Aviation Investigation Final Report

Location:	Anchorage, Alaska	**Accident Number:**	ANC09FA001
Date & Time:	October 1, 2008, 11:40 Local	**Registration:**	N29109
Aircraft:	Cessna U206C	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot and sole passenger were on a personal cross-country flight operating under Title 14, CFR Part 91. Following a planned fuel stop at an FAA tower controlled airport, the pilot was cleared for takeoff to the west. During the initial climb, witnesses reported hearing the airplane's engine sputter, backfire, and then lose power about 200-300 feet above the ground. They saw the airplane make a steep left turn toward an intersecting north-south runway that the airplane had just passed. During the steep turn, the witnesses said the airplane remained in a nose high attitude, stalled, and then descended steeply, colliding with a building just outside the airport boundary fence. A postcrash fire consumed most of the airplane. The pilot and passenger died in the crash. An FAA tower controller reported that he gave the pilot instructions for a right turn on departure, and when he saw the airplane make a left turn he asked the pilot's intentions. The pilot replied that his engine was out, and the controller cleared him to land on any runway. Prior to departure, a witness saw the pilot fuel the airplane, and after fueling, the pilot entered the airplane without checking the fuel tank sumps for water or contamination. The witness said the airplane taxied to the runway, but did not stop before entering the runway, and starting the takeoff. Inspections of the wreckage and engine did not disclose any preimpact mechanical anomalies, however, the fuel tanks and contents were consumed by fire, and the magnetos had impact damage and could not be tested. The fuel tank selector was examined, and found in the right tank position, and free of obstructions. Tests conducted with a similar airplane disclosed that the engine would stop between 3 and 4 minutes if the fuel selector was positioned in either the OFF position or at a setting between the tanks. According to the tower transcripts, the total elapsed time from the request to taxi with the engine running until the report of the engine power loss was 3 minutes and 12 seconds. While the loss of engine power may be attributable to the improper positioning of the fuel selector, the inability to examine the airplane’s fuel and ignition systems for deficiencies due to damage cannot rule out either an ignition problem or fuel contamination. However, the pilot’s decision to attempt a steep turn toward an intersecting runway at such a low altitude following the loss of engine power, likely resulted in an aerodynamic stall, loss of control, and a

nonsurvivable crash.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power during takeoff/initial climb for an undetermined reason, and the pilot's decision to make an abrupt and steep low altitude turn toward an intersecting runway, resulting in an aerodynamic stall and loss of aircraft control.

Findings

Aircraft	Airspeed - Not attained/maintained
Aircraft	(general) - Failure
Not determined	(general) - Unknown/Not determined
Personnel issues	Decision making/judgment - Pilot

Factual Information

History of Flight

Initial climb	Loss of engine power (total)
Emergency descent	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On October 1, 2008, about 1140 Alaska daylight time, a Cessna U206C airplane, N29109, was destroyed following a loss of engine power and collision with a building during takeoff initial climb from Merrill Field, Anchorage, Alaska. The airplane was being operated by the pilot as a visual flight rules (VFR) personal cross-country flight under Title 14, CFR Part 91, when the accident occurred. The commercial pilot and sole passenger received fatal injuries. Visual meteorological conditions prevailed, and a VFR flight plan was filed.

According to FAA records, at 0731 the pilot contacted Kenai Flight Service Station (FSS) via telephone and requested a weather briefing from Homer, Alaska to Whitehorse, Canada, with stops at Merrill Field, and Northway, Alaska. The pilot also filed a flight plan for the route. At 1004 the pilot called Homer FSS via the airplane radio and requested an airport advisory for Homer. At 1006 he reported departing Homer on runway 3, and asked to have his flight plan opened.

According to witnesses, after arriving at Merrill Field the airplane went to the Chevron Aviation Fuel station where the pilot added fuel to the airplane's tanks. One witness said his attention was drawn to the airplane because of a For Sale sign in the window. He said after fueling, the pilot entered the airplane without checking the fuel tank sumps for water or contamination. He said the airplane engine started and the airplane began to taxi toward the runway. The witness said the airplane did not stop before entering the runway, and starting the takeoff run on runway 25. He said the airplane had climbed about 200-300 feet when the engine started cutting out. He said the airplane remained in a nose high attitude and rolled into a steep left turn toward the intersecting runway (16/34) it had just flown over. The witness said the airplane entered a steep descent and impacted the roof of a building adjacent to the airport.

According to FAA tower transcripts, at 1137 the pilot called Merrill Field Ground and requested taxi instructions, and a northeast departure. The pilot was told to taxi to runway 25 for a right downwind departure. At 1139 the pilot was given takeoff clearance on runway 25 with a right downwind departure. At 1140 the tower controller saw the airplane in a left turn, and the pilot was asked his intentions. The pilot responded that his engine was out, and the tower controller cleared the pilot to land on any runway. The tower controller saw the airplane descend steeply and impact a building about 500 feet southwest of runway 25. Fire and rescue were called.

During interviews conducted October 1, by National Transportation Safety Board (NTSB) investigators and FAA air safety inspectors, numerous witnesses, including pilots and aircraft mechanics, stated that their attention was drawn to the airplane as it began its initial climb after takeoff. They reported hearing the engine lose power. One witness reported that originally the engine sounded fine, and then it started making a staccato popping sound like back firing, while another witness said it sounded like a bad miss. The witnesses said they saw the airplane roll into a nose-high, steep banked left turn. They said the airplane appeared to stall, the nose pitched down, and it descended steeply, colliding with a building outside the airport boundary. The airplane came to rest in the parking lot of the building, and was consumed by a postcrash fire.

INJURIES TO PERSONS

The pilot and sole passenger died in the accident and postcrash fire.

DAMAGE TO AIRCRAFT

The airplane was destroyed by impact with a building and terrain, and mostly consumed by a postcrash fire.

PERSONNEL INFORMATION

The pilot held a commercial airplane pilot certificate with ratings for airplane multi-engine land, airplane single-engine land, airplane single-engine sea, and instrument airplane. His most recent second-class medical certificate was issued on October 10, 2007, and contained the restriction that the pilot must have available glasses for near vision.

No personal pilot logbooks were discovered for examination. According to the latest FAA application for his second class medical certificate dated September 25, 2007, the pilot reported that he had 4,550 hours of flight experience, with 30 of those hours flown in the previous 6 months. No record of a biennial flight review was discovered.

AIRCRAFT INFORMATION

The airplane was a Cessna U206C, equipped with Teledyne Continental IO-520 series, fuel-injected engine. An examination of the airplane's logbooks revealed that an annual inspection of the airplane was completed on September 24, 2008. At the time of the inspection the airplane had 4,582 hours of service since new, and 987 hours since the engine was overhauled. No mechanical deficiencies were noted.

METEOROLOGICAL INFORMATION

The closest weather reporting station is on Merrill Field (PAMR) and the Routine Aviation

Weather Report (METAR) for Merrill Field reported at 1053 ADT was clear, wind calm, visibility 10 statute miles, temperature 6 degrees C, dew point -2 degrees C, altimeter 29.78 inches of mercury.

COMMUNICATION INFORMATION

Merrill Field has an air traffic control tower, and the pilot was in radio communications with the tower. As noted, the pilot was seen by a tower controller to deviate from his departure instructions and asked his intentions. The pilot stated he had an engine out, and the controller cleared the pilot to land on any runway. Air traffic control transcripts between the pilot and the tower are included in the public docket of this report.

WRECKAGE AND IMPACT INFORMATION

The NTSB investigator-in-charge (IIC), accompanied by an FAA air safety inspector, examined the wreckage at the accident site on the day of the accident. The accident site was about 500 feet from the departure end of runway 25 at Merrill Field. The airplane impacted in an empty parking lot of a warehouse outside of the airport boundary fence. Prior to coming to rest in the parking lot, the airplane struck the front roof line of the warehouse. The warehouse was a single story structure with a large open attic area above the ground floor. The impact opened a hole in the roof and front wall of the warehouse about 15 feet across the front. The left main landing gear separated from the airplane on impact with the warehouse, and was stuck in the roof. The left cabin door also separated on impact, and some of the cabin contents were found on the roof and in the attic of the warehouse. The angle of impact from the roof line of the warehouse to the airplane's impact point in the parking lot was approximately 40-50 degrees. Upon impact the engine was liberated from the fuselage, and continued about 50 feet across the street from the parking lot. The three-blade propeller broke off the engine at the propeller flange and also continued across the street. One of the three propeller blades was freed from the shattered propeller hub. One of the propeller blades that remained attached to the hub had no chord-wise scratching, and had minor tip bending aft. The second blade that remained attached to the hub was bent aft about 90 degrees, and had large scratches parallel to the blade's trailing edge. The liberated propeller blade had tip bending aft. The engine was recovered for later examination. The nose landing gear and left cabin door were found in the attic of the warehouse. The bulk of the airplane was consumed by the postcrash fire. The remaining wreckage was recovered for examination later. The fuel tank selector was recovered from the wreckage at the accident site, and retained by the IIC.

An FAA inspector went to the fuel station where the pilot had refueled, checked the station records, and obtained a fuel sample, which he provided to the IIC. An examination of the sample by the IIC showed that the sample was the correct color, smelled like aviation fuel, and was clear and free of contamination. The sample was tested with water paste, and it was free of water. No other aircraft owners who fueled at the station complained of fuel problems.

On October 8, a detailed examination of the engine was completed at Alaska Aircraft Engines,

Anchorage. The examination was led by an NTSB investigator accompanied by representatives from the FAA, Cessna Aircraft, and Teledyne Continental Motors. The engine was fuel injected, the fuel lines were intact, and the fuel pump appeared to function properly. The magnetos were damaged and could not be tested. The spark plugs appeared dry and clean, with normal wear, with the exception of one plug that was oil soaked. The engine was intact, but the impact damage was severe. The exhaust system was broken and crushed in several places. During the examination no preimpact mechanical anomalies were found that would have precluded the engine from operating. The fuel tank selector valve was also examined at that time. The fuel selector which was burned, was found in the right tank position, and free of obstructions.

On October 9, an examination of the airframe was completed at an aircraft recovery facility in Wasilla, Alaska. The examination was led by an NTSB investigator accompanied by representatives from the FAA, Cessna Aircraft, and Teledyne Continental Motors. Flight control continuity was established for all flight controls. The instrument panel, upper fuselage skins, vertical stabilizer and rudder, right horizontal stabilizer, and right elevator were consumed by fire. Flap actuator measurements indicated that the flaps were retracted at the time of the accident.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted under the authority of the Alaska State Medical Examiner, 4500 South Boniface Parkway, Anchorage, Alaska, on October 4, 2008. The examination revealed the cause of death for the pilot was attributed to multiple blunt force injuries resulting from an accident.

The FAA's Civil Aeromedical Institute (CAMI) conducted a toxicological examination on November 17, 2008, which was negative for any alcohol or drugs.

TEST AND REASEARCH INFORMATION

According to tower transcripts, the airplane was cleared to taxi for takeoff at 37 minutes and 31 seconds past the hour. The pilot requested and was given takeoff clearance at 39 minutes and 50 seconds, 2 minutes and 19 seconds later. The pilot reported the engine out at 40 minutes and 43 seconds, 53 seconds later. The total elapsed time from the request to taxi with the engine running until the report of the engine out was 3 minutes and 12 seconds.

The fuel system consists of two vented fuel tanks (one in each wing), two fuel reservoir tanks, a fuel selector valve, auxiliary fuel pump, fuel strainer, and an engine driven fuel pump. The fuel flows by gravity from the two wing tanks to the reservoir tanks, and from the reservoir tanks to a three-position selector valve labeled LEFT ON, RIGHT ON, and OFF. Fuel cannot be used from both tanks simultaneously. Fuel system venting is essential to system operation. Complete blockage of the venting system will result in decreased fuel flow, and eventual engine stoppage. The fuel vent system could not be examined due to the postcrash fire destruction. According to the Pilot's Operating Handbook, the fuel system is equipped with drain valves to

provide a means for the examination of fuel in the system for contamination and grade. The system should be examined before the first flight of every day and after each refueling.

An operator of the same make and model airplane reported that he had a loss of engine power after takeoff from the same runway about the same point as the accident airplane. He said he had not positioned the fuel selector fully on the tank selected, and this had obstructed the flow of fuel. He said he lowered the nose to maintain flying speed, and correctly repositioned the fuel selector. He said the engine restarted, and he continued the flight.

Based on information provided by the IIC, that operator, using his Cessna 206 airplane, started the airplane several times with the fuel tank selector in the off position and at a position between OFF and ON. After 2 minutes of engine run simulating taxi, the engine was advanced to full power simulating takeoff. Each time the test was performed, the engine quit from fuel starvation between 3 and 4 minutes.

The fuel selector in the accident airplane was found positioned on the right tank. According to the Pilot's Operating Handbook, emergency procedures section, during an engine failure in-flight, the first step is to maintain 75 knots airspeed, and then check the fuel selector valve.

Pilot Information

Certificate:	Commercial	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-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 2 With waivers/limitations	**Last FAA Medical Exam:**	September 25, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	4550 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N29109
Model/Series:	U206C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U206-1079
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	September 29, 2008 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2756 Hrs	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:	BLAKE THOMAS K	**Rated Power:**	285 Horsepower
Operator:	BLAKE THOMAS K	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MRI,137 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.78 inches Hg	**Temperature/Dew Point:**	6°C / -2°C
Precipitation and Obscuration:			
Departure Point:	Anchorage, AK (MRI)	**Type of Flight Plan Filed:**	VFR
Destination:	Northway, AK (ORT)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Merrill Field MRI	**Runway Surface Type:**	Asphalt
Airport Elevation:	137 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	4000 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	61.213611,-149.844451

Administrative Information

Investigator In Charge (IIC):	Lewis, Lawrence
Additional Participating Persons:	Terry Musick; FAA; Anchorage, AK Jan Smith; Cessna Aircraft; Wichita, KS Jason Lukasic; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	March 23, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=69246