Aviation Investigation Final Report

Location:	Granbury, Texas	**Accident Number:**	CEN22LA322
Date & Time:	July 18, 2022, 11:00 Local	**Registration:**	N1181J
Aircraft:	Aero Commander 112	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot stated that he performed a new engine run-up on the day of the accident. He stated that after he conducted a preflight inspection of the airplane, he taxied and performed multiple engine run-ups. He then shut down the engine and added fuel. The pilot started the engine and performed multiple engine run-ups both before and after taxiing to the runway with no engine anomalies noted. After takeoff, the engine sustained a loss of power while climbing through about 100 ft above ground level. The pilot performed a forced landing to a road, during which the airplane sustained substantial damage to the fuselage.

Postaccident examination of the airplane revealed one of the airbox's three aluminum spacers was missing. Pieces of the spacer were found in cylinder Nos. 1 and 2 with additional material within the No 1 spark plug lead. The cylinders exhibited pitting damage from the spacer. It is likely that the metallic pieces within the engine cylinder shorted the engine ignition, thus reducing and/or ceasing engine power production on those cylinders. An examination of the remaining engine and systems revealed no anomalies that would have precluded normal operations.

The accident occurred on the first flight following an annual inspection and engine installation following a propeller strike inspection. Investigators were not able to determine how the spacer was introduced to the cylinder.

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 metal contamination within the cylinder following poor maintenance.

Findings

Personnel issues	(general) - Maintenance personnel
Aircraft	(general) - Not specified
Personnel issues	Aircraft/maintenance logs - Maintenance personnel

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Enroute-climb to cruise	Loss of engine power (total) (Defining event)
Enroute-climb to cruise	Aerodynamic stall/spin
Emergency descent	Collision with terr/obj (non-CFIT)

On July 18, 2022, at 1100 central daylight time, an Aero Commander 112, N1181J, was substantially damaged with it was involved in an accident near Granbury, Texas. The pilot was uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot, who was also the airplane owner, stated that he performed a new engine run-up on the day of the accident. He stated that after he preflighted the airplane, he taxied the airplane and performed multiple run-ups. He then shut down the airplane and allowed it to cool for about 15 minutes. He restarted the airplane and taxied to the airport fuel facility, where he added about 10 gallons of fuel per tank so that the total fuel aboard was about 28 gallons. After he started the airplane, he performed additional runups, and “no irregularities or abnormalities were indicated.” The pilot then taxied to the runway and performed additional runups while holding for takeoff and “no irregularities or abnormalities were indicated.”

After takeoff, the engine sustained a loss of power while the airplane climbed through about 100 ft above ground level. The pilot extended the landing gear, pitched the nose down with the stall warning horn sounding, and performed a forced landing on a road. The airplane impacted a highway guard rail and the terrain, resulting in substantial damage to the fuselage.

Postaccident examination of the airplane revealed that one of the airbox’s three metal spacers was missing. Pieces of the spacer were found in cylinder Nos. 1 and 2. These cylinders exhibited pitting damage from the spacer. The No. 1 cylinder spark plug gap contained spacer material within the gap. There were no other anomalies with the engine or airframe that would have precluded normal operations.

The airframe logbook showed that an annual inspection and engine installation, following a propeller strike teardown inspection, was completed September 15, 2021, with a tachometer time of 3,593.9 hours and an airframe time of 3,563.9 hours. The accident occurred on the first flight following the annual inspection.

The airframe logbook entry showed that the last annual inspection was dated July 12, 2022, with a tachometer time of 3,595.49 hours, and was performed by a different airframe and

powerplant mechanic (later mechanic) than the one who performed the September 15, 2021, annual inspection. The later mechanic stated to the Federal Aviation Administration (FAA) inspector that he did not have the airplane's engine logbook when he performed his annual inspection. The later mechanic's entry stated, "performed an annual inspection," and there was no verbiage in the entry that stated that the annual inspection was limited to the airframe.

Pilot Information

Certificate:	Private	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 15, 2021
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 8, 2021
Flight Time:	640 hours (Total, all aircraft), 35 hours (Total, this make and model), 540 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Commander	**Registration:**	N1181J
Model/Series:	112	**Aircraft Category:**	Airplane
Year of Manufacture:	1974	**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	181
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 12, 2022 Annual	**Certified Max Gross Wt.:**	2650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3565.49 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-360-C1D6
Registered Owner:	Pilot	**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:	GDJ,778 ft msl	**Distance from Accident Site:**	0.25 Nautical Miles
Observation Time:	10:55 Local	**Direction from Accident Site:**	145°
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	35°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Granbury, TX (GDJ)	**Type of Flight Plan Filed:**	None
Destination:	Granbury, TX (GDJ)	**Type of Clearance:**	None
Departure Time:	11:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Granbury Regional Airport GDJ	**Runway Surface Type:**	
Airport Elevation:	778 ft msl	**Runway Surface Condition:**	Dry
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:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	32.444417,-97.816944(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Gerald Dotson; Federal Aviation Administration, North Texas FSDO; Irving, TX
Original Publish Date:	March 28, 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=105513