



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Central Region

April 25, 2022

INVESTIGATION SUMMARY

CEN22LA156

A. INVESTIGATION PARTICIPANTS:

Joshua Lindberg
Air Safety Investigator
National Transportation Safety Board

Gavin Hill
Airworthiness Inspector
Federal Aviation Administration

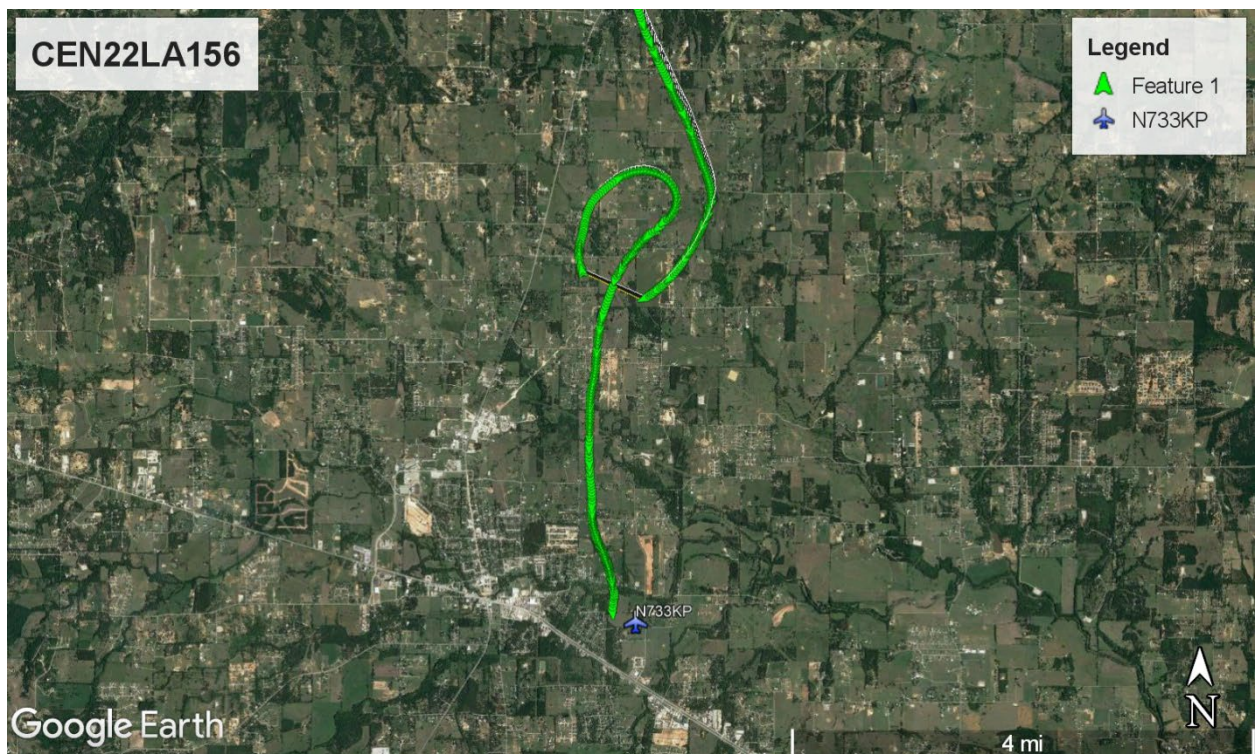
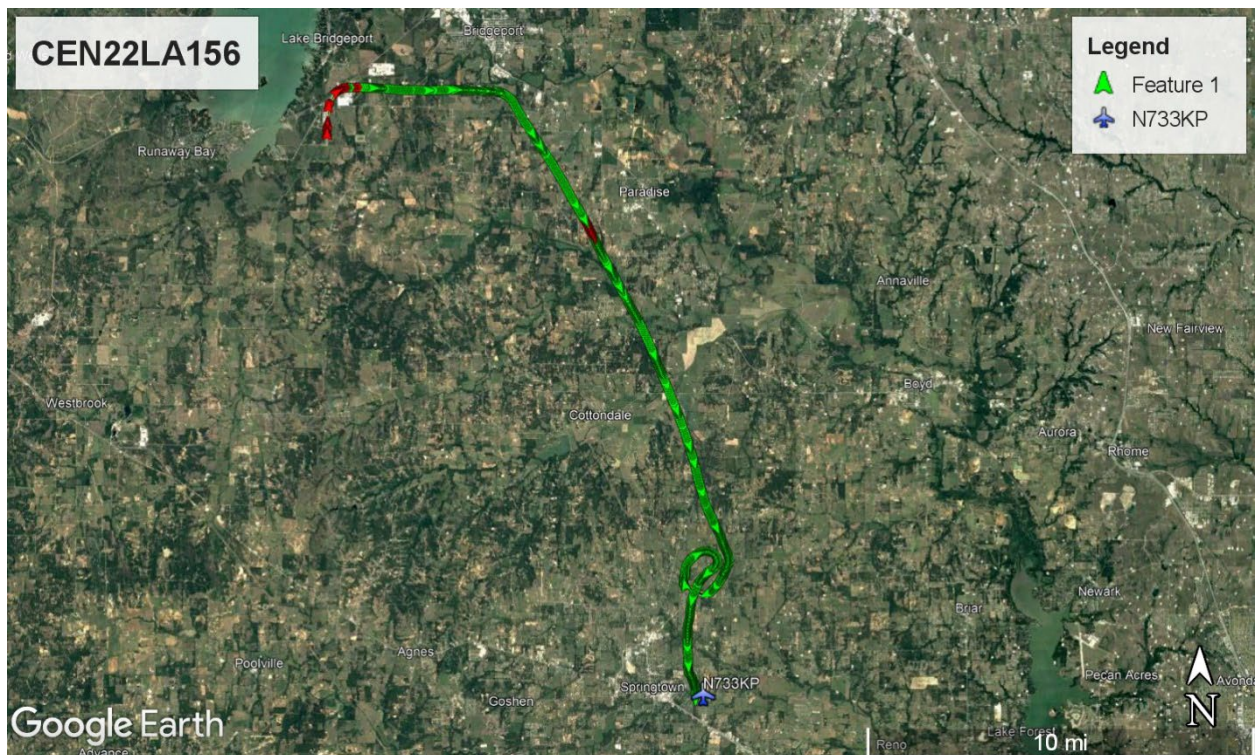
B. ACCIDENT SUMMARY

On March 24, 2022, about 1730 central daylight time, a Cessna 172N airplane, N733KP, was substantially damaged when it was involved in an accident near Springtown, Texas. The flight instructor and student pilot sustained minor injuries. The flight was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight instructor stated that the airplane had just been refueled (7-8 gallons) at Bridgeport Municipal Airport (XBP), Bridgeport, Texas, and departed to the south to continue the instructional flight. About 7 minutes after departure, the airplane's engine sputtered and eventually experienced a loss of power. The instructor was unable to restart the engine and elected to complete a forced landing to a field. During the forced landing, the airplane nosed over and came to rest inverted, which resulted in substantial damage to the fuselage, empennage, and both wings. The instructor added that the fuel selector valve was positioned to BOTH, she did not manipulate the fuel selector during the event, she did not remember the RPM on the tachometer during the event, she did not apply carburetor heat while troubleshooting the loss of power, they were in cruise flight and did not practice any maneuvers after departing XBP, the student pilot was manipulating the flight controls when the engine started sputtering, and she did not notice anything out of the ordinary in terms of how the student utilized the controls, instruments, etc. leading up to the accident. After the engine sputtered, she took control of the airplane immediately.

Airport fuel transactions showed that the CFI purchased 7.51 gallons of 100LL from the self-serve fuel pump at 16:57:45.

The responding Federal Aviation Administration (FAA) inspector stated that there was fuel leaking from the wings after the accident. The XBP airport manager reported to the FAA inspector that the fuel source was quickly checked for contaminants, which was negative. Also, two other airplanes were fueled from the same source around the same time and did not report any issues with the fuel. In a discussion with the student pilot, he stated that when they would pull the throttle to idle, the engine would smooth out somewhat, but would start missing when the throttle was pushed forward.



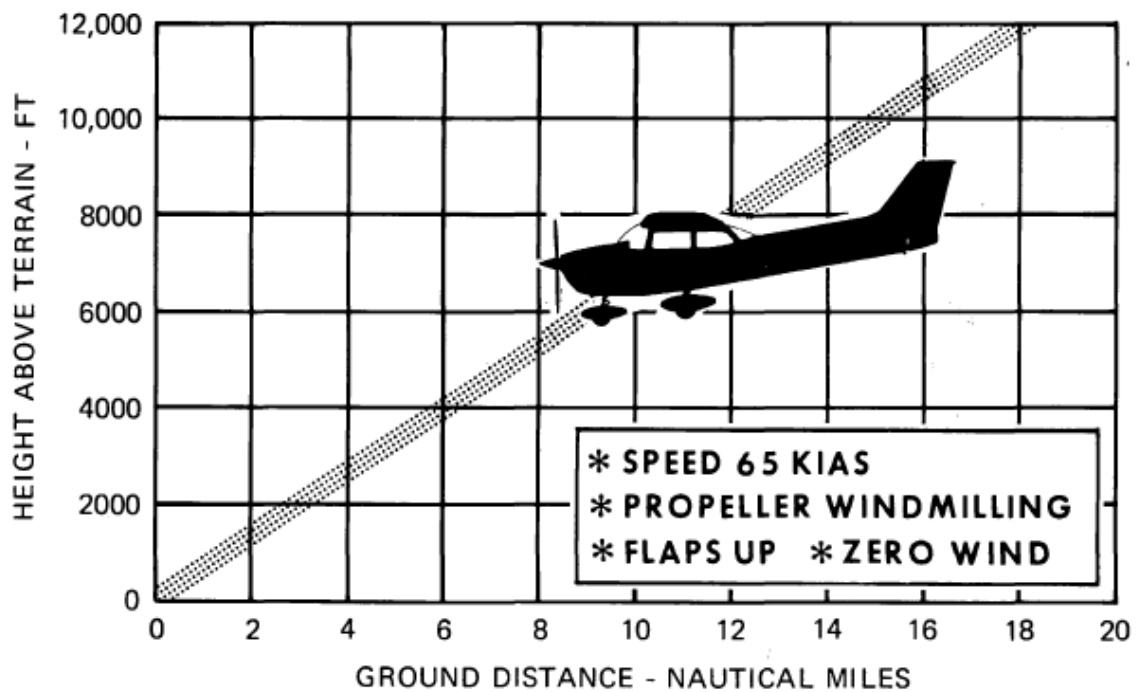
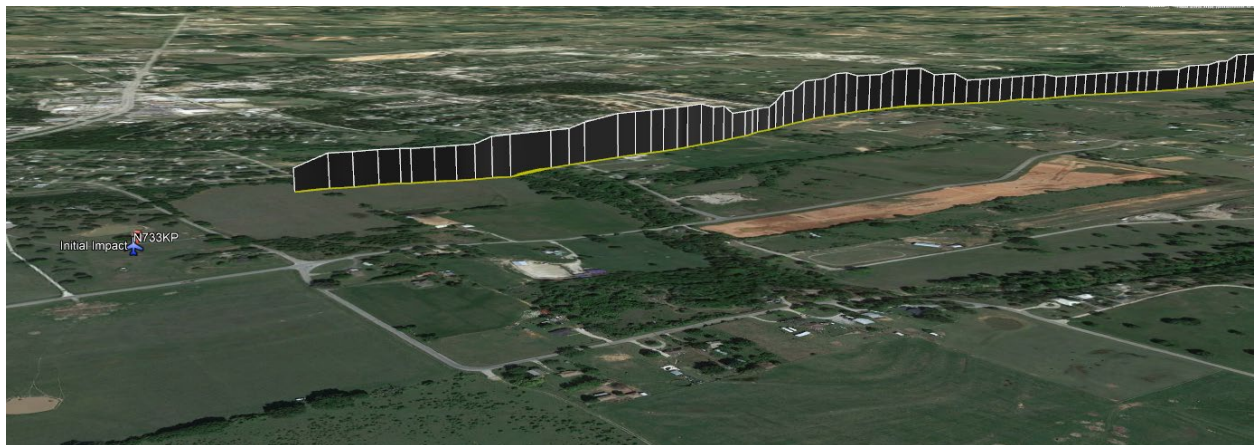
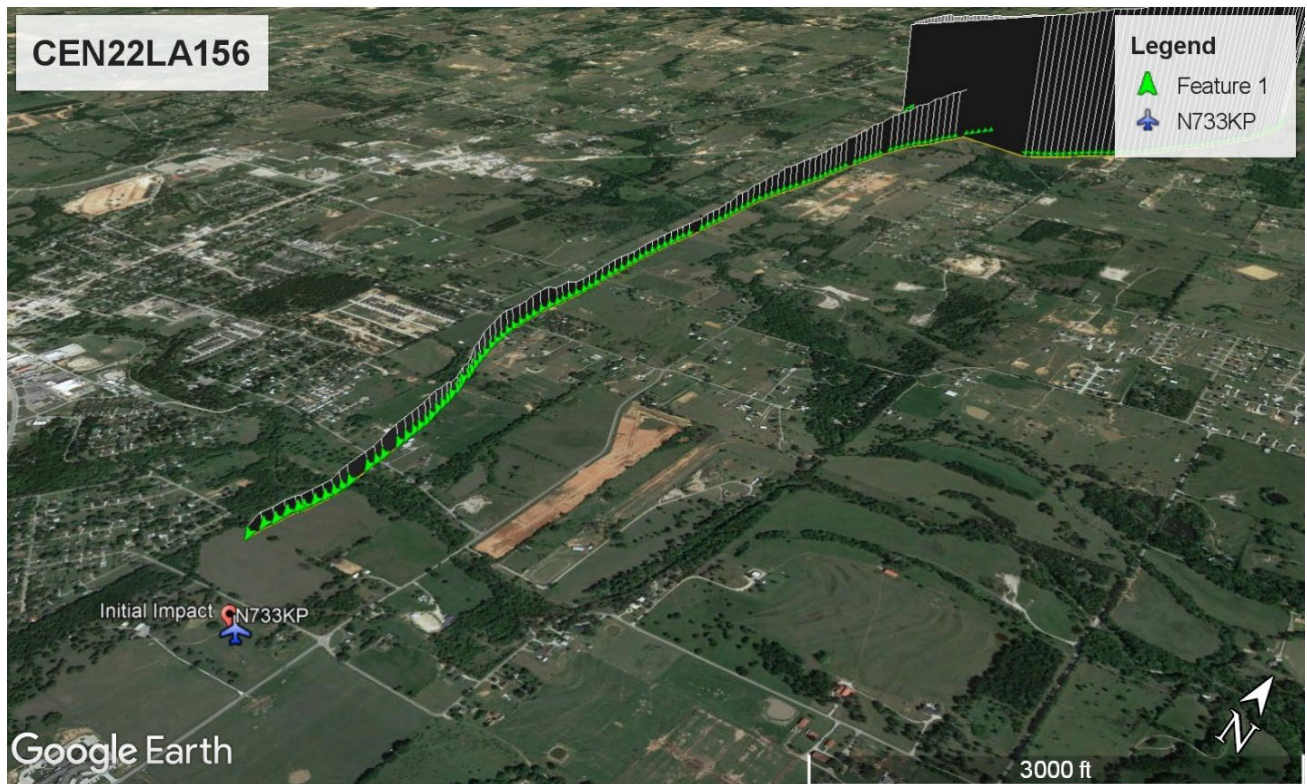


Figure 3-1. Maximum Glide

Max glide distance from 2,000 ft is 3 nm. Airplane actually traveled 2.75 nm.
 Max glide distance from 3,000 ft is 5 nm. Airplane traveled 5.62 nm and made a right turning descent near at the beginning of the event.



Airplane gained altitude two times during the final descent to the accident site.



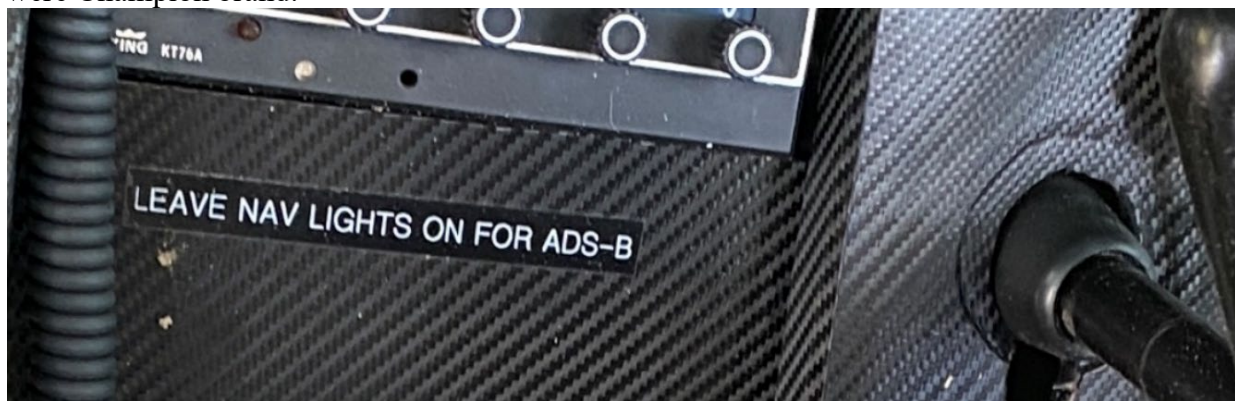
C. AIRFRAME AND ENGINE EXAMINATION

Details of the examination:

Examination of the recovered airframe and engine was conducted on April 25, 2022, at the facilities of Air Salvage of Dallas, Lancaster, Texas. The airplane's wings had been removed and the aft fuselage sectioned to facilitate the recovery and transportation.

On the instrument panel there was a placard that stated says "LEAVE NAV LIGHTS ON FOR ADS-B." Coincidentally there was a break the ADS-B data about the time of the engine issue when the right turning descent began. This is consistent with a loss of electrical power for 38 seconds. Airplane descended 500 ft during that time.

All spark plugs were removed and appeared "worn out – normal" when compared to a Champion check-a-plug chart. The No. 1 bottom and No. 2 top plugs were Tempest brand while the rest were Champion brand.





The engine remained mostly attached to the airplane, but a few of the engine mounts were impact damaged and fractured. The propeller assembly remained attached to the crankshaft and the blades were relatively straight.



The lower cowl induction air filter was in place and undamaged with dirt and organic debris at the bottom of the filter element.



The induction air filter screen was in place and undamaged with dirt and organic debris in the filter and screen. The hose from the filter to the carburetor inlet was clear and only contained a small amount of dirt.



The engine case and cylinders exhibited minimal impact damage. The engine mounts were broken on the top left side. The accessory area appeared undamaged. All fuel and oil lines were intact and secure. Throttle / Mixture / Carb heat control linkages remained intact and connected. When the controls were manipulated in the cabin, the linkages moved as expected. Engine oil appeared consistent with new oil with no visible contaminants. The cylinder rocker box covers were removed, and the rocker arms were undamaged.

All ignition wires remained connected from the dual magneto to the spark plugs ends. The wires were intact and undamaged. Magneto p-leads were cut during the exam.



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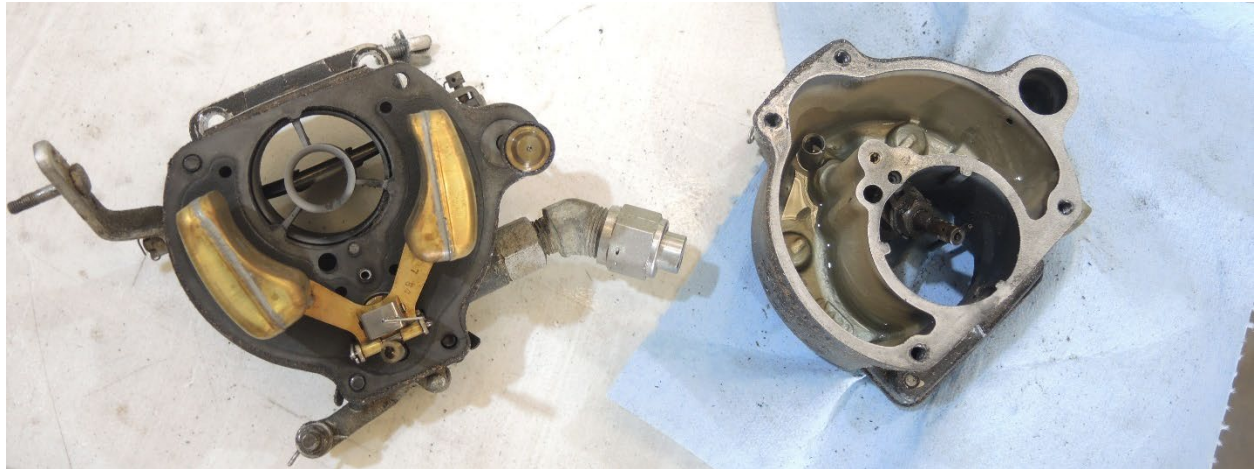
The propeller was manually rotated to obtain engine continuity. The propeller rotated very smoothly with not binding or abnormalities. All pistons moved through the cylinders. All rocker arms moved as expected. Thumb suction and compression were both obtained from each cylinder during the engine rotation. Each of the top ignition wires produces a spark during engine rotation.



The fuel strainer remained attached to the firewall with no damage or anomalies noted. The strainer bowl was removed, and all fuel was drained into a glass jar. The fuel was blue and smelled of AvGas with no contamination noted. The fuel strainer screen was clear of contaminants.



The fuel line from the strainer to the carburetor was clear of obstructions. The throttle and mixture cables were actuated from the cockpit, and both operated as expected. When the fuel selector was set to the LEFT/RIGHT/BOTH positions, air was blown through the fuel lines at the fuselage fittings; fuel ejected from the open fuel strainer each time and there were no blockages noted. Air was also blown through the fuel lines at the wing fittings; air was heard entering the fuel tanks and there were no blockages noted.



The carburetor remained attached at its mount and was intact, but sustained some impact damage to the air intake box. The fuel lines were connected and undamaged. The carburetor was removed, and the throttle arm was actuated, which verified functionally of the accelerator pump as it squirted fuel as expected. The carburetor was opened and contained 2-3 oz of blue fuel. The brass floats were intact and moved through their range of motion without restriction. When the floats were moved the needle valve was moved without issue. The venturi was clear and there were no anomalies noted.



The dual magneto was removed, and the case was opened. There were no abnormalities noted.

The examination revealed no evidence of preimpact mechanical malfunction or failures that would have precluded normal operation.