



Aviation Investigation Final Report

Location:	Cabool, Missouri	Accident Number:	CEN20LA107
Date & Time:	February 29, 2020, 15:34 Local	Registration:	N601ND
Aircraft:	Zenith CH601	Aircraft Damage:	Substantial
Defining Event:	Powerplant sys/comp malf/fail	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot of the personal flight stated that, after departure, the cockpit filled with smoke and the airplane then experienced a total loss of engine power. The pilot attempted to return to the departure airport but landed in a field short of the airport runway; the airplane sustained substantial damage to both wings. Postaccident examination of the engine revealed the No. 1 piston was broken in two pieces, and the piston crank link was bent. The reason for the failures was unknown.

Probable Cause and Findings

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

The loss of engine power due to failure of the No. 1 cylinder piston for reasons that could not be determined based on available evidence.

Findings

Aircraft	Recip eng cyl section - Failure
Aircraft	Recip eng cyl section - Unknown/Not determined
Environmental issues	(general) - Contributed to outcome

Factual Information

History of Flight

Enroute	Powerplant sys/comp malf/fail (Defining event)
Enroute	Unknown or undetermined
Enroute	Loss of engine power (total)
Emergency descent	Off-field or emergency landing
Landing	Collision during takeoff/land

On February 29, 2020, at 1534 central standard time, an experimental amateur-built Zodiac 601XLB, N601ND, was involved in an accident near Cabool Memorial Airport (TVB), Cabool, Missouri. The pilot and passenger were uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, the cockpit "suddenly" filled with black smoke after departing TVB. The engine then sputtered and ceased operating. He attempted to return to TVB but landed in a field short of the runway. The airplane sustained substantial damage to both wings.

Postaccident examination of the engine revealed the No. 1 cylinder piston was broken in two pieces, and the piston crank link was bent. The reason for the failures was unknown.

Pilot Information

Certificate:	Commercial	Age:	84, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 23, 2020
Flight Time:	4024 hours (Total, all aircraft), 165 hours (Total, this make and model), 3976 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Passenger Information

Certificate:	Age:
Airplane Rating(s):	Seat Occupied: Right
Other Aircraft Rating(s):	Restraint Used:
Instrument Rating(s):	Second Pilot Present: No
Instructor Rating(s):	Toxicology Performed:
Medical Certification:	Last FAA Medical Exam:
Occupational Pilot:	Last Flight Review or Equivalent:
Flight Time:	

Aircraft and Owner/Operator Information

Aircraft Make: Zenith	Registration: N601ND
Model/Series: CH601 XL	Aircraft Category: Airplane
Year of Manufacture: 2013	Amateur Built: Yes
Airworthiness Certificate: Experimental (Special)	Serial Number: 6-6444
Landing Gear Type: Tricycle	Seats: 2
Date/Type of Last Inspection: May 7, 2019 Condition	Certified Max Gross Wt.: 1320 lbs
Time Since Last Inspection:	Engines: 1 Reciprocating
Airframe Total Time: 163 Hrs at time of accident	Engine Manufacturer: Jabiru
ELT:	Engine Model/Series: 3300A
Registered Owner: On file	Rated Power:
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:	UNO,1228 ft msl	Distance from Accident Site:	17 Nautical Miles
Observation Time:	14:53 Local	Direction from Accident Site:	145°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	None /
Wind Direction:	200°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.18 inches Hg	Temperature/Dew Point:	13°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cabool, MO (TVB)	Type of Flight Plan Filed:	None
Destination:	Rolla/Vichy, MO (VIH)	Type of Clearance:	None
Departure Time:	15:00 Local	Type of Airspace:	Class D

Airport Information

Airport:	Cabool Memorial Airport TVB	Runway Surface Type:	
Airport Elevation:	1220 ft msl	Runway Surface Condition:	Dry;Vegetation
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

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:	37.132499,-92.083885(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Travis Schwien; Federal Aviation Administration; St Louis FSDO; St Ann, MO Danny Brickey; Federal Aviation Administration; Little Rock FSDO; Little Rock, AR
Original Publish Date:	March 11, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=101016

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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](#).