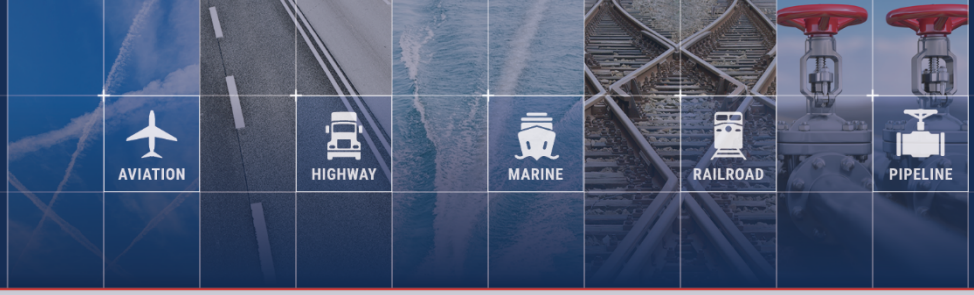

Aviation Investigation Final Report

Location:	Vacaville, California	**Accident Number:**	WPR22LA316
Date & Time:	August 24, 2022, 11:18 Local	**Registration:**	N22507
Aircraft:	Cessna 150H	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting a personal flight. During the initial climb after takeoff, the engine lost partial power, and the airplane was unable to maintain altitude. The pilot initiated a forced landing to a nearby field; during the landing roll, the airplane impacted uneven terrain and came to rest upright, which resulted in substantial damage to the left wing and fuselage.

Postaccident examination of the engine revealed that the No. 2 cylinder exhaust valve exhibited signatures consistent with a stuck valve, including a buildup of carbon deposits, and the exhaust valve could only be moved out of the valve guide with a significant amount of force. No additional evidence indicated any pre-existing mechanical malfunction or failure that would have precluded normal operation. Thus, the stuck exhaust valve likely caused the partial loss of engine power.

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 a stuck exhaust valve.

Findings

Aircraft	Recip eng cyl section - Malfunction

Factual Information

History of Flight

Initial climb	Powerplant sys/comp malf/fail (Defining event)
Initial climb	Loss of engine power (partial)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On August 24, 2022, about 1118 Pacific daylight time, a Cessna 150H, N22507, was substantially damaged when it was involved in an accident near Nut Tree Airport (VCB), Vacaville, California. The pilot and passenger sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, during the initial climb after takeoff from runway 20 at VCB, while the airplane was at an altitude of about 200 to 250 ft above ground level, the engine began to sputter, and the engine speed decreased to about 1,700 to 1,800 rpm. The pilot verified that the mixture and throttle were in the takeoff positions, but the airplane was no longer climbing, and the pilot had difficulty maintaining the airplane's altitude. As a result, the pilot initiated a forced landing to an open field adjacent to the airport. During the landing roll, the airplane impacted uneven terrain and came to rest upright, resulting in substantial damage to the left wing and fuselage.

Postaccident examination of the engine revealed that it was partially attached to the engine mount. The carburetor was separated from the intake spider. The upper spark plugs, and rocker box covers were removed, and the propeller was rotated by hand. Rotational continuity was established throughout the engine. Thumb compression was obtained on cylinder Nos. 1, 3, and 4. No compression was obtained on cylinder No. 2, which was removed for further examination.

The No. 2 cylinder was intact and undamaged. The exhaust and intake valve springs were intact and oil coated, as were the intake and exhaust valve rocker arms. The valve springs and keepers were removed. The intake valve slid out of the valve guide freely, but the exhaust valve slid out of the valve guide with a significant amount of force.

The exhaust valve stem exhibited carbon buildup along with the valve neck. White deposits were observed around the rim of the valve. The valve seat also exhibited carbon buildup.

The intake valve stem exhibited carbon deposits on the neck of the valve and stem. The valve seat contact area showed no carbon buildup, but a slight amount of carbon build-up was observed on the valve rim.

Examination of the airframe and engine revealed no additional evidence of pre-existing mechanical malfunction that would have precluded normal operation.

Pilot Information

Certificate:	Commercial	**Age:**	28,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	August 8, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 28, 2021
Flight Time:	973 hours (Total, all aircraft), 370 hours (Total, this make and model), 891 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 114 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N22507
Model/Series:	150H	**Aircraft Category:**	Airplane
Year of Manufacture:	1968	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	15068324
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 11, 2022 Annual	**Certified Max Gross Wt.:**	1600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6976.6 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:	Installed, not activated	**Engine Model/Series:**	0-200-A
Registered Owner:	On file	**Rated Power:**	100 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:	KVCB,104 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	32°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.8 inches Hg	**Temperature/Dew Point:**	29°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Vacaville, CA	**Type of Flight Plan Filed:**	None
Destination:	Sacramento, CA (MCC)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Nut Tree Airport VCB	**Runway Surface Type:**	Asphalt
Airport Elevation:	116 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	20	**IFR Approach:**	None
Runway Length/Width:	4700 ft / 75 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	38.370146,-121.96546(est)

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Tim Sydner; Federal Aviation Adminsitration; Sacramento, CA
Original Publish Date:	August 15, 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=105794