Aviation Investigation Final Report

Location:	Kingsbury, Texas	**Accident Number:**	CEN22LA423
Date & Time:	September 10, 2022, 15:30 Local	**Registration:**	N25144
Aircraft:	Luscombe 8	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that the airplane's engine lost power at an altitude of about 400 ft agl after takeoff. He attempted to glide to an open field but landed in a wooded area after he realized the airplane would not reach the field. The pilot's attempts to troubleshoot the power loss were unsuccessful. The airplane sustained substantial damage to the fuselage, both wings, and the empennage.

Postaccident examination revealed carbon tracking inside the ignition switch that interfered with the proper operation of the ignition switch as evidenced by testing using a multimeter. Once the carbon tracking was cleaned, the ignition switch operated normally.

It is likely that the carbon tracking present in the ignition switch resulted in a short, that caused both magnetos to stop functioning and ultimately the engine ceased producing power. Based on the available evidence, it could not be determined how long the carbon tracking had been present inside the ignition switch.

Probable Cause and Findings

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

A total loss of engine power due to a failure of the ignition switch from carbon tracking, which resulted in a forced landing and a subsequent impact with trees.

Findings

Aircraft	(general) - Failure
Aircraft	Switching - Failure
Aircraft	Switching - Fatigue/wear/corrosion
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Initial climb	Attempted remediation/recovery
Landing	Off-field or emergency landing
Landing	Collision during takeoff/land

On September 10, 2022, about 1530 central daylight time, a Luscombe 8A airplane, N25144, sustained substantial damage when it was involved in an accident near Kingsbury, Texas. The pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, who is also the mechanic, he had not flown the airplane "for some time." The pilot performed the preflight inspection with no anomalies noted. The fuel tank was full of fuel, the fuel vent was checked, and he "sumped" the fuel tank. The pilot started the airplane, taxied to the north end of the runway, and performed the run-up procedure with no anomalies noted. As part of the run-up procedure, both magnetos, the carburetor heat, and the fuel system were all checked.

The airplane took off from the runway and the pilot noticed the engine was "performing very well." The airplane climbed to about 400 ft agl and the pilot initiated a left turn. About halfway through the turn, the engine sustained a total loss of engine power. The pilot reported there was "no cough" or "no sputter" and the engine "just died." The pilot attempted to troubleshoot the loss of engine power to no avail. The pilot maneuvered the airplane for a forced landing to an open field. The pilot then realized the airplane would not make the open field and maneuvered the airplane for a wooded area. The airplane came to rest in trees. The pilot was able to egress from the airplane without further incident.

The pilot reported that at the time of the loss of engine power the engine was operating at full power. The pilot assessed that perhaps a short occurred in the ignition switch, that resulted in the loss of engine power. The airplane sustained substantial damage to the fuselage, both wings, and the empennage.

A postaccident examination revealed that the airplane was not equipped with a starter. The ground to the key-operated ignition switch (Bendix, part number 10-357290-1A) was found disconnected. The pilot surmised that he may have pulled off the ground lead when he removed the ignition switch from the panel.

The p-leads for the left, right, and both positions were checked with a multimeter. The readings for the p-leads varied from open to closed, along with varied ohm, or resistance, readings. The ignition switch was then disassembled, and carbon tracking, a buildup of carbon that interfered with electrical continuity, was observed. A substantial amount of carbon tracking was found inside the ignition switch, particularly on the contacts. The contacts in the ignition switch were then cleaned and the ignition switch was reassembled. The p-leads were checked again with a multimeter, the varied ohm readings were no longer present, and the ignition switch appeared to function normally with the multimeter.

There were no issues noted with the magnetos, the ignition harness, and the spark plugs. The magnetos are electrically independent, except at the ignition switch, and both magnetos produced spark when checked.

The pilot reported that while the ignition switch was not originally installed by the manufacturer, but it had been in the airplane for over 40 years. He additionally reported that he had no previous issues with the ignition switch, the ignition switch was never overhauled, nor was he aware of an overhaul schedule for the ignition switch. According to the manufacturer, the maintenance requirements for the ignition switch are based on condition.

The Federal Aviation Administration has published the Aviation Maintenance Technician Handbook – Powerplant Volume 1. This document defines carbon tracking for an ignition system and states in part:

Flashover can lead to carbon tracking, which appears as a fine pencil-like line on the unit across which flashover occurs. The carbon trail results from the electric spark burning dirt particles that contain hydrocarbon materials. The water in the hydrocarbon material is evaporated during flashover, leaving carbon to form a conducting path for current. When moisture is no longer present, the spark continues to follow the carbon track to the ground.

Pilot Information

Certificate:	Airline transport; Flight engineer	**Age:**	67,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	BasicMed Without waivers/limitations	**Last FAA Medical Exam:**	November 2, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 11, 2021
Flight Time:	(Estimated) 10000 hours (Total, all aircraft), 400 hours (Total, this make and model), 4000 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Luscombe	**Registration:**	N25144
Model/Series:	8 A	**Aircraft Category:**	Airplane
Year of Manufacture:	1939	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1068
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	November 1, 2021 Annual	**Certified Max Gross Wt.:**	1200 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2221 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:	Not installed	**Engine Model/Series:**	A-65-8
Registered Owner:	On file	**Rated Power:**	65 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None
Operator Does Business As:	On file	**Operator Designator Code:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KBAZ,648 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	14:51 Local	**Direction from Accident Site:**	290°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / 16 knots	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	35°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Kingsbury, TX (85TE)	**Type of Flight Plan Filed:**	None
Destination:	Kingsbury, TX (85TE)	**Type of Clearance:**	None
Departure Time:	15:30 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	29.631299,-97.805424(est)

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Frederick McMillan; FAA San Antonio FSDO; San Antonio, TX
Original Publish Date:	June 28, 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=105951