Aviation Investigation Final Report

Location:	Crowley, Louisiana	**Accident Number:**	CEN11FA115
Date & Time:	December 18, 2010, 14:30 Local	**Registration:**	N8556T
Aircraft:	Cessna 182C	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	3 Fatal, 2 Serious
Flight Conducted Under:	Part 91: General aviation - Skydiving		

Analysis

The flight departed to the east with four skydivers for a local jump. One witness stated that, immediately following the takeoff, about 200 feet above ground level, a "percussive" pop from the engine was heard. Two witnesses stated that the right wing dropped, and the airplane impacted the ground. The airplane was quickly engulfed in a postimpact fire. A postaccident examination of the engine revealed a piece of engine isolator gasket had become wrapped around the carburetor main fuel jet and both magnetos distribution gear had cracked and were missing teeth. The damaged distribution gear teeth were consistent with damage found after an engine experiences a backfire. It could not be determined which magneto failed first or if they both failed simultaneously. The cause of the backfire could not be determined. Further examination of the engine, airframe, and remaining systems revealed no anomalies that would have precluded normal operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the magneto failure for undetermined reasons.

Findings

Aircraft	Magneto/distributor - Failure
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

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

HISTORY OF FLIGHT

On December 18, 2010, approximately 1430 central standard time, a Cessna 182C airplane, N8556T, crashed shortly after takeoff from the Le Gros Memorial Airport (K3R2), Crowley, Louisiana. A post impact fire ensued. Visual meteorological conditions prevailed at the time of the accident. The skydiving flight was being conducted under the provisions of 14 Code of Federal Regulations Part 91, without a flight plan. The pilot and two passengers were fatally injured. Two additional passengers were seriously injured. The local flight was originating at the time of the accident.

According to one witness, the engine made a "percussive" pop sound as it reached an approximate elevation of 200 feet above ground level. Two witnesses reported that the nose of the airplane leveled slightly, the right wing dipped, and the airplane impacted the ground. The right wing of the airplane impacted a grassy area between runway 4 and the D taxiway, and then slid onto the taxiway.

The witnesses ran to the wreckage and helped the two survivors egress from the wreckage.

PERSONNEL INFORMATION

The pilot, age 56, held an airline transport pilot certificate with an airplane multiengine land rating, a commercial pilot certificate with an airplane single engine land rating, and a flight instructor certificate with single, multiengine, and instrument privileges. He was issued a first class airman medical certificate in August of 2010. The certificate contained the limitation "must wear corrective lenses."

The pilot's logbook was not made available for review. The Federal Aviation Administration (FAA) estimated his total flight time at 8,000 hours.

AIRCRAFT INFORMATION

The accident airplane, a Cessna 182C (serial number 52456), was manufactured in 1959. It was registered with the FAA on a standard airworthiness certificate for normal operations. A Teledyne Continental Motors O-470-Lengine rated at 230 horsepower at 2,400 rpm powered

the airplane. The engine was equipped with a McCauley 2-blade, variable pitch propeller.

The airplane was registered to and operated by a private individual, and was maintained under an annual inspection program. A review of the maintenance records indicated that an annual inspection had been completed on October 4, 2010, at an airframe total time of 6,736.6 hours. During this inspection, the engine cylinder compression and magneto timing was checked, the oil filter was removed and found free of metal contamination, both magneto filters were replaced, the spark plugs were cleaned and tested, and the engine was serviced with 11 quarts of oil.

The last engine overhaul was completed on March 1, 2000, at an airframe total time of 4,005.7 hours. At this time, it was reported that new pistons, valves, lifters, rods, bolts, spark plugs, ignition harnesses, and magnetos were installed. The NTSB was unable to determine the exact time on the magnetos or if they were in fact new at the time of the engine overhaul or had just been serviced.

The airplane had several supplemental type certificates applied including the addition of a jump door for sky diving purposes. Only the two forward occupant seats remained in the airplane.

METEOROLOGICAL INFORMATION

The closest official weather observation station was Lafayette Regional Airport (KLFT), Lafayette, Louisiana, located 25 nautical miles (nm) east of the accident site. The elevation of the weather observation station was 42 feet mean sea level. The routine aviation weather report (METAR) for KLFT, issued at 1353 reported, winds 360 degrees at 9 knots, visibility 10 miles, sky condition clear, temperature 11 degrees Celsius (C), dew point zero degrees C, altimeter 30.03 inches.

AIRPORT INFORMATION

Le Gros Memorial Airport was a public, uncontrolled airport (located 7 miles southwest of Crowley, Louisiana, at 30 degrees, 9 minutes, 42.25 seconds north latitude and 092 degrees, 29 minutes, 2.26 seconds west longitude, at a surveyed elevation of 17 feet. The airport had 2 open runways at the time of the accident, runway 4/22 (4,307 feet by 150 feet, concrete) and runway 13/31 (4,012 feet by 150 feet, concrete), both of which were reported to be in good condition.

WRECKAGE AND IMPACT INFORMATION

The accident site was located just to the south of runway 4/22. The unpaved terrain was flat and vegetated with short grass. A long narrow ground scar, which measured 25 feet in length, characterized the initial impact point. The north most point of the ground scar contained green lens fragments. The long narrow ground scar terminated at a second, larger ground scar that

contained paint chips, and the nose landing gear assembly. The propeller was also located within the debris field, to the west of the second ground scar.

The main wreckage, which consisted of the burnt remains of the fuselage, empennage, right and left wings, and the engine, came to rest in the center of the D intersection/taxiway. The wreckage was oriented on a heading of 342 degrees.

The forward fuselage consisted of the instrument panel, the pilot seat, a control yoke on the left side, and the cabin area. Two seat belt buckles were documented in the forward cabin, two seat belt buckles were documented in the center cabin, and two seat belt buckles were documented in the rear cabin. Only the buckles and attach points remained; the webbing for each lap belt had burned.

The instrument panel was destroyed. The entire fuselage was charred, melted, and partially consumed by fire. The position of the fuel selector valve could not be determined due to the fire damage.

The right wing was located on the southeast side of the main wreckage. Approximately 10 feet of the outboard leading edge was crushed and torn. Both the right aileron and right flap remained attached and were bent and wrinkled. The right aileron cables were continuous from the right aileron inboard to the flight control yoke. The Fiberglas wingtip was partially separated and crushed. The right fuel tank was breached at the inboard forward corner and contained approximately 15 gallons of fuel.

The left wing was located on the northwest side of the main wreckage. Both the left aileron and left flap remained attached and were bent and buckled. The left aileron cables were continuous from the left aileron inboard to the flight control yoke. The left fuel tank was compromised and the wing exhibited exposure to heat and fire. The Fiberglas wingtip was crushed and the leading edge of the left wing was unremarkable.

The aileron follow-through cable had a separation point with signatures consistent with tension overload.

The empennage consisted of the horizontal and vertical stabilizer, rudder, and elevator, and remained attached to the fuselage. Dried dirt was documented on both sides of the vertical stabilizer and rudder. The horizontal and vertical stabilizer, rudder, and elevator were unremarkable. The flight control cables for the rudder and elevator were continuous from the flight control surfaces, forward to the flight control yoke and rudder pedals.

The engine remained partially attached to the main wreckage. Both engine mounts on the right side of the airframe were broken. The engine cowling remained attached, was crushed, and exhibited exposure to heat and fire. The top bank of sparkplugs were removed from the engine and when compared to the Champion sparkplug chart, exhibited normal signatures. The engine was rotated through at the propeller flange; thumb compression was observed, engine drive

train continuity was confirmed. In addition to drive train continuity, both magneto impulse couplings snapped at the #1 cylinder top dead center location.

Further examination of the engine revealed a pieced of engine isolator gasket had become wrapped around the carburetor main fuel jet. This piece of gasket did not impede the fuel flow. The engine contained 10 quarts of oil.

The propeller separated from the engine at the propeller flange. The propeller blades were arbitrarily labeled A and B for report purposes. Both blade A and blade B were bent aft slightly and exhibited 45 degree chord wise scratching on the face of the blade. The spinner was crushed down in the area adjacent the ground.

MEDICAL AND PATHOLOGICAL INFORMATION

The Calcasieu Parish Coroner's Office performed the autopsy on the pilot on December 20, 2010, as requested by the Acadia Parish Coroner's office. The autopsy concluded that the cause of death was multiple injuries sustained in the airplane accident.

The FAA's Civil Aerospace Medical Institute, Oklahoma City, Oklahoma, performed toxicological tests on specimens that were collected during the autopsy (CAMI Reference #201100014001). Results were negative for carbon monoxide, cyanide, and ethanol. Testing of the blood revealed 0.063 ug/ml diphenhydramine. Testing of the urine revealed 66.9 ug/ml acetaminophen and diphenhydramine.

TESTS AND RESEARCH

Investigators from the NTSB, Cessna Aircraft, Teledyne Continental Motors, and an inspector from the Federal Aviation Administration examined the engine. During the engine exam, the distributor gear, on both the left and right magneto, would not rotate when the engine crankshaft was rotated. Both magnetos were replaced and the engine was prepared and placed in a test cell for an engine run. The engine started on the first attempt without hesitation or stumbling. The engine was run 25 minutes at rpm settings between 1,150 rpm and 2,400 rpm. The engine performed normally without any hesitation, stumbling, or interruption in power.

Magneto Examination

The right magneto contained a data plate indicating it was a Electrosystems, Inc., PN 10-79020-10 SN9102511. Internal examination of the magneto revealed that multiple teeth on the magneto distribution gear had separated and several others were cracked. Examination of the remainder of the magneto revealed no anomalies.

The left magneto contained a data plate indicating it was a Electrosystems, Inc., PN 10-79020-10 SN9102509. Internal examination of the magneto revealed that multiple teeth on the

magneto distribution gear had separated and several others were cracked. Examination of the remainder of the magneto revealed no anomalies.

Historically, dual magneto failures are extremely rare. The damage on the distribution gear teeth was consistent with damage found after the engine experiences a backfire. It could not be determined which magneto failed first or if they failed simultaneously.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	56,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):	Airplane multi-engine; Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	August 1, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	8000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N8556T
Model/Series:	182C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	52456
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 4, 2010 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6736.6 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:		**Engine Model/Series:**	O-470-L
Registered Owner:	On file	**Rated Power:**	230 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KLFT,42 ft msl	**Distance from Accident Site:**	25 Nautical Miles
Observation Time:	13:53 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	360°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	11°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Crowley, LA (K3R2)	**Type of Flight Plan Filed:**	None
Destination:	Crowley, LA (K3R2)	**Type of Clearance:**	None
Departure Time:	14:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Le Gros Memorial Airport K3R2	**Runway Surface Type:**	
Airport Elevation:	17 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	04	**IFR Approach:**	None
Runway Length/Width:	4307 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Fatal, 2 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal, 2 Serious	**Latitude, Longitude:**	30.161666,-92.480552

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer
Additional Participating Persons:	Terry Macon; FAA Flight Standards District Office; Baton Rouge, LA Steve Miller; Cessna Aircraft; Wichita, KS Jason Lukasik; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	November 17, 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=78027