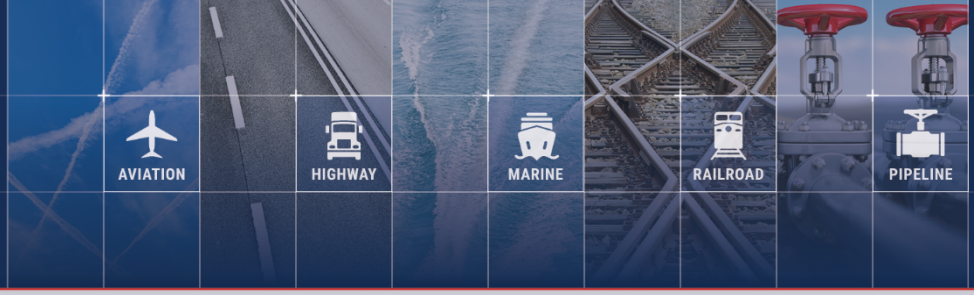

Aviation Investigation Final Report

Location:	Arcadia, Florida	**Accident Number:**	ERA10LA159
Date & Time:	March 3, 2010, 14:35 Local	**Registration:**	N4797K
Aircraft:	Cessna P210N	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

About 25 minutes into a cross-country flight, the airplane lost all engine power, and the pilot made an emergency landing in a field. The airplane collided with a power line pole and was consumed by a postcrash fire. Disassembly and examination of the engine revealed that the crankshaft separated at the forward end of the No. 2 connecting rod journal. According to laboratory analysis, the fatigue fracture of the crankshaft was due to bearing wear and bearing shift. The maintenance records were destroyed by the postcrash fire, and no other history on the engine was obtained.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The total loss of engine power due to a fatigue fracture of the crankshaft resulting from worn bearings.

Findings

Aircraft	Recip engine power section - Failure
Aircraft	Recip engine power section - Damaged/degraded

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On March 3, 2010, about 1435 eastern standard time, a Cessna P210N, N4797K, was substantially damaged after a loss of engine power and forced landing near the city of Arcadia, Florida. The commercial pilot received minor injuries and the passenger was seriously injured. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed. The flight originated from Buckingham, Fort Myers, Florida, about 1400.

The pilot stated that approximately 25 minutes into the cross-country flight, he noticed that the engine had lost power and the manifold pressure had decreased to 18 inches of pressure. This was followed by a grinding noise and a decrease in oil pressure to zero. He then heard a loud bang and the engine began to run rough. Consequently, he was unable to maintain altitude and made an emergency landing in a field. During the emergency landing, the airplane hit a power line pole and came to a complete stop. A power line broke away from the pole and started a brush fire. The pilot and his passenger exited the airplane, as the airplane was engulfed by fire.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the airframe was totally consumed by the post crash fire. An examination of the flight control system components revealed no evidence of preimpact mechanical malfunction. The airplane was removed from the field for further examination of the engine and system components. According to the pilot, all of the maintenance logbooks were in the airplane and were destroyed by the post crash fire.

The engine and its components were sent to Teledyne Continental Motors for examination under the supervision of a NTSB investigator and a FAA inspector. During the examination of the engine, it was noted that the engine was heavily fire damaged and exhibited thermal discoloration. As the engine was disassembled, two quarts of oil were drained from the oil sump. The oil was dark in color and contained parts of the connecting rod bolts, connecting rod bearings and fragments of the number 2 crankshaft main bearings. The number 2 crankshaft main bearings were fragmented and extruded from the bearing support. The fragments exhibited mechanical damage. The crankshaft and counterweight assembly exhibited separation and mechanical damage concentrated at the number 2 connecting rod journal forward cheek. The number 2 main bearing support diameter exhibited displaced material and mechanical damage consistent with bearing rotation and extrusion. The number 2 main bearing support lock-slot was elongated. The number 1 connecting rod assembly

exhibited mechanical damage, and the crankshaft bearings exhibited mechanical damage. The number 1 main bearing support diameter exhibited displaced material and mechanical damage consistent with bearing displacement. The number 1 main bearing support lock-slot was elongated. The number 1 main bearing support exhibited a fracture from the bearing support surface to the number one cylinder deck area. The camshaft was bent, and exhibited mechanical damage concentrated on the crown of the number 2, 3, 5, and number 6 lobe areas. The engine oil pump was removed and disassembled, and the oil pump drive was intact. The oil pump cavity walls contained radial scoring and hard particle passage signatures.

A detailed metallurgical examination of the engine was conducted by the NTSB Materials Laboratory. According to the Materials Laboratory Factual report, the fatigue fracture of the crankshaft was due to bearing wear and bearing shift. Fatigue features on the connecting rod bolt exhibited low-cycle high-stress fatigue features, indicating that the fracture was secondary. Deposits on the surface of the journal contained chlorine, suggesting the presence of contamination or additives in the oil. A sample of the engine lubricating oil was collected for evaluation. The exact type and manufacturer of the oil was not known. The sample was transferred to an independent, third-party laboratory for analysis. The sample was tested in accordance with ASTM D445 standards, and the testing viscosity values were found to meet the manufacturer's specifications.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	69,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 12, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 8, 2009
Flight Time:	(Estimated) 20000 hours (Total, all aircraft), 1800 hours (Total, this make and model), 135 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N4797K
Model/Series:	P210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000324
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 1, 2009 Annual	**Certified Max Gross Wt.:**	2303 lbs
Time Since Last Inspection:	23 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3292 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:	MCDERMOTT WAYNE E	**Rated Power:**	300 Horsepower
Operator:	MCDERMOTT WAYNE E	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PGD,26 ft msl	**Distance from Accident Site:**	
Observation Time:	13:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Thin Overcast	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4600 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	21 knots / 26 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	16°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fort Myers, FL (FL59)	**Type of Flight Plan Filed:**	None
Destination:	Hinesville, GA (LHW)	**Type of Clearance:**	None
Departure Time:	14:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	27.191944,-81.837219(est)

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	Michael Minner; North Florida FSDO; Tampa, FL Jason Lukasik; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	June 28, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=75435