Aviation Investigation Final Report

Location:	Luna, New Mexico	**Accident Number:**	DEN05FA003
Date & Time:	October 3, 2004, 10:30 Local	**Registration:**	N5964
Aircraft:	Cessna A185E	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane came in from the west and landed on the airstrip. A witness, the owner of the airstrip, said the pilot taxied the airplane to the west end of the airstrip and then took off to the east. The witness said the pilot made a "perfect" takeoff. The witness said that after he could no longer see the airplane he heard what sounded like two shots. He said he thought that "two guys were shooting muzzle loaders" and assumed that the airplane had "scared up some elk for them to shoot at." The witness said he expected the pilot to land at the airstrip when he came back around, but he never returned. The witness said about 30 minutes later he was met by a friend who told him the airplane had gone down. The witness said his wife reported seeing the airplane begin a left banking turn, then seeing "two puffs of smoke" come from the airplane, and hearing "two bangs" before losing sight of the airplane. The airstrip owner, who knew the pilot, said that this was the first time the pilot had landed at that airstrip. He said that when the airplane took off the engine sounded normal. The airstrip owner said that he flew in and out of the airstrip in his Maule. He said that taking off to the east put him in a canyon. He said that it was better to take off to the west through the larger part of the valley. An examination of the airplane revealed no anomalies; however, all of the engine spark plugs were noted to be light brown in color, indicative of the engine being operated at a lean fuel-air mixture setting. According to a manufacturer's representative, with the turbocharger installed, the operator must run the engine at the rich mixture setting to get the same performance at higher elevations that the engine would get at sea level. Any leaning at all would produce backfires and loss of performance. The density altitude calculated for the area was 11,246 feet msl. Turbocharger information showed at an altitude of 13,000 feet msl and 76 percent horsepower, the airplane's climb rate was 500 feet per minute.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's improper use of the mixture control, his failure to maintain clearance from the trees, and his improper preflight planning resulting in his taking off into a canyon and subsequently impacting the trees and terrain. Factors contributing to the accident were the trees, and the high density altitude.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL
Phase of Operation: MANEUVERING

Findings
1. (C) MIXTURE - IMPROPER USE OF - PILOT IN COMMAND
2. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING

Findings
3. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
4. (F) OBJECT - TREE(S)
5. (C) PREFLIGHT PLANNING/PREPARATION - IMPROPER - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. TERRAIN CONDITION - MOUNTAINOUS/HILLY

Factual Information

HISTORY OF FLIGHT

On October 3, 2004, approximately 1030 mountain daylight time, a Cessna A185E, N5964, piloted by an airline transport pilot, was destroyed when it impacted trees and mountainous terrain while maneuvering after takeoff from a private airstrip, approximately 8 miles north-northwest of Luna, New Mexico. Visual meteorological conditions prevailed at the time of the accident. The personal flight was being conducted under the provisions of Title 14 CFR Part 91 without a flight plan. The pilot was fatally injured. The cross-country flight was originating at the time of the accident.

A witness said he saw the airplane come in from the west land on the airstrip at the L.D.W. Ranch. The witness, also the owner of the ranch and airstrip, said the pilot taxied the airplane to the west end of the runway and then took off to the east. The witness said the pilot made a "perfect" takeoff. The witness said that after he could no longer see the airplane he heard what sounded like two shots. He said he thought that "two guys were shooting muzzle loaders" and assumed that the airplane had "scared up some elk for them to shoot at." The witness said he expected the pilot to land at the airstrip when he came back around, but he never returned. The witness said about 30 minutes later he was met by a friend who told him the airplane had gone down. The witness said he went to the crash scene, found the pilot and checked his vital signs. There were none. He then went to notify the sheriff's department. In a telephone interview, the witness said that his wife saw the airplane after takeoff enter a left banking turn and then saw two puffs of smoke. He said she then heard "two bangs" before losing sight of the airplane.

The witness' wife said that she saw the airplane takeoff to the east, and after clearing the trees begin to circle back. She then heard "two loud what sounded like shots. There was smoke and then the plane disappeared from sight."

The airstrip owner, who knew the pilot, said that this was the first time the pilot had landed at that airstrip. He said that when the airplane took off the engine sounded normal. The airstrip owner said that he flew in and out of the airstrip in his Maule. He said that taking off to the east put him in a canyon. He said that it was better to take off to the west through the larger part of the valley.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate dated November 8, 1999. The certificate listed privileges for multi-engine land airplane and type ratings for numerous commercial transport airplanes. The certificate also listed commercial privileges for single-engine land

airplanes, single-engine sea airplanes, rotorcraft-helicopters, and gliders.

The pilot held a flight instructor certificate dated March 9, 2003. The certificate listed privileges for instruction in single-engine land airplanes, single-engine sea airplanes, rotorcraft-helicopters, and gliders.

The pilot successfully completed a flight review on May 15, 2003.

According to his logbook, the pilot had 28,212 total flying hours, approximately 50 hours in the 90 days previous to the accident. The pilot had flown 21.4 hours in the accident airplane in the 90 days prior to the accident. The pilot's last logbook entry was made on September 29, 2004.

The pilot held a second-class medical certificate dated December 29, 2003. The pilot's medical certificate listed as limitations the certificate was "not valid for any class after December 31, 2004," and "holder must wear corrective lenses."

The pilot also possessed a Statement of Demonstrated Ability for a first class medical certificate, dated September 21, 1967, for "defective distance visual acuity," corrected to 20/20 vision in both eyes. The certificate listed as limitations, "Holder shall wear corrective lenses and have a pair of correcting glasses available while exercising the privileges of his airman certificate."

AIRCRAFT INFORMATION

The airplane, serial number 185-1153, was manufactured in January 1967. The airplane was owned and operated by the pilot and used primarily for pleasure.

According to the airplane logbooks, the airplane underwent an annual inspection on October 9, 2003. The engine tachometer time recorded at the annual inspection was 1,848 hours. The total airframe time recorded at the annual inspection was 7,000 hours and the Hobbs time was 1931 hours. The Hobbs time recorded at the accident site was 2,050.4 hours.

METEOROLOGICAL INFORMATION

A witness near the accident scene described the weather approximately 1 hour before the accident as clear skies, unrestricted visibility, and a temperature of approximately 50 degrees Fahrenheit.

The weather at St. Johns, Arizona (SJN), 38 miles northwest of the accident site, was clear skies, 10 miles visibility, temperature 64 degrees Fahrenheit (F), dew point 39 degrees F, winds 050 degrees at 5 knots, and altimeter 30.03 inches. Using the temperature and altimeter setting for SJN and the elevation at the accident site, the density altitude was calculated as 11,246 feet.

AERODROME AND GROUND FACILITIES

The L.D.W. Ranch airstrip sat at an elevation of 8,335 feet mean sea level. The airstrip was approximately 2,100 feet long and 50 feet wide, and was oriented on a 060-240 degree magnetic heading. The surface consisted of soft, dry dirt. According to the owner, they had recently graded the airstrip to reroute a road and to flatten out a "crown" in the center of the airstrip. The owner said that they had worked on the airstrip the previous day.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board's on scene investigation began October 4, 2004, at 0800.

The accident site was located on a hillside approximately 70 feet north of an east-west running segment of Catron County Road 220, a 2-lane winding gravel road. The hillside was heavily treed and showed an incline that varied between 20 to 60 degrees. The average slope was approximately 25 degrees. The elevation of the location where the airplane main wreckage came to rest was approximately 8,900 feet mean sea level.

The accident scene began with a 110-foot tall, 28-inch diameter Ponderosa pine tree, located approximately 200 feet north of CR 200 and 690 feet east of the airplane main wreckage. At the top of the tree was a 2-foot long section of the airplane's outboard wing. At the base of the tree were small pieces of metal, yellow-colored paint chips, and small broken pieces of clear Plexiglas.

Approximately 57 feet west of the first pine tree were several yellow-colored paint chips.

Approximately 138 feet from the first pine tree was a 16-inch long piece of the right outboard wing and right aileron. The outboard portion of this section, where the wing tip is fixed was crushed aft. The wing tip was broken aft along the longitudinal rivet line. Fractured pieces of the fiberglass wingtip adhered along the rivet line. The inboard portion of the wing section was crushed and torn rearward. Also in this area was a 12-inch wide piece of wing skin that was bent and torn.

Approximately 140 feet from the first pine tree on a 233-degree magnetic heading was a 26-inch long section of the right wing aileron. The section was broken aft and buckled.

At 336 feet west of the first pine tree was a landing light. At 375 feet was the green lens cover to the right wing position light.

Approximately 550 feet west of the first pine tree was a second Ponderosa pine tree with a yellow-colored metal pieces, approximately 2 feet in length, , lodged in it's branches, approximately 40 feet up from the ground.

At 579 feet west of the first pine tree was a 4-foot long, leading edge piece of the airplane's right wing. Numerous paint chips, pieces of broken clear Plexiglas, and pieces of chopped wood were located in this area.

A 6-foot outboard section of the airplane's left wing rested 591 feet west of the first pine tree. The section showed a 12-inch diameter, "C" shaped dent in the leading edge, 2 inches inboard of the wing tip rivets. The top and bottom wing skins were buckled. The left wing tip was broken aft longitudinally along the rivet line of the outboard wing section. The inboard edge of the wing section was broken aft. Next to the wing section were two pieces of the right aileron. One piece was 2 feet long. The other piece was 3 feet long. Both pieces were broken aft and buckled.

Approximately 603 feet from the first pine tree were two pine trees approximately 40 feet tall. Approximately 17 feet up from the base of the first tree was a 3-foot long piece of the airplane's left wing spar lodged in the tree branches. The piece had been broken aft and crushed. A 7-inch long, 6-inch wide area of torn bark was located on the first tree 8 feet above the lodged wing piece. Within the wing piece were sections of aileron cables. One of the cables was strung between the first tree and second tree's branches. The ends of the cable segments all showed fraying consistent with overload failure. At the base of the second tree were downed braches, pieces of chopped wood, and yellow-colored paint chips.

At 663 feet from the first pine tree was a 4-foot section of the left wing flap. The flap was broken out at the at the flap tracks. The flap section was broken aft and buckled.

Approximately 690 feet on a 283-degree magnetic heading from the first pine tree was the airplane main wreckage. The wreckage consisted of the engine and cowling, the propeller, the main landing gear, the inboard portion of the left wing and strut, the forward cabin, the aft cabin and baggage compartment, the fuselage, the empennage, and the tail wheel. The forward fuselage of the main wreckage was pushed up against a pine tree. The east side of the tree showed an 18-inch long, 12-inch wide scrape located approximately 2 feet up from the base. In the area around the main wreckage, the smell of fuel was prevalent.

Immediately to the east of the engine, main gear and forward fuselage was an impact crater. The crater was approximately 10 feet long east to west, 4 feet wide south to north, and 16 inches at its deepest point. In the crater were pieces of wing stringers, broken and twisted metal, pieces of clear Plexiglas, and pieces of chopped wood.

Also immediately to the east of the engine and west of the impact crater was a 40-foot tall pine tree that had been pushed over at the roots and rested on the ground oriented on an east-west line.

The propeller hub was broken. One propeller blade was broken out and rested at the base of a pine tree. The other two blades remained with the rest of the propeller hub. All three blades showed torsional bending, chordwise scratches, and leading edge nicks. The spinner was

crushed aft and twisted counter-clockwise.

The engine cowling was crushed aft, bent, and buckled. The engine was intact. The engine, engine accessories, mounts and the firewall were torn away from the forward fuselage.

The instrument panel, glare shield, and front windscreen were broken out, crushed, and fragmented. The instruments and radios were broken out of the instrument panel. The windscreen was broken out and fragmented. The forward cabin floor was crushed upward. The left side floor and left forward cabin wall were crushed up and inward. The main landing gear was intact. The right side cabin wall was buckled. The forward cabin ceiling was bent aft and downward. The pilot and right passenger seat were broken out from the floor rails. The main landing gear legs were twisted right 30 degrees. The left cabin door was broken at the hinges and twisted. The door rested north of the main wreckage.

The left aft cabin, baggage compartment and fuselage were buckled inward. The bottom of the fuselage was buckled inward beneath the aft cabin, aft of the baggage compartment, and just forward of the empennage. The right side aft cabin wall and fuselage were buckled. The right side of the aft fuselage, just forward of the right horizontal stabilizer was bent inward.

The empennage was bent 15 degrees to the right and approximately 10 degree down. The leading edge fairing to the vertical stabilizer was broken and bent left. The vertical stabilizer was bent left and crushed inward at the base. A 6-inch diameter hole was punched through the top center of the vertical stabilizer from left to right. The top portion of the rudder and rudder counterweight was broken aft and left. The rest of the rudder was crushed and bent to the right. Flight control continuity to the rudder was confirmed.

The right horizontal stabilizer was intact. The right elevator was crushed downward. The outboard section of the left horizontal stabilizer was crushed rearward at the leading edge and bent downward at mid-span. The left elevator was bent and buckled downward at mid-span. The outer 10 inches of the left elevator was broken aft. The tail wheel was undamaged. Flight control continuity to the elevator was confirmed.

The left inboard wing section was broken aft of the fuselage at the wing root. An 18-inch diameter "C" shaped dent was located the leading edge of the wing section, outboard of the wing root fracture. The remaining leading edge was crushed aft. The top wing skin was buckled outward. The wing strut was broken out at the fuselage mount, and bent forward.

A debris field extended south and west of the main wreckage. The debris field was approximately 105 feet wide, extending down onto the county road, and was 110 feet long. Within the debris field was a propeller blade, pieces of clear Plexiglas, aeronautical charts, personal effects, parts from the propeller hub, the left cabin door, flight and engine instruments, pieces of control yoke, yellow-colored paint chips, and broken tree branches.

Approximately 78 feet from the main wreckage on a 255-degree magnetic heading was the

right inboard wing section. The wing was broken aft at the wing root and just outboard of the wing strut mount. The leading edge of the wing was crushed aft across the entire span. The upper and lower wing skins were buckled outward. The right flap was intact, remained attached to the wing, and was in the "up" position.

Approximately 105 feet from the main wreckage on a 260-degree magnetic heading were two large pieces of fractured Plexiglas.

An examination of the airplane's engine controls showed the following:

Throttle:	Full in
Propeller control:	Destroyed
Mixture:	Rich
Turbo knob:	In
Cowl flaps:	Closed
Fuel selector:	Both
Magnetos	Both

An examination of the airplane's engine instruments showed the following:

Left fuel gauge:	1/4 tank
Right fuel gauge:	1/4 tank
Oil temperature	Zero
Oil pressure	Zero
Cylinder head temperature:	Zero
Ammeter:	Zero
Suction gauge:	Zero
Digital tachometer	Destroyed

An examination of the airplane's flight instruments showed the following:

Altimeter:	3,420 feet
Kollsman window:	30.30 inches
Airspeed:	Destroyed
Vertical speed indicator:	Destroyed
Horizon gyro	Destroyed

An examination of the airplane's navigation instruments showed the following:

Transponder:	Destroyed
ADF indicator	180 degrees
Magnetic compass	180 degrees
DME	Destroyed
Moving Map	Destroyed

Comm/Nav radios Destroyed
Comm/Nav selector panel: Destroyed
GPS Destroyed

Flight control continuity was established to both ailerons. An examination of the engine showed no anomalies.

MEDICAL AND PATHOLOGICAL INFORMATION

The New Mexico Office of the Medical Investigator, Albuquerque, New Mexico, conducted a post mortem medical examination of the pilot on October 5, 2004. In the opinion section of her report, the Chief Medical Investigator concluded that the pilot "died of blunt multiple injuries."

FAA toxicology testing of specimens from the pilot showed ATENOLOL detected in blood and present in urine.

Atenolol is in the class of prescription drugs known as beta-blocker. It is used to lower blood pressure, lower heart rate, reduce chest pain (angina), and reduce the risk of recurrent heart attacks. Atenolol may cause drowsiness, dizziness, and blood pressure changes. Patients prescribed Atenolol are to use caution when driving, operating machinery, or when engaged in hazardous activity.

An examination of the pilot's most recent application for a second class Airman Medical Certificate cites "Yes" in the block marked "Currently Use Any Medication" and lists Atenolol 50 mg (milligrams) daily, Lipitor 80 mg daily, and Niaspan 1000 mg daily. The application also shows "Yes" in the block marked "Heart or vascular trouble" and in the block marked "Admission to hospital."

An Authorization for Special Issuance of a Medical Certificate issued to the pilot and dated December 2, 2003, stated, "... The medical evidence reveals a history of myocardial infarction, coronary artery disease requiring percutaneous transluminal coronary angioplasty with stenting. You are eligible for second-class medical certification ... However, based on the complete review of the available medical evidence, I have determined that you may be granted authorization for special issuance second-class airman medical certification ..."

TESTS AND RESEARCH

The airplane's engine was examined in Phoenix, Arizona, on November 17, 2004. Chopped tree debris was observed embedded in the front of the number 6 (left, front) cylinder. Three 3-inch long wood pieces were removed. Each piece was approximately 3 inches long and showed 45-degree angular cuts at each end. Tree debris was also observed embedded in the crushed propeller spinner. The 6 top spark plugs were removed and examined. Each of the spark plug showed normal wear and were light brown in color. The turbocharger showed no damage.

The fan was freewheeling. Small pieces of plastic tubing was observed resting on the turbocharger fan blades. The oil filter showed no debris. The engine oil was light in color and showed good viscosity. The engine was turned and showed good continuity through the cylinders, crankshaft, and accessory drive gears. An internal examination of the engine showed no damage or debris. The fuel distribution manifold and lines to the cylinders showed fuel. The fuel was light blue in color and smelled of 100 low lead. The fuel screen within the distribution manifold showed no debris.

An examination of the airplane's airframe and engine records showed the airplane's engine was overhauled and reinstalled in Chandler, Arizona, between October 9 and 15, 2003. The engine logbook showed the engine was inspected at 25 hours on November 14, 2004. The engine's oil was changed and the propeller governor was adjusted at that time. The engine was again inspected at 50 hours on April 2, 2004. The oil was also changed on that date.

According to the engine manufacturer, the light brown colored spark plugs is indicative of the engine being operated at a lean fuel-air mixture setting. With the turbocharger installed, an operator must run the engine at the rich mixture setting to get the same performance at higher elevations that the engine would get at sea level. Any leaning at all would produce backfires and loss of performance.

Turbocharger performance information from the manufacturer showed that for a 3,350 pound gross weight airplane on wheels and no flaps, and at an altitude of 8,000 feet and 100 percent horsepower, the airplane would climb at rate of 1,200 feet per minute. At 8,000 feet and 95 percent horsepower, the airplane's climb rate was 900 feet per minute. At an altitude of 13,000 feet and 76 percent horsepower, the airplane's climb rate was 500 feet per minute.

ADDITIONAL INFORMATION

Parties to the investigation were the FAA Flight Standards District Office, Albuquerque, New Mexico, the Cessna Aircraft Company, and Teledyne Continental Motors.

The airplane wreckage was returned and released to the pilot's insurance company.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	63,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	December 29, 2003
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 15, 2003
Flight Time:	28212 hours (Total, all aircraft), 4047 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 28 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N5964
Model/Series:	A185E	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1153
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	October 9, 2003 Annual	**Certified Max Gross Wt.:**	3350 lbs
Time Since Last Inspection:	119.4 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	7119.4 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-D
Registered Owner:	Thomas Leon Rabourn	**Rated Power:**	300 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:	SJN,5736 ft msl	**Distance from Accident Site:**	38 Nautical Miles
Observation Time:	10:54 Local	**Direction from Accident Site:**	317°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	18°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Luna, NM	**Type of Flight Plan Filed:**	None
Destination:	Springerville, AZ	**Type of Clearance:**	None
Departure Time:	09:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	L. D. W. Ranch	**Runway Surface Type:**	Dirt
Airport Elevation:	8335 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	060	**IFR Approach:**	None
Runway Length/Width:	2100 ft / 50 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	33.913333,-109.023056

Administrative Information

Investigator In Charge (IIC):	Bowling, David
Additional Participating Persons:	Kenneth Hand; Federal Aviation Administration; Albuquerque, NM David H Shonka; Cessna Aircraft Company; Wichita, KS Mike Grimes; Teledyne Continental Motors; Lancaster, CA
Original Publish Date:	September 13, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60266