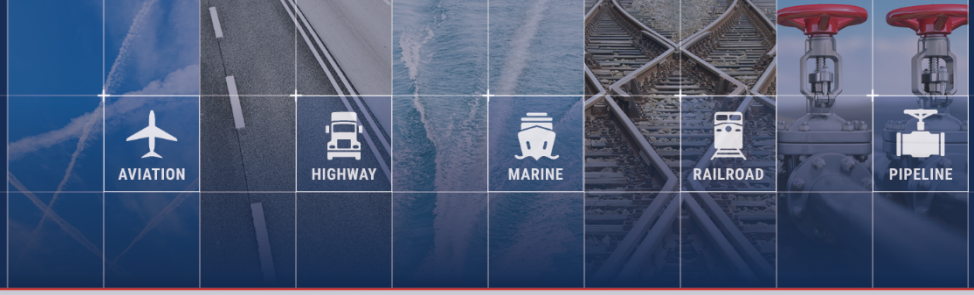

Aviation Investigation Final Report

Location:	Healy, Alaska	**Accident Number:**	ANC10FA004
Date & Time:	October 14, 2009, 14:30 Local	**Registration:**	N2764J
Aircraft:	Cessna A185E	**Aircraft Damage:**	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The pilot reported that he was flying a private wildlife biologist over an area of a national park to observe and track wolves using radio telemetry. The pilot stated that during the initial 2 hours of the flight there was no significant turbulence, only what he characterized as light chop. The pilot indicated that just prior to the accident he flew over a ridge that rose to about 500 to 800 feet above the ground. When the pilot maneuvered the airplane to reverse direction toward the ridge, it encountered turbulence and downdrafts that increased the airplane's bank angle and pushed it towards the ground, ultimately causing it to strike trees and the ground. A postaccident examination of the airplane revealed no mechanical malfunctions or failures that would have precluded normal operation. Additionally, a warning had been issued to airmen for the possibility of severe or greater turbulence, severe icing, low-level wind shear, and instrument flight conditions in the general area at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to maneuver at a low altitude over rising terrain in conditions conducive to turbulence/downdrafts, resulting in a loss of control and impact with terrain.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Environmental issues	Downdraft - Contributed to outcome
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Terrain induced turbulence - Effect on operation
Environmental issues	Downdraft - Effect on operation
Environmental issues	Mountainous/hilly terrain - Contributed to outcome

Factual Information

History of Flight

Maneuvering-low-alt flying	Turbulence encounter
Maneuvering-low-alt flying	Loss of control in flight
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT) (Defining event)

HISTORY OF FLIGHT

On October 14, 2009, about 1430 Alaska daylight time, a Cessna A185E airplane, N2764J, received substantial damage when it impacted trees and terrain, about 28 miles west of Healy, Alaska. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. The commercial pilot was seriously injured, and his passenger was killed. Visual meteorological conditions prevailed, and no flight plan was filed for the local aerial photography/animal survey flight, which originated from the Denali Airport, McKinley Park, Alaska, about 1215.

A friend of the pilot called the Federal Aviation Administration (FAA) the evening of October 14 after becoming concerned that the flight had not returned to the airport at the expected time. The flight was officially reported overdue to the FAA on October 15, at 0045. On the morning of October 15, search personnel from the Civil Air Patrol, Alaska State Troopers, and Alaska Air National Guard were dispatched to search along the pilot's reported route of flight. There was no emergency locator transmitter (ELT) signal from the airplane. The incinerated wreckage was located on October 15, about 1500, in an area of mountainous, tree-covered terrain by airborne searchers.

In a written statement and during subsequent interviews with the Safety Board investigator-in-charge (IIC), the pilot reported that after departure, he proceeded in a west-southwest circuit from the airport to conduct a local aerial observation flight in order to track wolves throughout the Denali National Park, using radio telemetry. The passenger, a private biologist who had frequently monitored wolves in the park, was tracking and monitoring movement of the wolves as well as conducting aerial photography of the wolf packs.

The pilot further reported that during aerial observations at four locations about 10 to 15 miles north-northeast of the accident site, he noted the wind was generally from the north at 5 to 10 knots, with occasional "light chop." The pilot altered his course to the west, and eventually to the south-southeast, to the east fork of the Toklat River. As the airplane reached the area of the upper east fork of the river, the pilot said he began arcing north-northwest along the river's west side on his initial approach over the intended observation area. He stated that they initially flew over the observation area, and crossed a low ridge line that rose to the west, about 500 to 800 feet above ground level (agl). He said he then started a left 180-degree turn back

towards the observation area "in an attempt to begin observations."

The pilot indicated that about half to three quarters of the way through the turn, the airplane "encountered unexpected turbulence and drafts that rolled the wings steeper into the left bank and induced a continuing loss of altitude." He said when he rolled the wings level and applied full power, the airplane was heading south-southwest, towards the rising ridge. He rolled the airplane into a shallow left bank in a climb-pitch attitude "in an attempt to reach lowering terrain and avoid the ridge without inducing a stall." He said that downdrafts continued to force the airplane down towards the ridge line where it impacted.

After impact, the pilot said he blacked out momentarily. As he awoke, he saw smoke and flames within the cabin area, and he left the airplane while yelling to his passenger to get out. He stated that at no time did he receive any reply from his passenger. The pilot attempted to re-enter the airplane through the baggage door, but was unsuccessful due to the flames.

The pilot remained near the wreckage over night. In the morning hours of October 15, he walked along the east fork of the Toklat River, about 7 miles upstream to a nearby road. He continued to walk about 9 miles on the road until he saw a group of people camping. The group walked 5 miles to their car, and the pilot was taken to town for medical attention.

PERSONNEL INFORMATION

The pilot, age 35, held a commercial pilot certificate with airplane single-engine land, airplane multi-engine land, and instrument ratings. A second-class airman medical certificate issued April 10, 2009, with no limitations stated. The pilot reported that as of December 26, 2009, he had a total flight time of 4,400 hours, of which 55 hours were in the accident make/model airplane.

AIRCRAFT INFORMATION

The four-seat, high-wing, fixed-gear tailwheel equipped airplane, serial number (S/N) 185-1514, was manufactured in 1969. It was powered by a Continental IO-520-D (9) engine, serial number 282982, and equipped with a two-blade McCauley constant speed propeller, model number D2A34C58-0, serial number 842378. The pilot registered the airplane with the FAA on April 13, 2009.

Review of copies of maintenance logbook records revealed that a 100-hour/annual inspection was conducted April 16, 2009, at a recorded tachometer reading of 2,350 hours, airframe total time of 3,474.80 hours, and engine time of 574 hours since factory remanufacture, and 6.24 hours since top overhaul. The tachometer and the Hobbs hour-meter were not observed at the accident site.

METEOROLOGICAL INFORMATION

A review of recorded data from the automated weather observation station, about 31 miles west-northwest of the accident site, at an elevation of 1,720 feet, revealed at 1456 Alaska daylight time, conditions were: wind from 010 degrees at 10 knots, visibility 10 statute miles, overcast cloud layer at 300 feet, temperature 1 degree Celsius, dew point minus 1 degree Celsius, and an altimeter setting of 29.49 inches of Mercury.

An AIRMET issued for the northern half of Alaska at 1045 was valid until 1700. The AIRMET stated that possible severe or greater turbulence, severe icing, low level wind shear, and IFR conditions could exist in the area during the specified time frame.

WRECKAGE AND IMPACT INFORMATION

The accident site was adjacent to the east fork of the Toklat River within the Denali National Park. Examination of the accident site revealed several topped trees, about 30 to 40 feet in height. The outboard portion of the right elevator was observed below the first tree, which was the first identified point of contact (IPC). The fiberglass right wingtip was located about 20 feet from the IPC, near a second grouping of topped trees. The left outboard horizontal stabilizer and section of elevator were located within a topped tree, about 20 feet in height, and about 80 feet from the IPC. The main wreckage was located about 110 feet from the IPC. Portions of Plexi- glass were observed about 50 feet beyond the main wreckage. The wreckage debris energy path was oriented along an approximate heading of about 230 degrees magnetic. The main wreckage came to rest upright, oriented on an approximate heading of 180 degrees magnetic at an elevation of about 3,040 feet mean sea level. From the southern side of the wreckage debris path, looking north, the damaged trees along the northwest edge of the debris path were topped and or damaged higher than the trees on the northeast side of the debris path.

Examination of the airplane reveled that a majority of the fuselage and right wing were consumed by fire. The left wing was partially consumed by fire. All major structural components of the airframe were located within the wreckage debris path. Examination of the airframe and flight control system revealed no evidence of preimpact mechanical malfunction.

The engine was partially attached to the engine mounts. The propeller remained attached to the engine crankshaft propeller flange. One blade was bent and twisted aft into the engine cowling. The blade had chord-wise scratching on the propeller blade face. The opposing propeller blade was twisted and buried into the soft ground. Chord-wise scratching was observed on the rear of the propeller blade. The propeller blade also appeared to be loose within the propeller hub. Impact damage was noted to the number three cylinder and oil sump.

The wreckage was recovered to a secure location for further examination.

SURVIVAL ASPECTS

The airplane was reportedly equipped with a 121.5 MHz emergency locator transmitter (ELT).

According to the Air Force Rescue Command Center (RCC), no ELT signals were received during the search and rescue operations. As of February 1, 2009, monitoring 121.5 MHz ELT analog transmissions by all search and rescue satellites was terminated. On that date, only digital, 406 MHz ELT transmissions could be received by the satellites. According to the National Oceanic and Atmospheric Administration (NOAA) Satellite and Information Service, "NOAA, along with the U.S. Coast Guard, U.S. Air Force, and NASA (the four Federal Agencies who manage, operate, and use the SARSAT system) are strongly advising users of 121.5/243 MHz beacons to make the switch to 406." The National Transportation Safety Board issued Safety Recommendation A-07-51, on September 4, 2007. The recommendation, addressed to the FAA administrator, states in part "Seek authority from Congress to require the installation of Technical Standard Order C126 [406 megahertz (MHz)] emergency locator transmitters (ELTs) in all applicable aircraft at the earliest possible opportunity. Further, the Federal Aviation Administration should strongly consider establishing a compliance date for upgrading to 406-MHz ELTs on or before the date that COSPAS-SARSAT will cease satellite processing of 121.5-MHz signals."

As of November, 2010, the FAA has not sought to mandate the use 406MHz ELTs, and the Safety Board has classified the FAA's response to Safety Recommendation A-07-51 as: "Open-Unacceptable."

TESTS AND RESEARCH

The aircraft wreckage (engine and airframe) was recovered from the accident site on May 11, 2010. The recovered engine and airframe were examined on July 13, 14, and 15 by representatives from Teledyne Continental Motors and Cessna Aircraft under the supervision of the Safety Board IIC.

Examination of the recovered engine revealed that the number three and five cylinders had impact damage. All engine accessories remained attached to the engine. The ignition harness exhibited impact damage in various areas. The engine driven fuel pump was removed from the engine. The drive coupling was intact and undamaged. The fuel pump drive shaft rotated freely by hand. The oil sump was breeched. The intake system was impact damaged.

The number 3 and 5 cylinders, oil sump, ignition harness, intake system cross over tube, number 3, 5, and 6 intake risers, fuel pump inlet fitting, all rocker box covers, exhaust system, ignition harness, and three of the four engine mount legs were replaced in order to facilitate preparation for an engine run. The propeller governor was removed from the engine and a blank plate was installed. The engine was installed on a test stand, which utilized a slave fuel source.

The engine was successfully started and run for about 10 minutes at various power settings with no anomalies noted. The engine was set to a speed of 1,700 rpm and a magneto test was performed. A drop of 50 rpm was noted for the left magneto and 100 for the right magneto. A series of power adjustments from idle to full power was conducted with no hesitation in

engine operation noted.

No mechanical anomalies were noted with the airframe or engine that would have precluded normal operation.

Pilot Information

Certificate:	Commercial	**Age:**	35,Male
Airplane Rating(s):	Single-engine land; 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:**	No
Medical Certification:	Class 2 None	**Last FAA Medical Exam:**	April 10, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 30, 2009
Flight Time:	4400 hours (Total, all aircraft), 55 hours (Total, this make and model), 4300 hours (Pilot In Command, all aircraft), 260 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N2764J
Model/Series:	A185E	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	185-1514
Landing Gear Type:		**Seats:**	6
Date/Type of Last Inspection:	April 16, 2009 Annual	**Certified Max Gross Wt.:**	3350 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3475 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:	Dan McGregor	**Rated Power:**	285 Horsepower
Operator:	Dan McGregor	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAIN,1720 ft msl	**Distance from Accident Site:**	31 Nautical Miles
Observation Time:	14:56 Local	**Direction from Accident Site:**	75°
Lowest Cloud Condition:	Thin Overcast / 300 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.48 inches Hg	**Temperature/Dew Point:**	1°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	McKinley Park, AK (A06)	**Type of Flight Plan Filed:**	Unknown
Destination:	McKinley Park, AK (A06)	**Type of Clearance:**	None
Departure Time:	12:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	63.619445,-149.901107

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Patrick Sullivan; Federal Aviation Administration; Anchorage, AK Terry Horton; Teledyne Continental Motors; Mobile, AL Mike Koonce; Cessna Aircraft; Wichita, KS
Original Publish Date:	March 16, 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=74906