

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23FA315

INVESTIGATION SUMMARY

July 24, 2023

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. SUMMARY	3
C. DETAILS OF THE EXAMINATION.....	4
1.0 ACCIDENT SITE	4
2.0 AIRCRAFT INFORMATION	6
3.0 AIRFRAME EXAMINATION.....	6
4.0 ENGINE/PROPELLER EXAMINATION.....	8
5.0 PILOT INFORMATION	10
6.0 METEOROLOGICAL INFORMATION	11
7.0 TEST AND RESEARCH.....	13
8.0 ADDITIONAL INFORMATION.....	13

A. ACCIDENT

Location: Houston, Texas
Date: July 22, 2023
Time: 2224 central daylight time (CDT)
0324 coordinated universal time (UTC)
Airplane: N17043, Cessna 150L

B. SUMMARY

On July 22, 2023, at 2224 central daylight time, a Cessna 150L airplane, N17043, was substantially damaged when it was involved in an accident near Houston, Texas. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to family familiar with the accident flight, the pilot was moving furniture and other belongings to his new hangar and then wanted to complete a few laps around the pattern. There were reportedly two friends at the pilot's hangar with him before the accident flight. They could not be reached during the course of the investigation.

Airport surveillance video showed the pilot arrived at his hangar at 2207. At 2222, the pilot made a radio call that he was departing runway 15. At 2223, the airplane departed runway 15 then continued south out of view. At 2224, the airplane is seen in the left traffic pattern (east side of the runway), flying north bound then descended toward the ground. There was a large flash observed where the airplane impacted the ground.

A local business surveillance video showed the airplane flying north, in seemingly level flight, with a lot of lightning flashes in the background. The airplane then quickly descended toward the ground and impacted power lines, which produced a large flash and sparks. The airplane's white landing light was visible during the level flight and descent, but it was briefly not visible for less than 1 second, then it was visible again right before the impact with power lines (Figure 1).



Figure 1. Composite image from surveillance video showing the flight path.

C. DETAILS OF THE EXAMINATION

1.0 Accident Site

The accident site was located about 0.37 nm east of West Houston Airport (IWS), Houston, Texas. Coordinates: 29.816741° x -95.664433° elevation 106 ft MSL

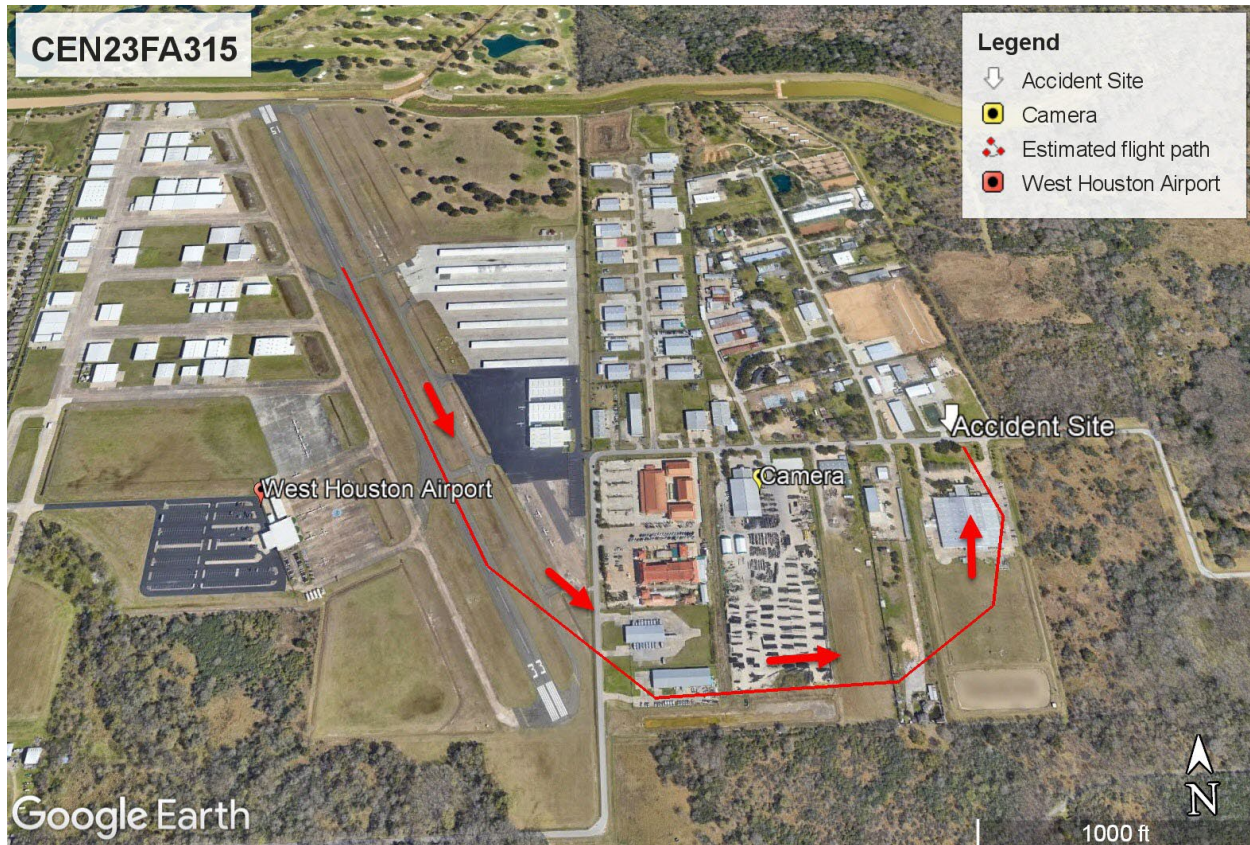


Figure 2. Google Earth image of the accident area and estimated flight path.

The airplane was located in a grassy drainage ditch, next to a road, and underneath powerlines. The powerlines were downed and one way laying on top of the airplane. The airplane came to rest inverted and oriented about 330° magnetic. The power lines circled in red in Figure 3 are the approximate location of the collision. This photo shows the powerlines after they had been repaired and restrung.



Figure 3. Image of the accident site.

2.0 Aircraft Information

Cessna 150L s/n 15073600 / Mfr Year: 1972
Continental O-200 s/n 214627-72A

According to airworthiness records, an STC approved TAF-L spin-on oil filter adapter was installed in 1993. Per the instructions, the oil screen was to be removed from the oil system as part of the adapter installation.

According to airport records the airplane was last fueled in June and had only been flown periodically since. Last fueling was on 6/25/2023 at 0711 CDT. Pilot purchased 13.9 gallons of 100LL.

Airplane maintenance records were not found during the investigation.

3.0 Airframe Examination

The airplane impacted power wires with the right main landing gear and the lower fuselage skin forward of the right landing gear. The airplane then impacted the ground, left wing low-inverted, and came to rest inverted below the wire strike

locations. There were also wire striations on the left- and right-wing leading edges. The right-wing leading-edge striation was oriented vertically about 10 ft from the wing root. The left leading edge wire striation was oriented horizontally about 3 ft from the wing root. Evidence of electrical arcing was observed on the left-wing strut leading edge. The outboard three ft of the left-wing leading edge sustained impact crushing damage upon impact with the ground, partly separating the wing from the cabin structure. The remainder of the leading edge also sustained impact crushing damage to a lesser extent. The empennage remained attached. The horizontal stabilizer was unremarkable. The vertical stabilizer and rudder sustained downward crushing damage to the upper portion. Flight control cable continuity was established for the rudder and ailerons by tracing the cables from the cockpit controls to the respective control surface. The rudder control cables were continuous from the pedals to the rudder torque tube control horns. The aileron cockpit control chains remained around the sprockets. The aileron control cable remained attached to the cockpit bellcrank and the bellcrank in each wing. The right aileron direct control cable was cut by first responders. The aileron balance control cable remained intact. The left aileron control cable remained intact. The elevator control cable were intact from the cockpit elevator bellcrank to the elevator bellcrank. The control link from the control column to the forward elevator bellcrank was fracture separated near the midpoint due to impact damage. The aft attach point of the control link was connected to the bellcrank, the forward connection between the push/pull rod and the elevator control column was not observed due to impact damage. The pilot's control wheel tube was fracture separated near the instrument panel.

Surface corrosion was observed on all flight control hardware and clevis ends.

The engine was displaced upward but remained partly attached to the mount and by cables and wires.

The fuel system was examined by disconnecting the fuel fittings at the fuel selector valve, the wing tank outlet fitting, and the fuel strainer. Air was passed through each line, by mouth, via a hose connection. No obstructions were noted. Fuel lines were reconnected to the fuel selector valve and air was passed through each port of the valve. No obstructions were observed. Each wing fuel tank finger screen was removed and examined; no obstructions were noted. Air was passed through the fuel vent plumbing with no obstructions noted. The fuel system remained intact except for a vent line in the upper right-wing root at the rubber hose connection.

Before setting the wings upright, the wing tank outlets were plugged to retain fuel for measurement. Approximately 0.6 gallons of blue fuel was drained from the right wing, the left-wing tank was empty. Both wing fuel caps were observed in place. The cap seals were pliable and soft. The cap sealing surface on the upper portion of the wing tank opening exhibited rust and corrosion. Evidence of grass blighting was observed in the vicinity of the wreckage final resting position.

The fuel strainer contained debris that was sandy or rusty in appearance. The debris sample was sent to the NTSB Materials Lab for analysis. See tests and research section below.

The landing gear remained attached. The right main gear exhibited wire strike striations. The nose gear scissor link was fractured.

ELT was in the airplane with the switch in the "armed" position.

The key was observed in the cockpit area and not inside the ignition switch.

The pilot was seated in the left seat. The 2-point restraint was unlatched and there were signs that it was being used at the time of the accident.

During the on-scene examination a blue headlamp was found under the cabin portion of the wreckage. It was located near the pilot's glasses and ball cap. The headband for the lamp was also found in the same area. When the lamp was initially found the light was on/illuminated. The NTSB-IIC recovered the headlamp, cleaned off the engine oil that had covered the lamp and seeped into the battery compartment. The AAA batteries were wiped down and replaced into the lamp, without changing the switch position, and the lamp was found to have been on the brightest setting. The other available switch positions were OFF and a softer/dimmer white. The lamp did not have a red lens or setting to prevent flash blindness.

Second airframe examination at salvage facility on November 15, 2023.

Examination of the elevator push pull tube from the control column to the forward elevator bellcrank revealed no preimpact anomalies.

Fuel selector valve removed and was free of obstructions. Fuel lines from the selector valve forward to the fuel strainer connection - air was blown through and no obstructions noted.

4.0 Engine/Propeller Examination

The engine remained attached to the mounts and displaced upward. The engine mounts were fractured in multiple locations. All engine control cables remained attached and were pulled to the forward positions in the cockpit. The oil sump sustained compression damage upon impact. The carburetor remained intact and attached. The carburetor mount on the induction system was cracked upon impact. The engine exhibited corrosion in multiple locations. The exterior of the accessory housing exhibited extensive corrosion and flaking. The carburetor, both ignition

harnesses, and spark plugs appeared to be new. The Nos. 3 and 4 cylinders appeared newer than the others.

The No. 4 exhaust valve was stuck; the valve was staked then it was free to move. Compression and suction was verified for each cylinder by blocking the spark plug hole with a thumb and rotating the propeller. The No. 1 upper spark plug lead for the right magneto was impact fractured approximately .5" from the magneto harness cap. The No. 4 upper spark plug was impact separated from the cylinder head and the lead was severed near the plug connection. The right magneto produced spark at the No. 3 spark plug when the propeller was rotated. The impulse coupling could be heard activating as the propeller was rotated.

The oil screen was examined and found to have approximately 1 oz. of sludge and carbon fragments surrounding the screen. According to airworthiness records, an STC approved TAF-L spin-on oil filter adapter was installed in 1993. Per the instructions, the oil screen is to be removed from the oil system as part of the adapter installation. The spin on oil filter was cut open and examined. No visible contaminants were observed. The oil that drained from the engine, and in the filter appeared clean like oil that had been recently replaced.



Figures 4/5. Oil screen sludge and debris.

The carburetor was removed and disassembled for examination and found to be clean inside. No abnormalities were observed. The fuel inlet fitting was fractured from the carburetor. No fuel was present inside the carburetor bowl.

The propeller remained attached to the crankshaft. Blade A was bent aft approximately 90° just outboard of midspan. The blade exhibited polishing and

leading edge scoring outboard of the bend. Blade B exhibited polishing and leading-edge scoring and was bent aft approximately 10°.

Second engine examination at salvage facility on November 15, 2023.

The No. 4 cylinder was removed and carbon build-up was found in the exhaust port of the cylinder; it was also dark black. The exhaust valve was removed and the stem exhibited several black rings along the stem. Both valves appeared to have good seats and no mechanical issues noted. The inside of the cylinder exhibited an area of rust about ½ way up the cylinder wall and extended around the entire circumference, which was indicative of the position sitting on one piston for a long time.

Left muffler cover was secured with wood screws. The flame cone was fractured and rusted and in poor condition. The muffler had several cracks and rust but there didn't appear to be any major restrictions.

Right muffler was intact with minimal impact damage. The flame cone was broken and loose with a lot of black soot and debris. There was a crack in the muffler near one of the joints.

Left and right magnetos were removed from and spun with a drill, which produced a spark at all 4 terminals on each magneto.

Aftermarket oil air separator was installed on the firewall. Could have been due to an oil blow by issue. Recently replaced Nos. 3 and 4 cylinders, carbon build-up throughout the engine, could have been attempts to stop the oil blow by.

Propeller blade 1 - bent aft about ¾ of the way outboard. Leading edge damage consistent with impact with a power line. Several areas of striations and chordwise scratches. There were two areas that appeared melted.

Propeller blade 2 - bent aft about ¼ of the way outboard. Leading edge damage consistent with impact with a power line. Several areas of striations and chordwise scratches. There was one area consistent with electrical arcing and thermal damage.

5.0 Pilot Information

The accident pilot had a student pilot certificate. As of the medical exam on 8/22/2009, he reported 120 total hours and 10 hours in last six months.

Most recent medical exam 8/22/2009: The pilot reported his occupation as "United Parcel Service - UPS". The pilot reported no concerns and no significant issues were identified.

Prior exams:

There was one previous medical exam in 2005. The pilot reported no other concerns and no significant issues were identified.

6.0 Meteorological Information

ARCHIVED METAR OF: 20230723 // FROM: 0 TO: 23 UTC
AIRPORTS REQUESTED: KIAH KHOU KMCJ KDWH

KTME 230255Z AUTO 20010KT 10SM CLR 32/22 A2990 RMK AO2

KTME 230315Z AUTO 20007KT 10SM CLR 31/22 A2991 RMK AO2

KTME 230335Z AUTO 21007KT 10SM CLR 31/22 A2991 RMK AO2

KTME 230355Z AUTO 20007KT 9SM SCT075 30/22 A2992 RMK AO2

KIAH 230153Z 26003KT 10SM FEW050 FEW075 SCT250 33/23 A2985 RMK AO2
SLP107 FRQ LTGICCCGCA DSNT N-NE CB DSNT N-NE MOV SE T03280228

**KIAH 230253Z 00000KT 10SM FEW050 SCT080 SCT250 33/23 A2987 RMK
AO2 SLP114 CONS LTGICCCGCA DSNT NE-SE CB DSNT NE-SE MOV SE TCU
DSNT NW T03280228 53014**

**KIAH 230353Z 11017KT 10SM SCT050 BKN085 BKN150 BKN250 29/24
A2993 RMK AO2 SLP135 FRQ LTGICCCG DSNT NE-SE AND NW CB DSNT NE-
SE AND NW MOV SE T02890239**

KHOU 230153Z 20012KT 10SM SCT075 SCT090 33/23 A2986 RMK AO2 LTG DSNT
N AND NE SLP116 CONS LGTCC VC N AND NE AND TCU DSNT N AND NE
T03280228

**KHOU 230253Z 20010KT 10SM FEW075 SCT100 SCT250 32/22 A2988 RMK
AO2 LTG DSNT N-E SLP121 CONS LTGCCCA N-NE CB DSNT NE MOV S-SE
T03170222 53017**

**KHOU 230353Z 14007KT 080V180 10SM SCT075 BKN090 31/22 A2992 RMK
AO2 LTG DSNT NW-E SLP136 CONS LTG ICCCCA VC N-E CB N-SE MOV S-SE TCU
DSNT N-SE T03060222**

KHOU 230453Z 10014KT 10SM FEW030 SCT075 BKN100 27/22 A2997 RMK AO2
LTG DSNT E AND SE AND NW SLP152 CONS LTGICCA SE CB SE MOV S T02670217

KMCJ 230255Z AUTO 19010G16KT 10SM VCTS SCT019 SCT024 31/22 A2988 RMK
A01 LTG DSNT N AND NE

**KMCJ 230315Z AUTO 21010G18KT 190V260 10SM VCTS SCT020 SCT029
BKN080 31/22 A2989 RMK A01 LTG DSNT ALQDS**

**KMCJ 230335Z AUTO 20011G19KT 10SM VCTS FEW021 SCT025 BKN080
31/22 A2989 RMK A01 LTG DSNT N-E**

KMCJ 230415Z AUTO 11015G27KT 090V160 10SM VCTS FEW037 FEW060 BKN075
30/22 A2993 RMK A01 LTG DSNT ALQDS

KDWH 230253Z 10SM VCTS CLR 31/23 A2987 RMK AO2 LTG DSNT N-SE SLP114
T03060233 53012

**KDWH 230314Z AUTO 10SM BKN075 33/22 A2990 RMK AO2 LTG DSNT
ALQDS T03280217**

**KDWH 230321Z AUTO 10SM VCTS BKN075 BKN110 32/21 A2991 RMK AO2
LTG DSNT ALQDS PRESRR T03220211**

**KDWH 230353Z AUTO 10SM TS OVC060 31/22 A2993 RMK AO2 LTG DSNT
ALQDS TSB48 SLP133 T03060217**

KDWH 230442Z AUTO 10SM VCTS FEW060 29/23 A2995 RMK AO2 LTG DSNT E
AND SW AND W RAB0354E22 TSE36 P0000 T02890228



Figure 6. Location of each METAR

7.0 Test and Research

A particulate sample removed from the fuel system of the accident airplane was submitted to the NTSB Materials Laboratory for examination. Photographs of the material are attached to the report in the public docket. The reddish-brown substance was examined using a Fourier Transform Infrared (FTIR) spectrometer with a diamond attenuated total reflectance (ATR) accessory in accordance with ASTM E1252-98 (American Society for Testing Materials E1252-98: Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis). The spectrometer was used to collect and process infrared wavelength absorbance spectra of the unknown material. The spectrum of the unknown substance yielded no significant peaks indicating that the substance was not likely organic (hydrocarbon) based.

The sample was then examined using scanning electron microscopy (SEM) and semi-quantitative standardless energy dispersive x-ray spectroscopy (EDS) in accordance with ASTM E1508: Standard Guide for Quantitative Analysis by Energy-Dispersive Spectroscopy. A small amount of the material was mounted on carbon tape for analysis. The EDS analysis found that the sample consisted mostly of carbon (C), oxygen (O) and aluminum (Al) with small amounts of sodium (Na), silicon (Si) and iron (Fe). This is consistent with the presence of aluminum wear particles from the fuel system as well as dirt/soil present in the fuel system.

8.0 Additional Information

Air Traffic Control

The investigation was unable to find any radar track or ADS-B track for the accident flight. The pilot was not communicating with air traffic control and IWS airport was not towered.

Submitted by:

Joshua Lindberg
Senior Aviation Accident Investigator