Aviation Investigation Final Report

Location:	Bulverde, Texas	**Accident Number:**	CEN22LA413
Date & Time:	September 9, 2022, 07:50 Local	**Registration:**	N31981
Aircraft:	Piper PA32RT	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported the airplane did not accelerate as usual during the takeoff roll. To avoid obstacles at the end of the runway, the pilot continued the takeoff. The airplane cleared powerlines, trees, and a school, but was nearing a stall so the pilot decided to make a forced landing in a field. During the landing the airplane collided with a tree, resulting in substantial damage to the right wing and fuselage.

Examination of the engine found excessive carbon deposits around the No. 4 cylinder exhaust valve. A large amount of carbon buildup was found on the rocker arm, rocker shaft, and valve spring. The rotator cap also had carbon deposits and exhibited a groove wear pattern consistent with a lack of cap rotation. The exhaust valve guide had excessive wobble and movement within the guide. The No. 5 exhaust valve also displayed signatures of carbon buildup but not to the same extent as the No. 4.

No other anomalies were detected with the engine or airframe.

The loss of engine power was likely due to at least one stuck exhaust valve.

Probable Cause and Findings

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

The partial loss of engine power due to excessive carbon deposits that resulted in one or more stuck exhaust valves.

Findings

Aircraft	Recip eng cyl section - Malfunction

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)

On September 9, 2022, about 0750 central daylight time, a Piper PA32RT-300T airplane, N31981, was substantially damaged when it was involved in an accident near Bulverde, Texas. The pilot and passenger were not injured. The airplane was operated under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight.

The pilot reported that during the takeoff from Bulverde Airpark (1TT8), Bulverde, Texas, the airplane did not accelerate as planned. The pilot reported that he was not going to be able to stop on the remaining runway, so he continued the takeoff in order to avoid contacting a fence and vehicles at the end of the runway. The airplane cleared powerlines, trees, and a school at the end of the runway, but was nearing a stall, so the pilot performed a forced landing to a field. During the landing the airplane collided with a tree, resulting in substantial damage to the right wing and fuselage.

Postaccident examination of the engine found excessive carbon deposits around the No. 4 cylinder exhaust valve. A large amount of carbon build up was found on the rocker arm, rocker shaft, and valve spring. The rotator cap also had carbon deposits and exhibited a groove wear pattern consistent with a lack of cap rotation. The exhaust valve guide had excessive wobble and movement within the guide. The No. 5 exhaust valve also displayed signatures of carbon buildup but not to the same extent as the No. 4.

No other anomalies were detected with the engine or airframe.

Pilot Information

Certificate:	Private	**Age:**	44,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	May 13, 2021
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 19, 2021
Flight Time:	657 hours (Total, all aircraft), 488 hours (Total, this make and model), 541 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N31981
Model/Series:	PA32RT 300T	**Aircraft Category:**	Airplane
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Commuter	**Serial Number:**	32R-7887018
Landing Gear Type:	Tricycle	**Seats:**	7
Date/Type of Last Inspection:	March 4, 2022 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3655 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	TIO-540-51AD
Registered Owner:	ELUSIVE AVIATION INC	**Rated Power:**	300 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:	KSAT,799 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	07:51 Local	**Direction from Accident Site:**	187°
Lowest Cloud Condition:	Scattered / 7000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	24°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bulverde, TX (1T8)	**Type of Flight Plan Filed:**	None
Destination:	Dallad, TX (KDAL)	**Type of Clearance:**	None
Departure Time:	07:51 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:**	29.75067,-98.453328

Administrative Information

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	Michael Gabster; FAA FSDO; San Antonio, TX David Harsanyi; Lycoming; Bridgeport, PA
Original Publish Date:	January 30, 2024
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=105901