Aviation Investigation Preliminary Report

Location:	Huntsville, TX	**Accident Number:**	CEN23FA401
Date & Time:	September 6, 2023, 11:48 Local	**Registration:**	N6059G
Aircraft:	Cessna 150K	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

On September 6, 2023, about 1148 central daylight time, a Cessna 150K airplane, N6059G, was substantially damaged during an accident at the Huntsville Municipal Airport (UTS), Huntsville, Texas. The flight instructor and student pilot were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to automatic dependent surveillance-broadcast (ADS-B) data that was transmitted from the airplane to Federal Aviation Administration air traffic control, at 1027, the airplane departed from runway 14 at North Houston Regional Airport (CXO), Conroe, Texas. The airplane flew northeast about 6 nautical miles before it turned northwest toward UTS. About 1050, the airplane entered the traffic pattern for runway 36 at UTS. The airplane flew 6 traffic patterns consistent with touch-and-go landings on runway 36. The airplane descended below ADS-B coverage about 700 ft mean sea level (msl), or about 337 ft above airport elevation, while it operated in the traffic pattern at UTS. About 1128, the airplane switched landing direction to use runway 18. The airplane flew 3 additional traffic patterns consistent with touch-and-go landings on runway 18. At 1146:54, the last ADS-B return was recorded about 830 feet msl while the airplane was descending on the base leg for runway 18.

Two witnesses reported that the airplane was flying in the airport traffic pattern before the accident. They were on the ramp preparing for an instructional flight when they heard a sudden decrease in engine rpm. They turned and saw the airplane flying southbound over runway 18, about 500 ft above the ground, rocking its wings in a level pitch attitude. The airplane then entered a left, nose down, turn toward the east. The flight instructor believed that the pilot of the accident airplane was attempting to make a left 180° turn to land on runway 36. He stated that after the airplane turned about 90° it entered a spin and descended to the ground in a nose down pitch attitude.

An on-scene examination revealed that the main wreckage was about 407 ft south of the end of runway 18 and about 40 ft east of the extended runway centerline. The airplane came to rest

upright and nose down on a west heading, as shown in figure 1. The leading edge of both wings were crushed aft to their respective main spars.

Figure 1. Main wreckage at the accident site

The elevators, ailerons, and rudder flight control surfaces, trim tabs, and the flaps were accounted for at the accident site. Flight control cable continuity was confirmed from the cockpit to the respective flight control surfaces. The cockpit control column exhibited impact-related damage. The aileron control chain remained intact and partially attached to each control column sprocket. The aileron forward bellcrank/arm assembly remained attached to the control column with attached cables. The aileron balance cable remained continuous between the aileron bellcranks. The elevator control tube remained attached to the cockpit control column. The aft end of the elevator control tube was displaced aft about 6 inches and separated from the elevator forward bellcrank, which fractured into two halves with attached cables; the fracture exhibited signatures consistent with an overstress separation due to impact related damage. The rudder cables were continuous from the cockpit pedals to the rudder control horn.

The left and right ailerons remained attached to their respective wing attachment points. The rudder remained attached to its attachment points on the vertical stabilizer. The left and right

elevators remained attached to their respective horizontal stabilizer. The elevator trim actuator extension measured 1.4 inches and was consistent with a neutral trim tab position.

The left and right flaps remained attached to their respective wing attachment points. The flap handle in the cockpit was found in the UP position. The flap actuator/motor was found in the fully retracted position and was consistent with the flaps fully retracted at impact.

The wreckage examination did not reveal any preimpact flight control anomalies that would have prevented normal operation.

Examination of the left- and right-wing metal fuel tanks exhibited hydraulic deformation along the forward and top tank surfaces. The left and right fuel tank finger screen strainers were unobstructed. The fuel lines from each wing fuel tank to the fuel shutoff valve assembly remained intact. The fuel lines from each wing fuel tank combined through a Y-shaped fuel fitting upstream of the fuel shutoff valve, as depicted in figure 2. The fuel line from the fuel shutoff valve assembly to the fuel strainer assembly was impact separated about 2 inches forward of the fuel shutoff valve assembly. The fuel strainer assembly was displaced aft through the firewall into the cockpit floor area. The filter bowl was separated from the fuel strainer assembly and was impact damaged. The fuel strainer screen filter remained attached to the fuel strainer and exhibited debris. The fuel line from the fuel strainer assembly to the carburetor was separated and not observed.

The fuel line connected to the inlet port of the fuel shutoff valve was removed and fuel-wetted debris was seen inside the elbow fuel fitting. The debris obstructed the elbow fuel fitting, as shown in figure 3a. The fuel shutoff valve outlet port exhibited accumulated debris affixed to its inside diameter, as shown in figure 3b. Additional debris was recovered from inside the shutoff valve when tapped on a table, as shown in figure 4.

The fuel line from each wing fuel tank was disconnected and air blown through the fuel line to the disconnected line at the fuel shutoff valve. Fuel and traces of debris was extracted from the left and right fuel lines. The recovered debris was similar to the debris found in the inlet/outlet ports of the fuel shutoff valve, as shown in figures 5a and 5b. A borescope examination of the left- and right-wing fuel tanks revealed additional loose debris inside each fuel tank.

The fuel shutoff valve and the recovered debris from the fuel lines were retained for additional laboratory examination.

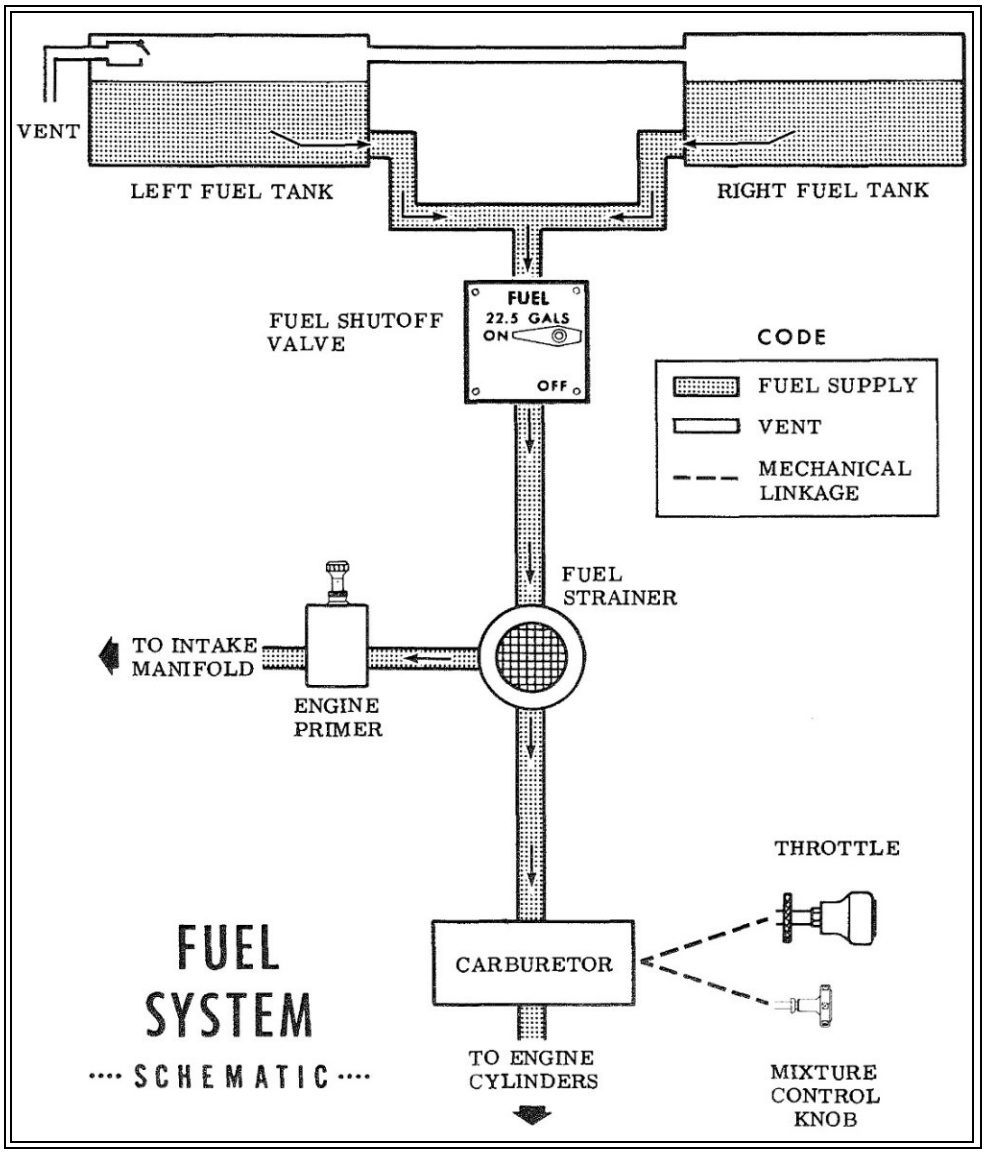

Figure 2. Fuel system schematic

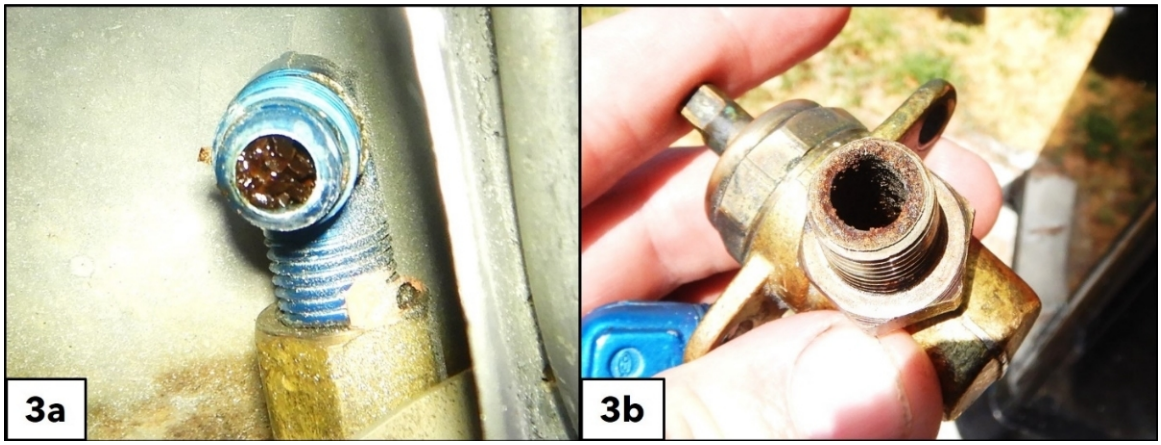

Figure 3. Fuel shutoff valve inlet port (3a) and outlet port (3b)

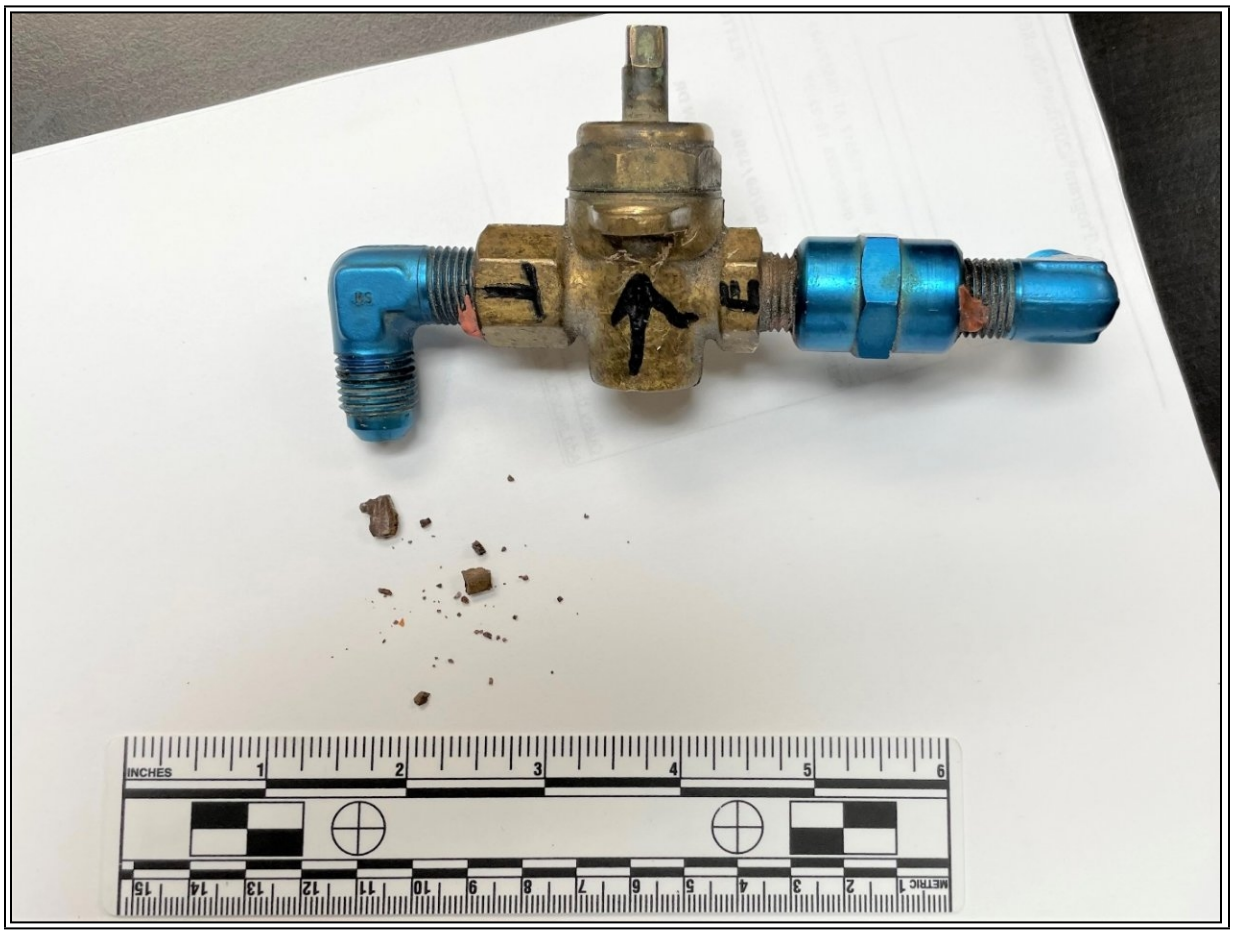

Figure 4. Fuel shutoff valve and debris recovered from inlet port

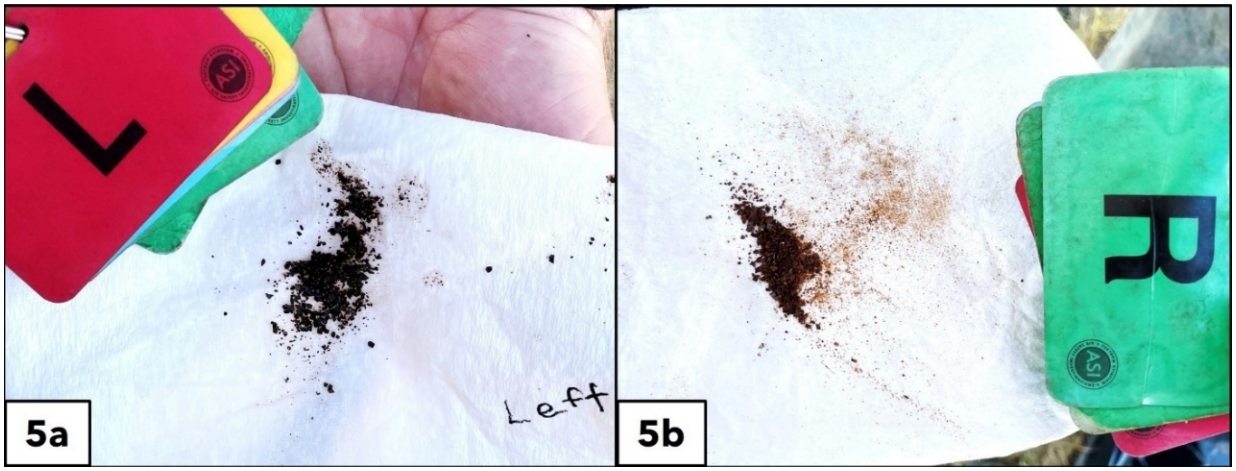

Figure 5. Debris recovered from the left fuel line (5a) and right fuel line (5b)

The engine was displaced upwards, compressed aft into the firewall, and was rotated/twisted to the left side of the aircraft. The starter separated from the engine, but the remaining accessories remained attached to the engine. The engine crankshaft did not rotate by hand

through the propeller. The crankshaft was displaced aft about 0.5 inches, consistent with damage associated with a nose down impact. The removal of the rear accessories revealed additional damage to the accessory gears consistent with the entire crankshaft being displaced aft of its normal position.

Borescope examination of each cylinder reveal no anomalies with the cylinders, pistons, valves, valve seats, or bottom spark plugs. There were no mechanical failures observed during a borescope examination of the drive train components. There was evidence of ample oil in the crankcase, accessory gearbox, valve covers, and the oil filter. The spin-on type oil filter was removed, cut open, and exhibited no evidence of debris.

Both magnetos produced spark at all four leads when rotated by hand. The impulse coupling for each magneto functioned normally. The spark plugs exhibited features consistent with normal engine operation.

The carburetor separated from the engine during impact. The engine control continuity to the carburetor could not be established due to impact related damage. The intake air box assembly remained attached to the carburetor but exhibited impact damage. The carburetor heat control cable separated from the intake air box.

The carburetor fuel inlet with inlet screen fractured from the carburetor body during impact and was not located during the investigation. The fuel line from the fuel strainer assembly to the carburetor was not located. The throttle valve did not rotate due to impact damage. The carburetor fuel bowl contained about 1 fluid ounce of uncontaminated 100 low-lead aviation fuel. There was no evidence of sediment or debris in the carburetor fuel bowl. The fuel metering float and float valve appeared intact and functional.

The engine examination revealed no evidence of a preexisting mechanical malfunction or failure that would have prevented normal operation.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6059G
Model/Series:	150K	**Aircraft Category:**	Airplane
Amateur Built:			
Operator:	On file	**Operating Certificate(s) Held:**	None
Operator Designator Code:			

Meteorological Information and Flight Plan

Conditions at Accident Site:	VMC	**Condition of Light:**	Day
Observation Facility, Elevation:	KUTS,363 ft msl	**Observation Time:**	11:53 Local
Distance from Accident Site:	0.5 Nautical Miles	**Temperature/Dew Point:**	35°C /23°C
Lowest Cloud Condition:	Few / 4200 ft AGL	**Wind Speed/Gusts, Direction:**	4 knots / ,
Lowest Ceiling:		**Visibility:**	10 miles
Altimeter Setting:	30.01 inches Hg	**Type of Flight Plan Filed:**	None
Departure Point:	Conroe, TX (CXO)	**Destination:**	Conroe, TX (CXO)

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	30.738928,-95.587989

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Jeffery S. Hayes; Federal Aviation Administration - Houston FSDO; Houston, TX Ernest C. Hall; Textron Aviation; Wichita, KS
Investigation Class:	Class 3
Note:	