National Transportation Safety Board
Aviation Accident Final Report

Location:	Erie, Colorado	**Accident Number:**	CEN14FA467
Date & Time:	August 31, 2014, 11:50 Local	**Registration:**	N228LL
Aircraft:	Piper PA 46 350P	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	5 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was inbound to the airport, attempting to conduct a straight-in approach to runway 33. Due to the prevailing wind, traffic flow at the time of the pilot's arrival was on runway 15. Another airplane was departing the airport in the opposite direction and crossed in close proximity to the accident airplane. The departing traffic altered his course to the right to avoid the accident airplane while the accident airplane stayed on his final approach course. The two aircraft were in radio communication on the airport common traffic advisory frequency and were exercising see-and-avoid rules as required.

Witnesses reported that as the airplane continued down runway 33 for landing, they heard the power increase and observed the airplane make a left-hand turn to depart the runway in an attempted go-around. The airplane entered a left bank with a nose-high attitude, failed to gain altitude, and subsequently stalled and impacted terrain. It is likely the pilot did not maintain the necessary airspeed during the attempted go-around and exceeded the airplane's critical angle of attack. The investigation did not reveal why the pilot chose to conduct the approach with opposing traffic or why he attempted a landing with a tailwind, but this likely increased the pilot's workload during a critical phase of flight.

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 airspeed and exceedance of the critical angle of attack during a go-around with a tailwind condition, which resulted in an aerodynamic stall. A contributing factor to the accident was the pilot's decision to continue the approach with opposing traffic.

Findings

Personnel issues	Incorrect action performance - Pilot
Environmental issues	Traffic pattern procedure - Compliance w/ procedure
Personnel issues	Task overload - Pilot
Personnel issues	Decision making/judgment - Pilot
Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Capability exceeded

Factual Information

HISTORY OF FLIGHT

On August 31, 2014 about 1150 mountain daylight time, a Piper Malibu PA-46-350P airplane, N228LL, was substantially damaged when the airplane impacted terrain near the Erie Municipal Airport (EIK), Erie, Colorado. The airplane was owned by The Real Estate School, LLC, Erie, Colorado and privately operated. The private pilot and four passengers on board were fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. The flight originated at Centennial Airport (KAPA), Denver, Colorado.

Multiple witnesses located at and around EIK saw the accident airplane on final approach to runway 33 while another airplane was departing runway 15. Witnesses stated the two airplanes crossed in "close proximity." The airplane continued down runway 33 and they heard an increase in engine power "as if to go-around." A witness in the fixed-base operator's building described the airplane as being at a low altitude with full power, in a left bank with a nose-high attitude. Witnesses said it appeared the "airplane did not want to fly, it appeared to be in a stall," and "it did not accelerate or climb." The airplane continued in a "rapid descent" until impacting the terrain.

PERSONNEL INFORMATION

The pilot, age 67, held a private pilot certificate with an airplane single-engine land, airplane multi-engine land, and instrument airplane ratings. A third-class airman medical certificate was issued on June 30, 2014, with the limitation: must wear corrective lenses. The pilot reported on his most recent medical certificate application that he had accumulated 1,300 total flight hours, with 60 hours in the previous 6 months. The pilot's logbook was not located during the investigation.

AIRCRAFT INFORMATION

The airplane, manufactured in 1994, was a six-seat, low-wing, retractable-gear airplane, serial number 4622164, and was powered by a Lycoming Engines TIO-540 engine, rated at 350 horsepower. The engine drove a metal, 2-blade Hartzell HC-I2YR-1BF/F80 variable pitch propeller.

According to the airplane's logbooks, the most recent annual inspection was accomplished on December 4, 2013, at a Hobbs time of 2,808.8 hours. According to the airplane tachometer, the airframe's total time was 2,910.7 hours at the time of the accident.

Additionally, the airplane was equipped with two fuel tanks, which hold 61 gallons per tank, of which; 1 gallon is unusable for each tank. Refueling records obtained from a fuel vendor revealed that the airplane had been most recently refueled the morning of August 31, 2014, with 12.98 gallons of 100 low lead aviation fuel at their location at EIK. Additional fuel receipts from EIK were obtained, which showed that the airplane was refueled on August 15, 2014 with 73.54 gallons, on July 18, 2014 with 39.01 gallons, and on July 13, 2014 with 67.24 gallons.

METEOROLOGICAL INFORMATION

The closest official weather observation station is located at EIK. At 1135, an automated weather observation system (AWOS) reported wind from 160 degrees at 6 knots; visibility 10 miles; temperature 21 degrees Celsius (C); dew point 10 degrees C; and an altimeter reading of 29.95 inches of mercury.

AIRPORT INFORMATION

Erie Municipal Airport is a non-towered airport operating in Class-G airspace underneath of Class-B airspace. The airport is equipped with one runway. Runway 15/33 is 4,700 feet in length and 60-feet wide. The reported field elevation of the airport is 5,119 feet mean sea level.

WRECKAGE AND IMPACT INFORMATION

The aircraft impacted the edge of a culvert about 350 yards west of runway 33 at EIK. The initial impact point to the main wreckage was about 180 feet at a 300-degree heading. Several components of the aircraft; including the radar pod, forward baggage door and vertical stabilator with attached rudder surface, were located within the debris field west of the initial impact site. The main wreckage came to rest inverted, on a heading of approximately 158 degrees.

The fuselage sustained crushing damage to its belly skins along most of its entire length. The engine and baggage compartment were partially separated from the forward fuselage pressure bulkhead assembly. The tail section completely separated from the aft section of the fuselage at the rear pressure bulkhead assembly but remained attached to the fuselage by control surface cables.

The external fuselage skins exhibited wrinkling and creasing along both sides. The roof section was partially crushed inward near the right forward side window and emergency exit window. The emergency window was pushed inboard and partially separated from the window frame. The rear fuselage, in the area of the rear bulkhead section where the tail section separated, sustained extensive impact damage.

The main cabin area of the fuselage remained mostly intact. All six seats remained attached to the floor. Some of the seat bottom cushions were reportedly removed by first responders.

Continuity of the forward control cables was established. The primary aileron cables remained attached to both of their respective aileron quadrant assemblies. Both elevator control cables remained attached to their respective quadrant sectors. Both rudder cables remained attached to their respective rudder quadrant sector.

The fuel selector valve found to be in the "off" position. The cockpit fuel valve lever was also found in the "off" position. First responders reported to the National Transportation Safety Board (NTSB) that the fuel selector valve was placed into the "off" position during rescue activities.

The fuel gascolator bowl assembly was upside down when it was disassembled. The upper bowl housing exhibited a trace amount of fuel. The bowl did not contain any fuel, and was free of contaminates. The fuel filter assembly exhibited minor particles, but was otherwise mostly free of contamination. No evidence of any water contamination was observed.

The left wing remained attached to the fuselage. The wing sustained ground impact damage. Both the flap and aileron surfaces remained attached to the wing. The aileron cable assemblies remained attached

to the aileron quadrant drive sector at the aileron surface. The flap actuator assembly was observed in the retracted position. The pushrod remained attached to the flap surface bellcrank assembly. The landing gear was observed in the retracted position.

The right wing remained attached to the fuselage although it was broken at the main spar. The wing sustained ground impact damage but was otherwise mostly intact. The wing exhibited a downward bow and was partially separated about 5 feet outboard of the fuselage. Both the flap and aileron surfaces remained attached to the wing. The aileron cable assemblies remained attached to the aileron quadrant drive sector at the aileron surface. The flap actuator assembly was observed in the retracted position. The flap interconnect pushrod separated at the flap drive idler arm assembly due to impact. The landing gear was observed in the retracted position.

The rear fuselage section sustained some ground impact damage and remained mostly intact up to the rear pressure bulkhead assembly. The horizontal tail section separated from the rear fuselage at the rear bulkhead and remained attached to the fuselage by control surface cables. The vertical surface, with attached rudder surface, separated from the rear fuselage and was located in the debris path near the initial ground impact area.

Visual continuity of the tail surface control cables was established. Both elevator control cables remained attached to the elevator sector assembly.

The rudder surface torque tube assembly separated where it attaches to the rudder sector control. The rudder sector control sustained impact damage and both rudder control cables remained attached to the rudder sector control.

One propeller blade was broken off mid span, with chord wise polishing and some lengthwise scratches. The second blade was relatively straight with leading edge and chord wise polishing.

The engine was removed from the airframe and subsequently examined at the recovery facility. The examination of the engine revealed the sparkplugs appeared "worn out-normal" as compared to the *Champion Aviation Check-a-Plug Chart AV-27*. Both magnetos were rotated by hand and produced spark at all leads. The crankshaft was rotated by hand and compression was established at all cylinders. Engine drive train continuity was established throughout the engine crankcase. The cylinders were borescope inspected and no anomalies were noted. The oil pickup screen, oil filter and propeller governor screen were all found free of debris. The intake plenum was found crushed upward and cracked open. The left turbo charger was free to rotate but stiff; impact damage was noted. The right turbo charger was also free to rotate. The exhaust tubes were found crushed upwards.

Fuel was noted in the fuel servo, lines, and flow divider. The flow divider diaphragm was found intact. The fuel injectors were found clear. Fuel was discharged from the engine driven fuel pump when rotated by hand.

No evidence of any preexisting mechanical malfunction that would have precluded normal operation of the airframe or engine was found.

MEDICAL AND PATHOLOGICAL INFORMATION

A post mortem examination was conducted under the authority of the Office of the Coroner, Weld County, Colorado on September 1, 2014. The cause of death for the pilot was attributed to multiple blunt force injuries.

The Federal Aviation Administration (FAA) Civil Aeromedical Institute performed toxicology examinations for the pilot which was negative for carbon monoxide, alcohol and drugs.

TESTS AND RESEARCH

The annunciator panel from the accident aircraft was removed by the NTSB Investigator-in-Charge (IIC) and sent to the NTSB Materials Laboratory, Washington, DC., to be examined for the presence of any stretched light bulb filaments. Stretched light bulb filaments are indicators the light bulb was illuminated at the time of the accident. Each annunciator light was x-rayed to determine the status of the two bulbs inside. No stretched filaments were found in any of the annunciator lights.

Additionally, an Apple iPad tablet computer was located within the wreckage. The tablet was subsequently sent to the NTSB Vehicle Recorder Division, Washington, DC. for further examination.

An exterior examination revealed the device had sustained extensive structural damage. The internal board was removed from the damaged device and installed in a surrogate iPad. The device was successfully powered on. However, the unit was protected by a 4-digit passcode and after possible passcodes were unsuccessfully tried, the device reported "iPad is disabled." No further recovery attempts were made.

For further information, see the Personal Electronic Device Report within the public docket for this accident.

OTHER INFORMATION

The NTSB's air traffic control (ATC) investigator reviewed radar data provided by the 84th Radar Evaluation Squadron (RADES) located at Hill Air Force Base in Utah. The radar data was recorded from the Denver ASR-9 (DEN).

There were no audio re-recordings available for this accident. According to radar data and witness statements, moments before the accident N228LL was on approach to runway 33 at EIK and passed in close proximity to N573MS who had departed runway 15 (opposite direction) at EIK. According to witness statements, the pilots of both aircraft were transmitting on the local common traffic advisory frequency (CTAF) which was not recorded (see witness statements in the public docket). Both aircraft were operating under visual flight rules (VFR) in visual meteorological conditions (VMC) and were not in communication with ATC while operating within class G airspace at an airport without an operating control tower.

Radar data indicated that the accident aircraft was inbound to runway 33 and was flying an approximately straight course to the runway with no observed significant deviations from that inbound heading. Radar data indicated that N573MS departed runway 15 at EIK and shortly after becoming airborne, made an abrupt deviation to the west (to the pilot's right).

According to radar data, the closest proximity between N228LL and N573MS occurred when the aircraft were separated by approximately 0.12 nautical miles (729 feet) laterally, and 200 feet vertically (and increasing). The flight track of N228LL indicated nothing out of the ordinary after passing N573MS, and it continued to approach EIK on course for runway 33 at a normal rate of descent. Witness statements indicated that N228LL appeared to be going around, however the aircraft never reached an altitude high enough for radar coverage and therefore any attempt at a go around was unable to be corroborated via recorded radar data.

According to the Piper Malibu Pilot's Operating Handbook, *Section 4.33 Go-Around* under *Normal Procedures*, states:

"To initiate a go-around from a landing approach, the mixture should be set to full RICH, the propeller control should be at full INCREASE, and the throttle should be advanced to full power while the pitch attitude is increased to obtain the balked landing speed of 80 knots-indicated airspeed (KIAS). Retract the landing gear and slowly retract the flaps when a positive climb is established. Allow the airplane to accelerate to the best angle of climb speed (81 KIAS) for obstacle clearance or to the best rate of climb speed (110 KIAS) if obstacles are not a factor. Reset the longitudinal trim as required."

History of Flight

Approach-VFR go-around	Aerodynamic stall/spin (Defining event)

Pilot Information

Certificate:	Private	**Age:**	67,Male
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
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:**	June 30, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1300 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N228LL
Model/Series:	PA 46 350P 350P	**Aircraft Category:**	Airplane
Year of Manufacture:	1994	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4622164
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	December 4, 2013 Annual	**Certified Max Gross Wt.:**	4299 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2910.7 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	C126 installed	**Engine Model/Series:**	TIO-540-AE2A
Registered Owner:		**Rated Power:**	350 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:	KEIK	**Distance from Accident Site:**	
Observation Time:	11:35 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	21°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DENVER, CO (APA)	**Type of Flight Plan Filed:**	None
Destination:	Erie, CO (EIK)	**Type of Clearance:**	VFR
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	ERIE MUNI EIK	**Runway Surface Type:**	
Airport Elevation:	5119 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Go around

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	4 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	5 Fatal	**Latitude, Longitude:**	40.011943,-105.05278

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney
Additional Participating Persons:	David Carroll; FAA; Denver, CO Troy Helgeson; Lycoming Engines; Millikan, CO Charles Little; Piper ; Chino Hills, CA
Original Publish Date:	August 10, 2016
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89992

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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.