Aviation Investigation Final Report

Location:	Lincoln, Nebraska	**Accident Number:**	CEN22LA117
Date & Time:	February 10, 2022, 20:06 Local	**Registration:**	N317KJ
Aircraft:	CIRRUS DESIGN CORP SR22T	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that the engine start, taxi, and run-up were normal. The night flight proceeded uneventfully until about 60 nm from the destination airport when the engine briefly stuttered and started to run rough. The pilot stated that he told air traffic control that the engine was running rough and requested to divert to an airport located about 39 nautical miles (nm) east of the destination airport. About 40 nm from the destination airport, the pilot told air traffic that the engine smoothed out and he wanted to continue the flight to the destination airport. About 6 nm from the destination airport, the pilot told air traffic that he would be unable to make it to the runway due to engine power loss and was going to look for a field where he could land. He located a field and deployed the airframe parachute. The airplane landed, under parachute, in the field and sustained substantial damage to the fuselage.

Recorded avionics data for the flight showed that the abnormal engine indications began about 100 nm from the destination airport and continued to the end of the flight. The pilot continued the flight and passed two airports where a safe precautionary landing could have been performed while operating in night light conditions, which increased the risk of finding a safe area to perform an off-airport landing.

Postaccident examination of the engine revealed a catastrophic engine failure. The No. 4 and 5 cylinders were not connected to their respective crankpins. The No. 5 cylinder crankpin surface lacked the deformation and scoring found on the No. 4 cylinder crankpin, suggesting that the No. 5 piston connecting rod separated from its crankpin and that material from the No. 5 cylinder induced foreign object damage and subsequent failure to the remaining portions of the engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's decision to continue the flight with abnormal engine indications and the subsequent failure of the No. 5 cylinder connecting rod for unknown reasons.

Findings

Personnel issues	Lack of action - Pilot
Aircraft	Recip eng cyl section - Failure

Factual Information

History of Flight

Enroute	Powerplant sys/comp malf/fail (Defining event)
Enroute	Loss of engine power (total)
Emergency descent	Collision with terr/obj (non-CFIT)

On February 10, 2022, at 2006 central standard time, a Cirrus SR22T, N317KJ, sustained substantial damage when it was involved in an accident near Lincoln, Nebraska. The pilot and a passenger were uninjured. The airplane was operated as a *Code of Federal Regulations* Part 91 personal flight.

The pilot did not report any anomalies with the engine start, run-up, or takeoff. He reported the that the flight was initially uneventful, and the airplane was operating with all the gauges indicating within the proper operating limits. At 10,000 ft mean sea level (msl) and about 60 nm east of Lincoln Airport, Lincoln, Nebraska, there was a brief “stutter” of the engine, and the engine began to run rough. He contacted Omaha approach control and told them the engine was running rough and would like to divert to Plattsmouth Municipal Airport/Douglas V Duey Field (PMV), Plattsmouth, Nebraska, located about 39 nm and 080° from LNK.

The pilot said he a received clearance to fly direct to PMV and to descend and maintain 4,000 ft msl. About 40 nm miles from LNK and 8,000 ft msl, the pilot said he told Omaha approach control that the engine smoothed out, and he would like to continue the flight to LNK at 6,000 ft msl. The pilot said as the flight continued to LNK, the engine’s No. 3 cylinder head temperature indicated 0°F. About 15 nm east of LNK, the engine began to run rough again, and the pilot asked Omaha approach control if he could begin a slow descent toward LNK. He was cleared to descend and maintain 3,000 ft msl. About 12 nm from LNK, he was issued cleared for a visual approach to runway 17 and subsequently a clearance to land. As he continued the descent to 2,500 ft msl, the engine began to run rough, the oil pressure rapidly decreased, and the indicated airspeed decreased. About 6 nm from LNK, he told LNK air traffic control that he would be unable to make it to the runway and was going to look for a field to land on. He located a field, deployed the airframe parachute, and the airplane landed in the field and sustained substantial damage to the fuselage.

Recorded avionics data showed that about 1930, the airplane was about 100 nm from LNK and about 7 nm northeast of Schenck Field Airport, Clarinda, Iowa, at an altitude of about 10,000 ft when the No. 3 cylinder head temperature decreased to and remained about 210°F while the remaining cylinder head temperatures were about 300°F. The No. 3 cylinder had a corresponding decrease in exhaust gas temperature to about 600°F while the remaining

cylinder exhaust gas temperatures remained about 1,300°F. These temperature indications remained constant to about 2007:30, at which time the temperatures further decreased to the end of recorded data at 2009:55. The continuous decrease in engine temperature corresponded to decreases in indicated airspeed and engine speed.

Postaccident examination of the engine revealed that the No. 3 cylinder, opposite to the No. 4 cylinder, was attached and secured to its crankpin. The cylinder exhibited debris related impact damage to an estimated 45° of the piston skirt bottom and nearest crank cheek.

The No. 4 cylinder connecting rod was detached from its crankpin at the connecting rod end. The end of the connecting rod was deformed and its connecting rod bolts and connecting rod cap were not intact. The No. 4 cylinder crankpin exhibited partial gouging along its circumference and radial impact related deformation.

The No. 5 piston and its connecting rod were intact and secure. The crankpin end of the No. 5 piston connecting rod was not connected to its crankpin, and the connecting rod end was hammered into a rounded shape. The connecting rod cap was not intact. The No. 5 cylinder crankpin did not exhibit scoring and did not possess gouging like that of the No. 4 cylinder crankpin.

The deformed end of a connecting rod with both connecting rod bolts in place was recovered loose in the engine.

The engine oil sump contained metallic debris, which was consistent with internal engine component failure, and engine oil.

The airplane engine logbook showed that on June 30, 2021, at a Hobbs time of 887.7 and a flight time of 790.0 hours, the No. 5 cylinder, part number 658595A1, serial number AC18FB740, was removed and replaced with a new cylinder, part number 658815A3, serial number AC21CA785. The engine logbook did not have entries for any subsequent engine cylinder removals.

Pilot Information

Certificate:	Private	**Age:**	44,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:**	
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	January 3, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 15, 2020
Flight Time:	775 hours (Total, all aircraft), 503 hours (Total, this make and model), 667 hours (Pilot In Command, all aircraft), 93 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	**Registration:**	N317KJ
Model/Series:	SR22T	**Aircraft Category:**	Airplane
Year of Manufacture:	2019	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1881
Landing Gear Type:	Tricycle	**Seats:**	5
Date/Type of Last Inspection:	January 30, 2022 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1159.3 Hrs at time of accident	**Engine Manufacturer:**	Continental Motors
ELT:	C126 installed, not activated	**Engine Model/Series:**	TSIO550K1B
Registered Owner:	CC EQUIPMENT HOLDINGS LLC	**Rated Power:**	310 Horsepower
Operator:	Pilot	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	LNK,1219 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	20:05 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Scattered / 8000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 10000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.62 inches Hg	**Temperature/Dew Point:**	12°C / -1°C
Precipitation and Obscuration:			
Departure Point:	Zionsville, IN (TYQ)	**Type of Flight Plan Filed:**	IFR
Destination:	Lincoln, NE (LNK)	**Type of Clearance:**	IFR
Departure Time:	17:40 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	40.850889,-96.759111(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Jeremy Kraemer; Federal Aviation Administration; LNK FSDO; Lincoln, NE
Original Publish Date:	June 14, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=104629