



National Transportation Safety Board Aviation Accident Final Report

Location:	Arcadia, FL	Accident Number:	ERA10LA159
Date & Time:	03/03/2010, 1435 EST	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 (Cause)
	Recip engine power section - Damaged/degraded (Cause)

Factual Information

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.

History of Flight

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

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	69, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	11/12/2009
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	07/08/2009
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 Manufacturer:	CESSNA	Registration:	N4797K
Model/Series:	P210N	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	P21000324
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	10/01/2009, Annual	Certified Max Gross Wt.:	2303 lbs
Time Since Last Inspection:	23 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3292 Hours	Engine Manufacturer:	CONT MOTOR
ELT:	Installed, not activated	Engine Model/Series:	TSIO-520 SER
Registered Owner:	MCDERMOTT WAYNE E	Rated Power:	300 hp
Operator:	MCDERMOTT WAYNE E	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	PGD, 26 ft msl	Observation Time:	1353 EST
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Thin Overcast	Temperature/Dew Point:	16 °C / 4 °C
Lowest Ceiling:	Broken / 4600 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	21 knots/ 26 knots, 310°	Visibility (RVR):	
Altimeter Setting:	29.93 inches Hg	Visibility (RVV):	
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:	1400 EST	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		

Administrative Information

Investigator In Charge (IIC):	Eric Alleyne	Adopted Date:	06/28/2012
Additional Participating Persons:	Michael Minner; North Florida FSDO; Tampa, FL Jason Lukasik; Teledyne Continental Motors; Mobile, AL		
Publish Date:	06/28/2012		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=75435		

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