Aviation Investigation Final Report

Location:	Eagar, Arizona	**Accident Number:**	WPR10FA287
Date & Time:	June 11, 2010, 13:54 Local	**Registration:**	N7699F
Aircraft:	Piper PA-32R-300	**Aircraft Damage:**	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness at the airport observed the accident airplane depart runway 11. During the departure sequence, the witness observed the airplane use more runway than most of the other small aircraft and that the airplane seemed to have trouble gaining altitude. The witness stated that the airplane gained and lost altitude about three or four times before banking to the left and impacting a building. Numerous witnesses located near the accident site observed the accident airplane flying at a low altitude before impacting a building, and that the engine appeared to be running strong. The wreckage was located within a building structure and was heavily damaged by fire. Examination of the accident site and aircraft wreckage revealed signatures consistent with a near-level, left-wing-low impact with a tree and a light pole prior to impacting the building. Examination of the airplane, flight control systems, engine, and propeller revealed no evidence of any preimpact mechanical malfunctions. The investigation determined that, at the time of the accident, the airplane was within weight and balance limitations. Weather at the departure airport equated to a crosswind component for runway 11 varying from 25 to 32 knots, with a tailwind component from 4 to 5 knots, based on the sustained wind and gust values respectively. About 1 minute after the time of the accident, the reported wind equated to crosswind component of 21 to 27 knots, and a headwind of 12 to 16 knots. The airport density altitude at the time of the accident was calculated to be 9,700 feet. Review of airplane manufacturer's takeoff performance charts revealed that, at the time of the accident, the weather and environment conditions exceeded the takeoff performance chart limitations.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's operation of the aircraft outside of the manufacturer's specified performance

limitations, which resulted in the pilot's failure to maintain clearance from buildings and terrain during takeoff initial climb.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Takeoff distance - Related operating info
Aircraft	Altitude - Not attained/maintained
Environmental issues	High density altitude - Contributed to outcome
Environmental issues	High wind - Contributed to outcome

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Initial climb	Collision with terr/obj (non-CFIT) (Defining event)

HISTORY OF FLIGHT

On June 11, 2010, about 1354 mountain standard time, a Piper PA-32R-300, N7699F, sustained substantial damage when it impacted a building near Eagar, Arizona, during takeoff initial climb from the Springerville Municipal Airport (D68), Springerville, Arizona. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. Visual meteorological conditions prevailed and no flight plan was filed. The private pilot and three passengers were killed. There were no reported ground injuries. The flight was originating at the time of the accident with an intended destination of Grand Canyon, Arizona.

A witness located on taxiway A6 at D68 reported that while watching the airplane take off from runway 11, it "used more runway then used by most of the other small aircraft during takeoff." The witness stated that after takeoff, the airplane was "rocking side to side" and appeared to be "having trouble gaining altitude." The witness further reported that the airplane "gained altitude" then "lost altitude" three or four times. He added that prior to the airplane impacting the school building; it banked in a counterclockwise direction.

Numerous witnesses located near the accident site reported observing the accident airplane flying at a "low altitude" toward the Round Valley High School prior to observing an explosion, immediately followed by rising black smoke from the high school.

One witness, who was located within the courtyard area of the Round Valley High School, reported that while repairing a walk-in freezer in the southwest corner of the courtyard, he heard the sound of an airplane. The witness looked up and observed the accident airplane flying over his position at an altitude of no more than 30 feet in a level attitude. The witness stated that he "ducked for cover" and subsequently heard the sound of the airplane impact the side of the school building. The witness said that the "engine was wound up" and "seemed to be running strong."

A second witness reported that while driving south on Main Street, about 0.2 miles west of the high school, she heard and subsequently saw a small white airplane fly over her position to the east at a very low altitude. The witness stated that the airplane appeared to be "losing altitude very fast" as it went overhead their position, and that it did not sound like the engine was "sputtering or missing." The witness turned onto a nearby street, heading toward the high

school and observed the airplane "turn its wings at an angle when it crashed into the roof."

PERSONNEL INFORMATION

The pilot, age 50, held a private pilot certificate with airplane single-engine land and instrument airplane ratings. A third-class airman medical certificate was issued December 17, 2008, with a "miscellaneous restriction assigned." According to the Federal Aviation Administration (FAA), the restriction assigned to the pilot was "not valid for night flying or by color signal control" and was re-evaluated on August 14, 2009, following a medical flight test. The pilot was subsequently granted a "third-class letter of evidence" upon successfully completing a signal light gun test.

Review of the pilot's personal flight records revealed that as of the most recent entry in his pilot logbook, dated May 28, 2010, he had accumulated 2,159 total hours flight time, of which 5.7 hours were in the previous 30 days of the accident and 34.4 hours within the previous 90 days.

AIRCRAFT INFORMATION

The four-seat, low-wing, retractable-gear airplane, serial number (S/N) 32R-7780081, was manufactured in 1977. It was powered by a Lycoming IO-540 engine, serial number L-15570-48A, which was rated at 300 horsepower. The airplane was equipped with an adjustable pitch Hartzell two-bladed propeller; model number HB-C2YK-1BF, serial number CH43959B. The airplane was equipped with four fuel tanks, totaling 98 gallons, of which 94 are usable. The certified maximum gross weight of the airplane was 3,600 pounds. Review of the airframe and engine logbooks revealed that the airplane underwent its most recent annual inspection on November 10, 2009, at a tachometer time of 2,474.0 hours, airframe total time of 4,389 hours and engine time since overhaul (TSO) of 155.6 hours. The most recent maintenance entry within the engine logbook stated that the oil was changed on April 20, 2010, at a tachometer time of 2,527.54 hours.

A current copy of the aircraft’s weight and balance, which would include empty weight of the airplane, was not located. The middle seats (seat number three and four) were previously removed from the airplane and were located within the pilot's hangar.

The Pilot’s Operating Handbook (POH) stated in part on page 2-7, section "2.25 PLACARDS," "...demonstrated crosswind component 17 kts." The POH further states on page 5-1, section "5.3 INTRODUCTION TO PERFORMANCE AND FLIGHT PLANNING," "...performance information derived by extrapolation beyond the limits on the charts should not be used for flight planning purposes."

Review of the manufacturer’s supplied Flaps Up and 25-degree Flaps Takeoff Performance charts, located in the Pilot’s Operating Handbook, revealed that the weather conditions present at the time of the accident exceeded the chart’s performance parameters. As a result, takeoff

performance calculations were not determined.

Using the manufacturer's supplied gear up and gear down performance calculation charts, reported weather conditions, and maximum gross weight of the airplane, the climb performance with the gear in the "DOWN" position was calculated to be about 90 feet per minute. The climb performance with the gear in the "UP" position was calculated to be about 410 feet per minute.

Review of sales receipts from the self service fuel station at D68 revealed that the accident airplane was refueled with 76.41 gallons of 100 low-lead aviation fuel prior to departure. The airport management reported that the exact time of the refueling was not determined due to a time error within the airport's sales system. Fuel samples from the self-serve fueling station were secured and found to be free of contaminants. The fuel sample secured from the fuel pumps was tested using "water finding paste." The results were negative.

Portions of the recovered burnt luggage, which were damp with water, included various loose items (hand gun, rifle, knife, various bags) from the airplane that were located throughout the accident site. The items were weighed using a standard analog scale. The total weight of the recovered items was about 76 pounds. The weight of additional items that were destroyed by fire (ammunition, luggage) was not obtained. Using the reported basic empty weight of the airplane provided by Piper Aircraft, reported weight of the occupants, 98 gallons of fuel and 100 pounds of luggage, the total weight of the airplane was about 3,392 pounds. The airplane was found to be within weight and balance and center of gravity limitations.

METEOROLOGICAL INFORMATION

A National Transportation Safety Board (NTSB) staff meteorologist prepared a factual report regarding weather conditions at and near the vicinity of D68.

The report states in part that the National Weather Service (NWS) southwest regional Surface Analysis Chart for 1400 MST depicted a low pressure system with a central pressure of 999.0-hectopascals (hPa) over northwestern Arizona with a trough of low pressure extending south-southeastward into southern Arizona. To the north of the low pressure system a stationary front was depicted extending from extreme southeast Nevada into southern Utah, and western Colorado to another low at 999-hPa. A high pressure system at 1006-hPa was located along the Colorado and New Mexico border, to the north-northwest of the accident site. The resultant pressure pattern resulted in southerly wind flow over southwest Arizona.

The station models surrounding the accident site depicted southerly winds at 20 to 25 knots, clear skies, with a temperature of 92 degrees Fahrenheit (F) over southeast Arizona and immediately south of the accident site. The station models also showed temperatures between 70 to 80 degrees F across central and northern Arizona along the intended route of flight. No significant weather was depicted across the area.

The airport (D68) had an Automated Weather Observation System (AWOS-3) installed, which broadcasted weather observations locally on radio frequency of 119.65 MHz and had dial up telephone access, but did not transmit the observations for distant dissemination to the NWS or FAA. No problems were identified with the AWOS system or sensors surrounding the time frame of the accident.

At 1350, the AWOS-3 at D68 reported wind from 210 degrees at 25 knots, gusting to 32 knots, visibility 10 miles, a few clouds at 8,500 feet, temperature 25 degrees Celsius (C), dew point temperature -2 degrees C, altimeter setting 29.99 inches of Mercury (Hg). The airport density altitude was reported to be 9,700 feet.

At 1355, the AWOS-3 at D68 reported wind from 170 degrees at 24 knots, gusting to 31 knots, visibility 10 miles, a few clouds at 8,500 feet, temperature 25 degrees C, dew point temperature -2 degrees C, altimeter setting 29.99 inches of Mercury (Hg). The airport density altitude was reported to be 9,700 feet.

Based on the 1350 weather observation at D68, the resultant crosswind component for runway 11 ranged from 25 to 32 knots, with a tailwind component from 4 to 5 knots based on the sustained wind and gust values respectively. The 1355 observation at D68 indicated a crosswind component of 21 to 27 knots, and a headwind of 12 to 16 knots.

The next closest weather reporting site was from St John Industrial Air Park (SJN), located approximately 24 miles north of D68, at an elevation of 5,737 feet. The airport had an Automated Surface Observation System (ASOS) and reported the following conditions surrounding the period:

At 1354, the ASOS at SJN reported a wind from 240 degrees at 15 knots, gusting to 26 knots, visibility 10 miles, sky clear, temperature 28 degrees C, dew point -2 degrees C, altimeter 29.87 inches of Hg. Remarks: automated observation system, peak wind from 180 degrees at 35 knots recorded at 1338, sea level pressure 1001.9-hPa, temperature 28.3 degrees C, dew point -1.7 degrees C, 3-hour pressure tendency fallen 1.1-hPa.

The observations surrounding the accident time period at SJN showed a diurnal pattern of the winds increasing in speed throughout the day during the period of heating with a peak wind of 35 knots.

The Show Low Regional Airport (SOW) was located approximately 35 miles west of D68, at an elevation of 6,415 feet. The airport had an AWOS-3 and reported the following conditions:

At 1350, the AWOS-3 at SOW reported wind from 220 degrees at 26 knots, gusting to 36 knots, visibility 10 miles, sky clear, temperature 23 degrees C, dew point 0 degrees C, altimeter 29.98 inches of Hg. Remarks: automated observation system.

The observations surrounding the time period at SOW showed an afternoon increase in wind

speeds with the maximum peak wind of 38 knots.

The Area Forecast (FA) issued at 1245 for southeastern Arizona expected occasional high scattered cirrus type clouds with wind from the south-southwest at 25 knots gusting to 38 knots, with winds diminishing by 2200 MST.

COMMUNICATIONS

There were no reports of any distress calls from the accident airplane at the time of the accident. Airport management reported that the common traffic advisory frequency (CTAF) was not being monitored at the time of the accident nor was it recorded.

AIRPORT INFORMATION

The Springerville Municipal Airport (D68) is an uncontrolled airport that operates under class G airspace. The reported field elevation for the airport was 7,055 feet msl. The airport is equipped with two asphalt runways (3/21 and 11/29). Airport management reported that Runway 3/21 was closed at the time of the accident due to runway resurfacing construction work. A notice to airman (NOTAM) was published on June 7, 2010, stating that Runway 3/21 was closed. Runway 11/29 is 4,603 feet in length and 60-feet wide with a 0.4 percent negative gradient. An unlit wind sock was located to the left of Runway 11. In addition a larger wind sock was located south of the airport ramp area and to the left of Runway 11. The airport is also equipped with an automated weather observing system.

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site revealed that the airplane impacted a high school building about 0.96 statute miles east of the departure end of Runway 11. The first identified point of contact (FIPC) was an impact mark and damage to a light post, about 22 feet above the ground, located within a courtyard of the high school. An impact mark was also observed about 3 feet from the top of the light post. Adjacent to the light post, damaged tree limbs were observed near the top of an approximate 30-foot high tree. The wreckage debris path was about 230 feet in length and oriented on an approximate heading of 050 degrees magnetic. The measured elevation for the accident was about 7,045 feet msl.

Portions of wreckage debris, including a portion of the outboard right tip of the horizontal stabilator were observed between the light post and school building. The left wing, center seats, aft fuselage structure, horizontal stabilator, vertical stabilizer, and rudder were located about 80 feet from the FIPC, and against the side of the northeast corner of the school building courtyard. The forward portion of the fuselage, instrument panel area, firewall, and engine were located within the far northeast corner of the school building structure about 200 feet beyond the FIPC. The engine was observed in an inverted position with the remains of the fuselage and forward cabin area extending to the north wall of the building structure. A portion of the right wing was located about 30 feet beyond the engine and fuselage, adjacent to the

school building.

The high school building sustained extensive fire damage to multiple classrooms, offices, and adjacent structures. The building's roof structure was mostly collapsed into the classrooms and offices. School officials reported that the room where the engine was located contained a significant amount of paper files, books, and other documents.

The aircraft wreckage was recovered from the accident site to a secure location for further examination.

Examination of the recovered airframe and flight control system components revealed no evidence of preimpact mechanical malfunction. Examination of the recovered engine revealed that the engine remained attached to the engine firewall. All of the rear accessories, including the left and right magnetos, vacuum pump, and engine driven fuel pump were impact separated and destroyed by fire. The propeller remained attached to the engine crankshaft propeller flange and exhibited substantial thermal and fire damage. The propeller was removed for examination. The propeller blades were marked "A" and "B" for photo and documentation purposes. Propeller blade "A" exhibited impact and fire damage. About 12 inches of partially melted propeller blade remained secured within the propeller hub. The remaining portion of the propeller blade was not recovered. Propeller blade "B" was measured to be about 32 inches in length and exhibited substantial thermal and impact damage. The propeller blade was observed secured to the propeller hub and rotated freely by hand. The blade exhibited twisting near the outboard end and the outboard portion of the blade was partially melted. The propeller assembly was shipped to the facilities of Hartzell Propellers Inc. for further examination.

Examination of the recovered engine and system components revealed no evidence of preimpact mechanical malfunction.

MEDICAL AND PATHOLOGICAL INFORMATION

The Pima County Medical Examiner conducted an autopsy on the pilot on June 15, 2010. The medical examiner determined that the cause of death was "Blunt force injuries" and "thermal injuries."

The FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicology tests on the pilot. According to CAMI's report, carbon monoxide, cyanide, volatiles, and drugs were tested, and had negative results.

FIRE

A post impact fire ensued within the high school building structure. Local fire department personnel reported that they responded to the fire within a few minutes of the initial report. In addition, fire personnel reported that the fire burned within the structure for approximately 10

to 12 hours before being extinguished. Fire personnel added that during the initial firefighting efforts, an unknown amount of gun ammunition was heard "firing off' within the school building.

TESTS AND RESEARCH

Examination of the propeller assembly at the facilities of Hartzell Propeller Inc., under supervision of an FAA inspector revealed no mechanical anomalies that would have precluded normal operation.

Pilot Information

Certificate:	Private	**Age:**	50,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:**	December 17, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2159 hours (Total, all aircraft), 35 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7699F
Model/Series:	PA-32R-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R-7780081
Landing Gear Type:		**Seats:**	4
Date/Type of Last Inspection:	November 10, 2009 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4389 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	IO-540
Registered Owner:	JEFFREY J ULRICH	**Rated Power:**	300 Horsepower
Operator:	JEFFREY J ULRICH	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	D68,7055 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:55 Local	**Direction from Accident Site:**	104°
Lowest Cloud Condition:	Few / 8500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	24 knots / 31 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	25°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Eagar, AZ (D68)	**Type of Flight Plan Filed:**	None
Destination:	Grand Canyon, AZ (GCN)	**Type of Clearance:**	None
Departure Time:	13:54 Local	**Type of Airspace:**	

Airport Information

Airport:	SpringervilleMunicipal Airport D68	**Runway Surface Type:**	Asphalt
Airport Elevation:	7055 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	11	**IFR Approach:**	None
Runway Length/Width:	4589 ft / 60 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	34.124168,-109.291389(est)

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Michael Moyer; Federal Aviation Administration; Scottsdale, AZ Mike McClure; Piper Aircraft; Vero Beach, FL John Butler; Textron Lycoming Engines; Williamsport, PA Tom McCreary; Hartzell Propeller Inc.; Piqua, OH
Original Publish Date:	May 26, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76300