disorientation

The FAA's Advisory Circular 60-4A states in part, "The attitude of an aircraft is generally determined by reference to the natural horizon or other visual references with the surface. Spatial disorientation to a pilot means simply the inability to tell which way is "up." Surface references and the natural horizon may at times become obscured, although visibility may be above flight rule minimums. Lack of natural horizon or such reference is common at night, and especially at night in extremely sparsely populated areas, or in low visibility conditions. The disoriented pilot may place the aircraft in a dangerous attitude."

Student pilot Information

Certificate:	Student	Age:	41,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 2 Without waivers/limitations	Last FAA Medical Exam:	September 18, 2007
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	68 hours (Total, all aircraft), 1 hours (Total, this make and model), 12 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N8810P
Model/Series:	PA-24-260	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	24-4166
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	December 16, 2008 Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:	4 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	4390 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	C91 installed, not activated	Engine Model/Series:	TIO-540
Registered Owner:	On file	Rated Power:	260 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	TWF,4053 ft msl	Distance from Accident Site:	35 Nautical Miles
Observation Time:	20:53 Local	Direction from Accident Site:	125°
Lowest Cloud Condition:	Few / 7000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None / 7000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	3 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.88 inches Hg	Temperature/Dew Point:	-1°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Caldwell, ID (EUL)	Type of Flight Plan Filed:	None
Destination:	Bountiful, UT (BTF)	Type of Clearance:	None
Departure Time:	19:00 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	42.819721,-115.104721

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Dan L Frandson; Federal Aviation Administration; Boise, ID Charles Little; Piper Aircraft Company; Williamsport, PA Troy Helgeson; Lycoming; Williamsport, PA
Report Date:	March 8, 2010
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=73360

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 here.