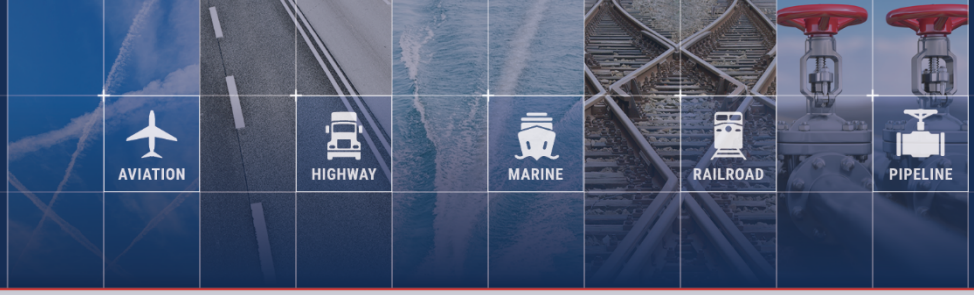

Aviation Investigation Final Report

Location:	Corydon, Iowa	**Accident Number:**	CEN17LA263
Date & Time:	July 9, 2017, 16:19 Local	**Registration:**	N929DE
Aircraft:	CIRRUS DESIGN CORP SR22	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Before takeoff, the private pilot completed an engine run-up and noted no anomalies. However, witnesses and the passenger described the engine as "pinging," "popping," and "skipping a beat" during the takeoff roll and shortly after takeoff. The pilot turned the airplane on course toward the destination when the "engine started sputtering and died." The pilot attempted an engine restart by turning on the fuel boost pump, switching fuel tanks, checking the mixture lever, and cycling the magneto switch; he was unable to restart the engine. Due to the low altitude at the time of the loss of engine power, the pilot did not deploy the airframe parachute system and instead performed a forced landing to a wooded area. Damage to the crankshaft prevented a functional test of the engine; however, a teardown examination revealed no mechanical 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 total loss of engine power for reasons that could not be determined because postaccident examination of the engine and airframe did not reveal any anomalies that would have precluded normal operation.

Findings

Not determined	(general) - Unknown/Not determined
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On July 9, 2017, about 1619 central daylight time, a Cirrus SR22 airplane, N929DE, impacted trees during a forced landing following a loss of engine power near Corydon, Iowa. The private pilot and passenger sustained serious injuries, and the airplane sustained substantial damage. The airplane was registered to Lakeview Aviation LLC and operated by a private individual under Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and a flight plan was not filed. The flight departed the Corydon Airport (0E9) about 1614 and was destined for the Centerville Municipal Airport (TVK), Centerville, Iowa.

Prior to takeoff, the pilot completed an engine run-up with no problems noted. Shortly after takeoff, the pilot turned the airplane toward TVK when the "engine started sputtering and died." The pilot attempted an engine restart by turning on the boost pump, switching fuel tanks, checking the mixture lever, and cycling the magneto switch; however, the engine restart was unsuccessful. Due to the low altitude at the time of the loss of engine power, the pilot did not deploy the Cirrus Airframe Parachute System and performed a forced landing to a wooded area. The pilot reported the airplane contained 40 gallons of fuel at the time of takeoff.

According to the passenger, who was interviewed by a Federal Aviation Administration inspector after the accident, the pilot planned to go to TVK for fuel since there was no fuel at 0E9. During the turn toward TVK, she heard and felt the engine lose power. She stated the pilot attempted to restart the engine, but nothing he was doing was working. The passenger reported that the airplane usually sounds like a hot rod car, but after takeoff, it sounded like it kept skipping a beat.

According to local authorities and witnesses, the airplane departed 0E9 after a local fly-in event. Witnesses described the engine as "pinging or popping" during the takeoff roll. The airplane departed the grass runway and witnesses lost sight of the airplane. One witness became concerned based on his observation of the airplane during the takeoff about whether the airplane had crashed. The witness then departed in his airplane to search for the accident airplane. The airplane was located by search personnel about 1/2 miles east of 0E9.

The airplane came to rest upright and right-wing low in the trees about 10 ft above the ground. Both wings and the forward fuselage structure were fragmented. The instrument panel, firewall, and engine were displaced down toward the terrain. The three-bladed propeller assembly was separated from the engine. The engine crankshaft propeller flange remained attached to the propeller hub, and the engine crankshaft was fractured near the flange.

A Garmin Aera 796 GPS device was recovered from the accident site and sent to the National Transportation Safety Board (NTSB) for examination and data extraction. The device was undamaged and data was downloaded normally using the manufacturer's software. The data extracted included one track log session which consisted of 9,999 data points from multiple events ranging from April 20, 2017, to July 9, 2017. The accident flight was recorded which started at 16:14:55 and ended at 16:19:34.

An Avidyne Multifunction Display (MFD) Compact Flash Card was recovered from the cockpit MFD and sent to the NTSB Vehicle Recorder Laboratory for examination and data extraction. An examination revealed the compact flash card was undamaged. The card would not read in an NTSB surrogate unit, and a binary copy was sent to Avidyne for further examination. According to Avidyne, the MFD unit was not configured to record, and no non-volatile memory data was available.

On October 24, 2017, at Continental Motors Inc., Mobile, Alabama, the engine was examined and disassembled under the supervision of the NTSB investigator-in-charge. Due to a bent engine crankshaft, the engine could not be functionally tested. Disassembly of the engine and functional testing of the engine components revealed no anomalies that would have precluded normal operation. A reason for the loss of engine power could not be determined.

Pilot Information

Certificate:	Private	**Age:**	63,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 21, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 27, 2017
Flight Time:	1260 hours (Total, all aircraft), 34 hours (Total, this make and model), 1260 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	**Registration:**	N929DE
Model/Series:	SR22 NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	2002	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0293
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 16, 2017 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	35 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	896 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-550-N7
Registered Owner:	On file	**Rated Power:**	310 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:	TVK	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	16:15 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / None	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	31°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Corydon, IA (0E9)	**Type of Flight Plan Filed:**	None
Destination:	Centerville, IA (TVK)	**Type of Clearance:**	None
Departure Time:	16:14 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	40.775276,-93.23278

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	Katie Sample; Federal Aviation Administration; Des Moines, IA Brannon Mayer; Cirrus Aircraft; Duluth, MN Chris Lang; Continental Motors Inc; Mobile, AL
Original Publish Date:	July 5, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95548

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties … and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available here.