National Transportation Safety Board
Aviation Accident Final Report

Location:	Page, Arizona	**Accident Number:**	WPR14FA186
Date & Time:	May 10, 2014, 15:45 Local	**Registration:**	N7311U
Aircraft:	Cessna T207A	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Fatal, 1 Serious, 5 Minor
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

During a local sightseeing flight, the pilot noticed that the engine had lost partial power, and he initiated a turn back toward the airport while troubleshooting the loss of power. Despite the pilot's attempts, the engine would not regain full power and was surging and sputtering randomly. The pilot entered the airport's traffic pattern on the downwind leg, and, while on final approach to the runway, the airplane encountered multiple downdrafts and wind gusts. It is likely that, due to the downdrafts and the partial loss of engine power, the pilot was not able to maintain airplane control. The airplane subsequently landed hard short of the runway surface and nosed over, coming to rest inverted. The reported wind conditions around the time of the accident varied between 20 and 70 degrees right of the runway heading and were 14 knots gusting to greater than 20 knots. In addition, a company pilot who landed about 8 minutes before the accident reported that he encountered strong downdrafts and windshear while on final approach to the runway and that he would not have been able to reach the runway if he had a partial or total loss of engine power.

Postaccident examination of the airframe and engine revealed no evidence of any preexisting mechanical malfunctions or failures that would have precluded normal operation. The engine was subsequently installed on a test stand and was successfully run through various power settings for several minutes. The reason for the partial loss of engine power could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's inability to maintain aircraft control due to a partial loss of engine power and an encounter with downdrafts and gusting crosswinds while on final approach to the runway. The reason for the

partial loss of engine power could not be determined because postaccident examination revealed no mechanical malfunction or failure that would have precluded normal operation.

Findings

Aircraft	(general) - Attain/maintain not possible
Environmental issues	Downdraft - Effect on operation
Environmental issues	Gusts - Effect on operation
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (partial) (Defining event)
Approach-VFR pattern final	Windshear or thunderstorm
Approach-VFR pattern final	Collision with terr/obj (non-CFIT)

On May 10, 2014, about 1545 mountain standard time, a Cessna T207A, N7311U, was substantially damaged when it impacted terrain during landing at the Page Municipal Airport (PGA), Page, Arizona. The airplane was registered to and operated by American Aviation, under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. The airline transport pilot and four passengers sustained minor injuries, one passenger sustained serious injuries, and one passenger was fatally injured. Visual meteorological conditions prevailed, and a company flight plan was filed for the local sightseeing fight. The flight originated from PGA about 20 minutes prior to the accident.

In a written statement to the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), the pilot reported that about 10 minutes into a 40-minute sightseeing flight, he noticed that the engine had lost partial power. The pilot initiated a turn towards the airport, and began troubleshooting the loss of power. Despite the pilot's attempts, the engine would only produce partial power, and was surging and sputtering randomly.

The pilot stated that he entered the downwind leg of the airport traffic pattern for runway 15 about 1,000 feet above ground level. After turning onto final for the runway, the airplane suddenly descended abruptly, impacted terrain, and nosed over. The pilot further reported that the airplane experienced an "extreme downdraft" on final approach to the runway, and he attempted to maintain control of the airplane while maintaining best glide airspeed. The airplane encountered a strong gust of wind, and the nose of the airplane pitched upward about 15 degrees. The pilot stated that the airplane was in a nose high attitude, but not stalled, and he attempted to counteract the gust by pushing full forward on the yoke. Subsequently, the airplane encountered a second downdraft, and the airplane impacted the ground in a tail low attitude, and nosed over. The pilot estimated that prior to impact with the ground the wind was from 170 to 220 degrees at 14 knots, gusting in excess of 20 knots.

Multiple witnesses located adjacent to the accident site reported observing the accident airplane on final for runway 15, and suddenly descend rapidly into terrain in a normal approach to landing attitude.

A company pilot reported to the NTSB IIC that while flying a Cessna 206, they had landed on runway 15 about 8 minutes prior to the accident. The pilot stated that at the time of their landing, the wind was from 170 to 220 degrees at 14 knots, gusting to the mid 20's, and that about 1/4 mile from the runway, they encountered strong downdrafts and windshear, which resulted in an approximate descent in excess of 2,000 feet per minute as observed on the vertical speed indicator (VSI). The pilot further stated they applied full power, and regained their desired glide path to the runway as the airplane approached short final. They added that if they did not have engine power available, or limited engine power, they would have not been able to reach the end of the runway.

Pilot Information

Certificate:	Airline transport	**Age:**	53
Airplane Rating(s):	Single-engine land; 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 1 With waivers/limitations	**Last FAA Medical Exam:**	March 3, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	5850 hours (Total, all aircraft), 48.7 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

The pilot, age 53, held an Airline Transport pilot certificate with an airplane multi-engine land rating and commercial privileges for airplane single-engine land. A first-class airman medical certificate was issued to the pilot on March 3, 2014, with the limitation stated "must wear glasses for near vision." The pilot reported on his most recent medical application that he had accumulated 6,835 hours total flight time. The pilot reported on the Pilot/Operator Aircraft Accident Report Form (NTSB Form 6120.1) that he had accumulated 6,850 hours total flight time of which 45.8 hours were in the accident make/model airplane. He further reported that he had accumulated 40 hours of flight time in the accident make/model airplane within the previous 30 days to the accident, of which 2 hours were in the previous 24 hours of the accident.

Review of company training records revealed that the pilot began employment with the company in March, 2014, and subsequently went through initial training on March 21, and his CFR Part 135 check ride on March 23, 2014.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N7311U
Model/Series:	T207A	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	20700395
Landing Gear Type:	Tricycle	**Seats:**	7
Date/Type of Last Inspection:	October 28, 2013 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:	70 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	14883.1 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors Inc.
ELT:	C91 installed, not activated	**Engine Model/Series:**	TSIO-520-GCM
Registered Owner:		**Rated Power:**	315 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)

The seven-seat, high-wing, fixed tricycle gear airplane, serial number (S/N) 20700395, was manufactured in 1977. It was powered by a Continental Motors TSIO-520-G (3) C M engine, serial number 216054-R rated at 315 horse power. The airplane was also equipped with a Hartzell PHC-C3YF-1RF variable pitch propeller. The forward two seats were equipped with lap belt and shoulder harness restraints, however, the aft five seats were only equipped with lap belt restraints.

Review of the airplane maintenance logbooks revealed that the most recent inspection performed on the airplane was a 50-hour inspection, completed on May 3, 2014, at a tachometer time of 3,647.4 hours, airframe total time of 14,933.0 hours, engine total time of 5,092.9 hours, and 475.1 hours since major overhaul. The most recent annual inspection was completed on October 28, 2013, at a tachometer time of 3,597.5 hours and airframe total time of 14,883.1 hours.

The airplane was previously refueled with 25.8 gallons of 100 Low Lead (LL) fuel the day of the accident. Company personnel stated that the airplane had 30 gallons of fuel in the right fuel tank and 10 gallons in the left fuel tank prior to departure.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPGA,4310 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	22:53 Local	**Direction from Accident Site:**	170°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 11000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.6 inches Hg	**Temperature/Dew Point:**	26°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Page, AZ (PGA)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Page, AZ (PGA)	**Type of Clearance:**	None
Departure Time:	15:09 Local	**Type of Airspace:**	Class G

A review of recorded data from the Page Municipal Airport automated surface observing station (ASOS), revealed at 1553 conditions were wind from 220 degrees at 6 knots, gusting to 14 knots, visibility 10 statute miles, overcast cloud layer at 11,000 feet, temperature 26 degrees Celsius, dew point -1 degrees Celsius, and an altimeter setting of 29.60 inches of mercury. Using the reported weather conditions and field elevation, the calculated density altitude was about 6,932 feet and pressure altitude of about 4,613 feet.

Airport Information

Airport:	PAGE MUNI PGA	**Runway Surface Type:**	Asphalt
Airport Elevation:	4316 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	15	**IFR Approach:**	None
Runway Length/Width:	5950 ft / 150 ft	**VFR Approach/Landing:**	Forced landing;Traffic pattern

The Page Municipal Airport is a non-towered airport that is equipped with two runways, 7/25, a 2,201-foot long and 75-foot wide asphalt runway, and 15/33, a 5,950-foot long and 150-foot wide asphalt runway. The reported airport elevation is 4,316 feet. Runway 15 features a Visual Approach Slope Indicator (VASI) oriented on a 3-degree glideslope.

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal, 1 Serious, 4 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious, 5 Minor	**Latitude, Longitude:**	36.933887,-111.449722

Examination of the accident site revealed that the airplane impacted soft terrain about 390 feet from the approach end of runway 15, slightly left of the runway on a magnetic heading of about 142 degrees magnetic. The airplane came to rest inverted on a heading of about 325 degrees magnetic. Two initial ground scars, consistent with the main landing gear, were observed about 160 feet north of the main wreckage. Both ground scars were about 3 feet in length. All major structural components of the airplane were located within about 30 feet of the main wreckage.

Examination of the airplane revealed both wings remained attached to the fuselage. All primary flight controls remained attached to their respective mounts. The right wing leading edge outboard of the landing light cutout was bent downward about 10 degrees, and was buckled in a 45-degree angle extending to the wing tip. The left wing appeared to be undamaged. The fuselage was mostly intact. The structure around the forward baggage compartment was buckled. The engine remained attached to the fuselage structure. Both main landing gear were compressed upward. The nose wheel landing gear was compressed upward into the engine compartment structure. The fuselage roof structure from the left rear side window, aft seat, and rear right door was compressed downward and slightly deformed to the left. The fuselage area aft of the rear windows was compressed and buckled throughout the entire structure. The empennage was mostly intact and bent downward.

Flight control continuity was established from the cockpit controls to all primary flight control surfaces. One of the elevator control cables was splayed, consistent with tension overload.

Examination of the cockpit area revealed that the beacon and avionics switches were in the "on" position. The throttle, mixture, and propeller controls were in the full forward position. The beacon and fuel pump circuit breakers were in the tripped position. The cowl flaps were in the closed position. The pitch trim wheel indicator was in the neutral position.

The wreckage was recovered to a secure location for further examination. During wreckage recovery, about 14 gallons of fuel was removed from the right fuel tank, and 9 gallons of fuel was removed from the left fuel tank. The removed fuel was free of debris.

Examination of the recovered wreckage at the facilities of Air Transport, Phoenix, Arizona, on May 13, 2014, was conducted by representatives of Cessna Aircraft, Continental Motors, and American Aviation, under the supervision of the NTSB IIC.

Examination of the recovered airframe revealed that all seats with the exception of the number two seat remained attached to the seat tracks via at least 2 feet. All seat backs for the passenger seats were

displaced rearward. The number two seat was found separated from the seat track. All lap belt restraints remained attached to their respective attach points. The shoulder harness for the number two seat remained attached to the seat belt. The number one shoulder harness was found loose from the seat belt. No stretching was observed on all of the seat belts. The number one seat had a secondary seat stop installed.

The fuel selector valve was operated throughout its entire range, and the valve functioned normally. The fuel boost pump circuit breaker was in the tripped position. Power was supplied to the fuel boost pump through the aircraft circuit breaker, and the fuel pump functioned in the high position only. The system was inspected, and two wires to the dropping resisters for the low operating condition were found separated. The separation was found consistent with impact damage. The fuel line from the boost pump to the fuel strainer was found separated and consistent with impact damage at the inlet to the fuel strainer.

Examination of the recovered engine revealed that it remained attached to the airframe via all its mounts. Throttle, mixture, and propeller control continuity was established from the cockpit controls to the engine. All fuel and oil lines remained attached to their respective attach points. The engine was removed from the airframe and subsequently shipped to Continental Motors Inc., Mobile, Alabama, for further examination.

The propeller assembly was intact. All three propeller blades remained attached and secure to the propeller hub. Propeller blade "A" was bent aft about 10 degrees at mid span. The blade exhibited multi directional striations throughout its span. A slight amount of leading edge nicks was observed. Propeller blade "B" was bent aft about 10 degrees about 10 inches inboard from the blade tip. The propeller blade exhibited multi directional striations throughout and leading edge polishing near the blade tip. Propeller blade C was bent aft about 90 degrees about mid span, and exhibited chordwise scratches through its span and leading edge gouges near the blade tip.

For more information, see the NTSB Accident Site, Airframe, and Engine Examination Summary Report in the public docket for this accident.

Medical and Pathological Information

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.

Tests and Research

Examination of the Continental Motors TSIO-520-G (3) C M engine was conducted on July 22 and 23, 2014, at the facilities of Continental Motors Inc., Mobile, Alabama, by the NTSB IIC and

representatives from Continental Motors, Cessna Aircraft, and American Aviation.

The engine was received secure in a wooden shipping container. The engine was removed and slung from a hoist for further inspection. The oil sump, intake tube into the throttle body, and exhaust pipe were replaced to facilitate an engine run. The propeller governor was removed to facilitate installation on the engine test stand. The engine was started, and ran uneventfully for about 30 minutes at various power settings. No evidence of any preexisting mechanical anomalies was noted during the engine run that would have precluded normal operation and the production of power.

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Gary Rucker; Federal Aviation Administration; Las Vegas, NV Andrew Hall; Cessna Aircraft Company; Wichita, KS Kurt Gibson; Continental Motors Inc.; Mobile, AL Larry D Wright; American Aviation; Page, AZ Robert Logan; American Aviation; Page, AZ Larry J Martin; American Aviation; Page, AZ
Original Publish Date:	June 18, 2015
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89190

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.