



Wreckage Examination Summary

NTSB ACCIDENT NUMBER: ANC22LA004

AIRCRAFT REGISTRATION/AIRCRAFT TYPE: N368G, Gregg Origer PA-18 Replica
ACCIDENT LOCATION: Willow, AK

HISTORY OF FLIGHT

On October 23, 2021, about 1825 Alaska daylight time, a Gregg Origer P-18 Replica airplane, N368G sustained substantial damage when it was involved in an accident about 2 miles south of Willow, Alaska. The commercial pilot was fatally injured, and the passenger sustained serious injuries. The airplane was operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot had departed from Anderson Lake Airport (0AK1), Wasilla, Alaska and was returning to Minuteman Strip Airport (AK68), Willow, Alaska when the accident occurred. A witness located about .30 nautical miles to the southeast observed the airplane fly over his location and reported that the engine appeared to be at a low power setting, as it was fairly quiet, which he thought was unusual. Subsequently, the airplane made a turn and disappeared from view. He then heard an increase in engine power followed by the sound of an impact. He and another Good Samaritan responded to the scene to render aid. He stated that at no point did he hear any unusual sounds from the airplane and the engine appeared to be operating normally.

The airplane impacted in a near vertical attitude at an elevation of about 274 ft. All the airplane's major components were located at the main accident site.

PERSONNEL INFORMATION

The pilot age 53 held an airline transport pilot certificate with single engine land and sea, and a multi-engine rating.

AIRCRAFT INFORMATION

- Make/model Homebuilt – Gregg Origer
- PA-18 Replica
- S/N - 1801

METEOROLOGICAL INFORMATION

PAWS 240256Z AUTO 05007KT 10SM CLR 07/M02 A2912 RMK AO2 SLP866 T00671022 51016

COMMUNICATIONS

None

AIRPORT INFORMATION:

AK68 Minuteman Strip Airport N61 43.13 W150 03.16 Private airstrip

Elevation 290 ft

1 mile south of Willow AK

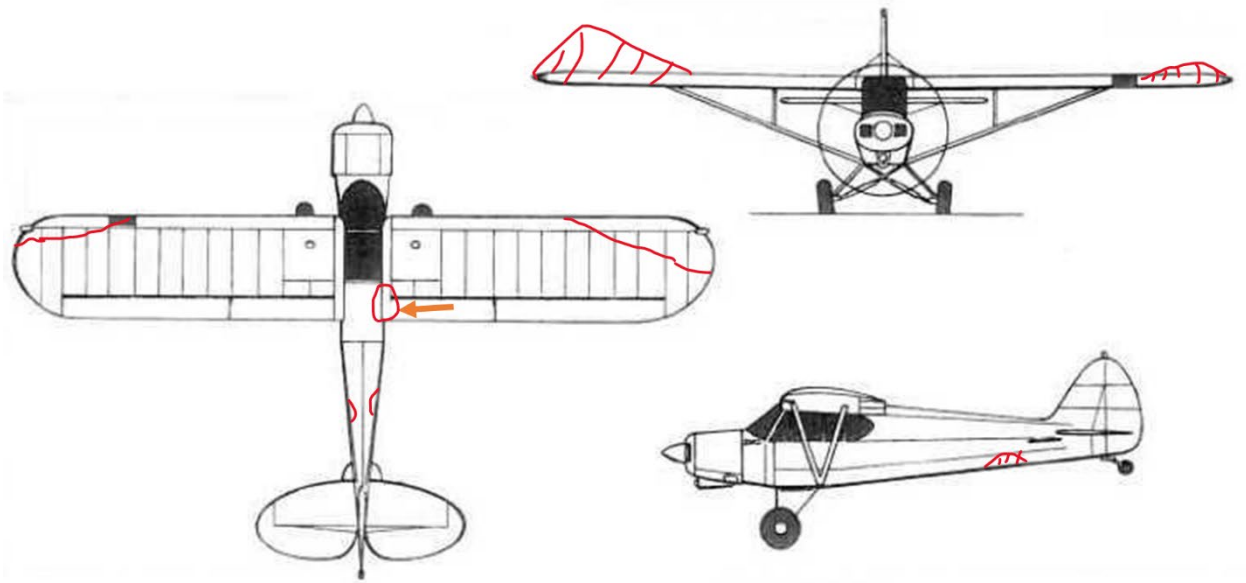
Runway 12/30 gravel 1,200 ft x 40 ft

Class G

Wreckage layout (not to scale)

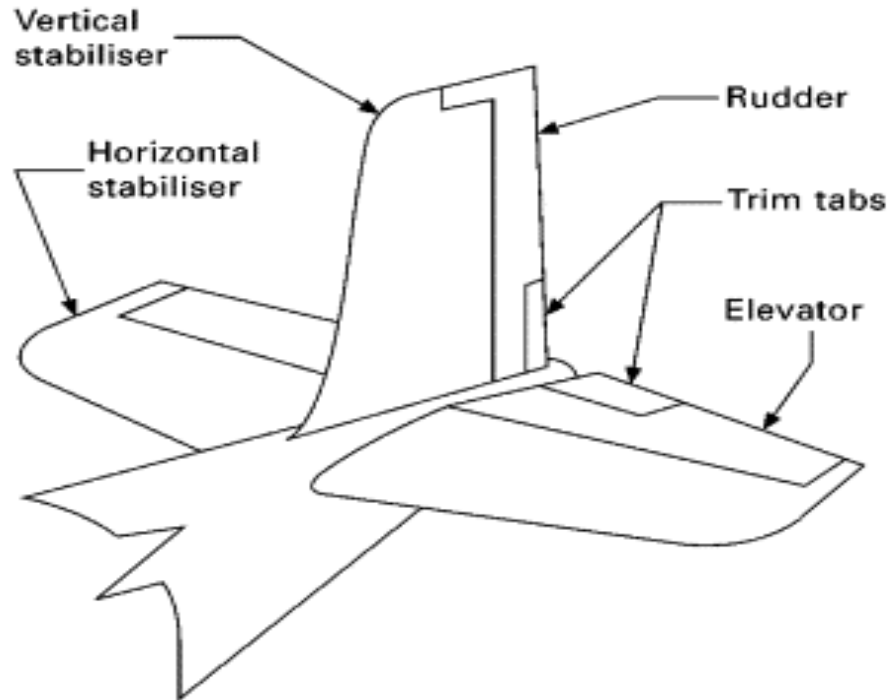
Cockpit/Fuselage

- Fuselage Condition / Damage



- Pilot location - Front seat
- Passenger location- Rear seat
- Type of seat belts used- Hooker Harness 4 point

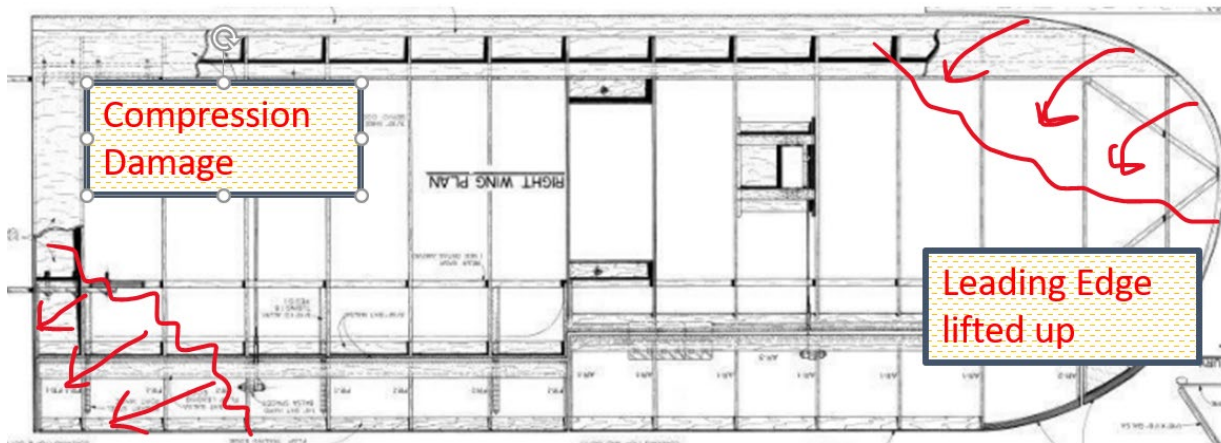
Empennage



- The empennage condition- No damage noted
- The right horizontal stabilator
 - Attached to its respective attach points - Yes
 - Condition/Damage – No damage noted
- The right elevator
 - Attached to its respective attach points - Yes
 - Condition/Damage – No damage noted
- The vertical stabilizer
 - Attached to its respective attach points - Yes
 - Condition/Damage- No damage noted
- The rudder
 - Attached to its respective attach points - Yes
 - Rudder horn – No damage
 - Left and right rudder cables remained attached to their respective attach points - Yes
 - Condition/Damage – No damage noted

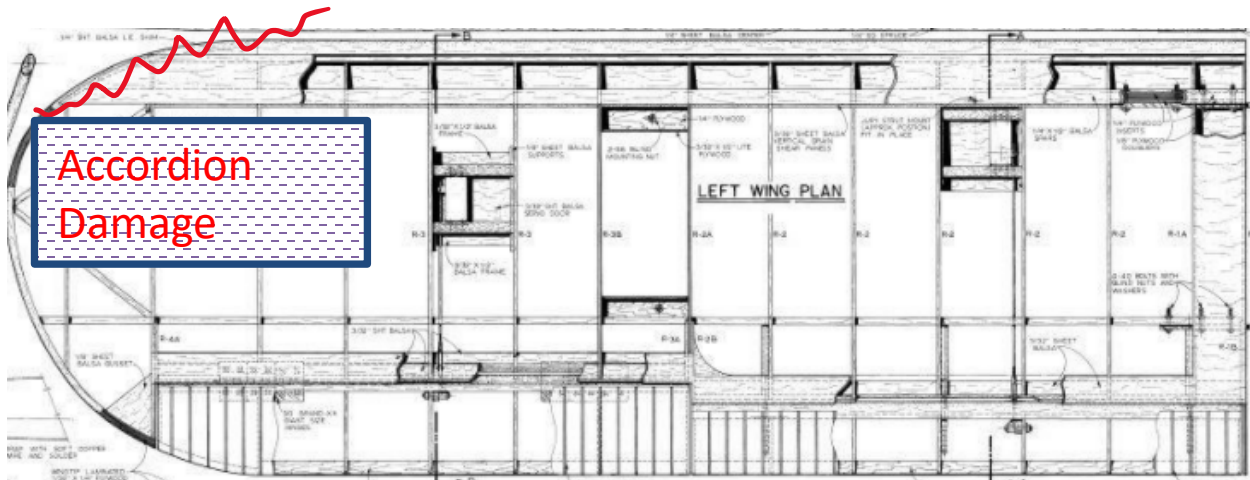
- The tail wheel – Matco
 - Attached to its respective attach points - Yes
 - Damage – No damage noted
- The left horizontal stabilator
 - Attached to its respective attach points - Yes
 - Damage – No damage noted
- Left elevator
 - Attached to its respective attach points - Yes
 - Damage – No damage noted

Right Wing



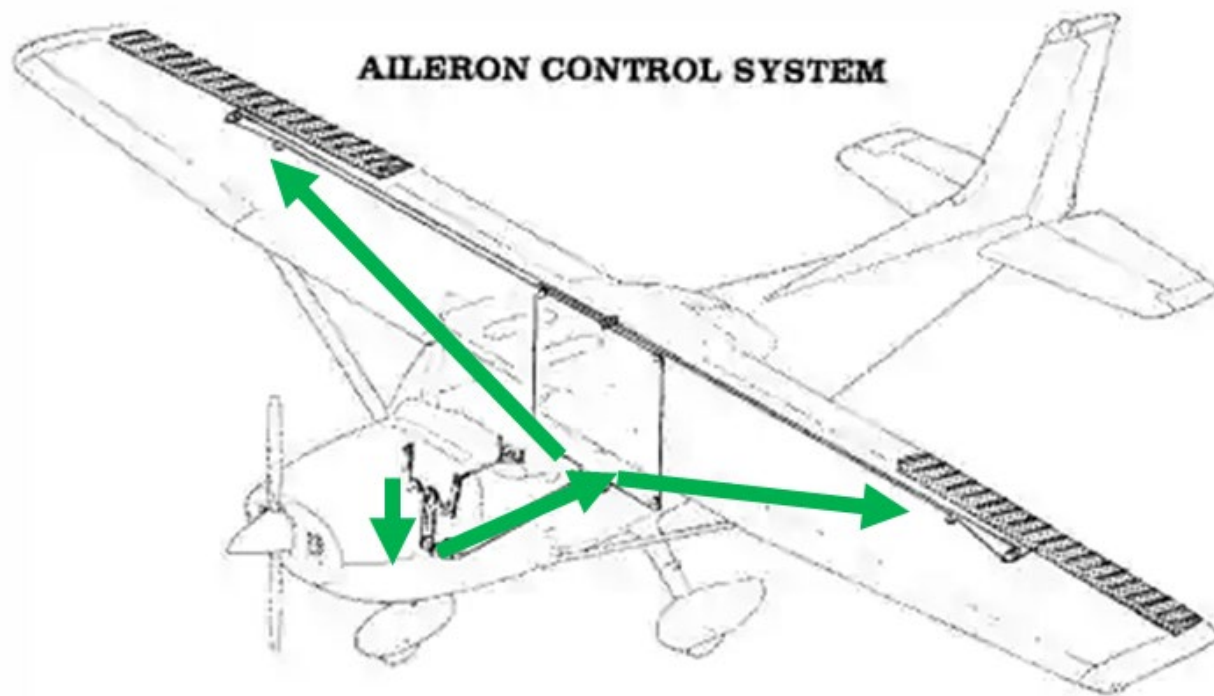
- Overall – Impacted damage to outboard leading edge, inboard trailing edge, and wing struts.
- Leading edge
 - Condition/Damage- Substantial impacted damage from wing tip to about 6 ft inboard.
- The right aileron
 - Attached to its respective attach points - Yes
 - Condition/Damage – Relatively undamaged
- The right flap
 - Attached to its respective attach points - Yes
 - Condition/Damage – Inboard portion pushed into fuselage
- Fuel – Cap on and tight, tank sustained substantial impact damage and was breached. No fuel was observed in the tank.
- Wing attachment to fuselage – Front yes, rear yes; however, rear spar separated about 6 inches from inboard attachment point.

Left Wing

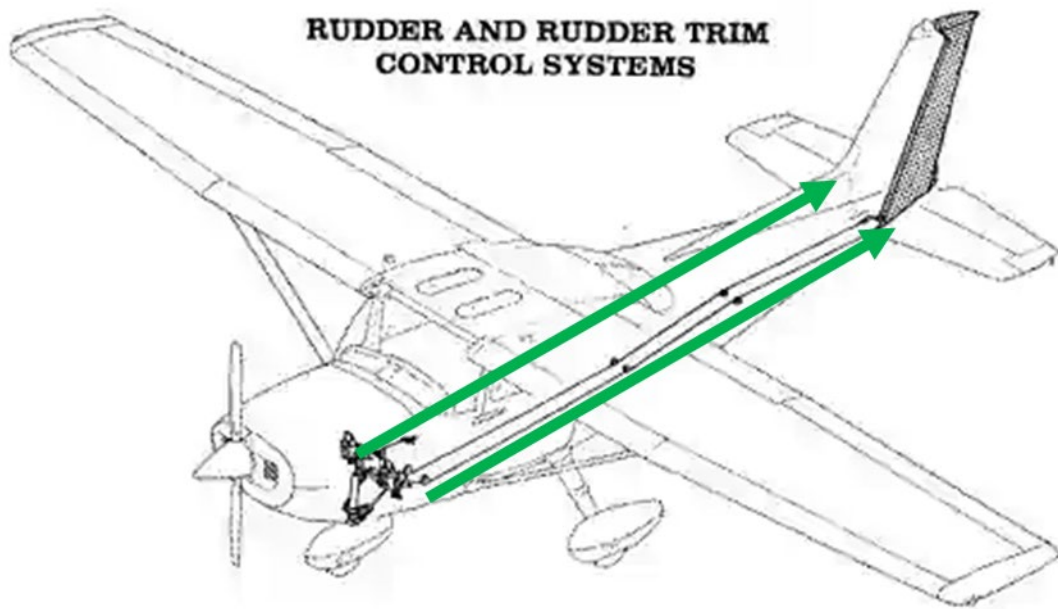


- Overall
- Leading edge
 - Condition/Damage – Tip to strut attachment, about 6 ft, accordion style impact damage.
- The left aileron
 - Attached to its respective attach points - Yes
 - Condition/Damage – Minimal damage
- The left flap
 - Attached to its respective attach points - Yes
 - Condition/Damage – Minimal damage
- Fuel -Cap on and tight. No fuel observed in tank.
- Wing attachment to fuselage - Yes

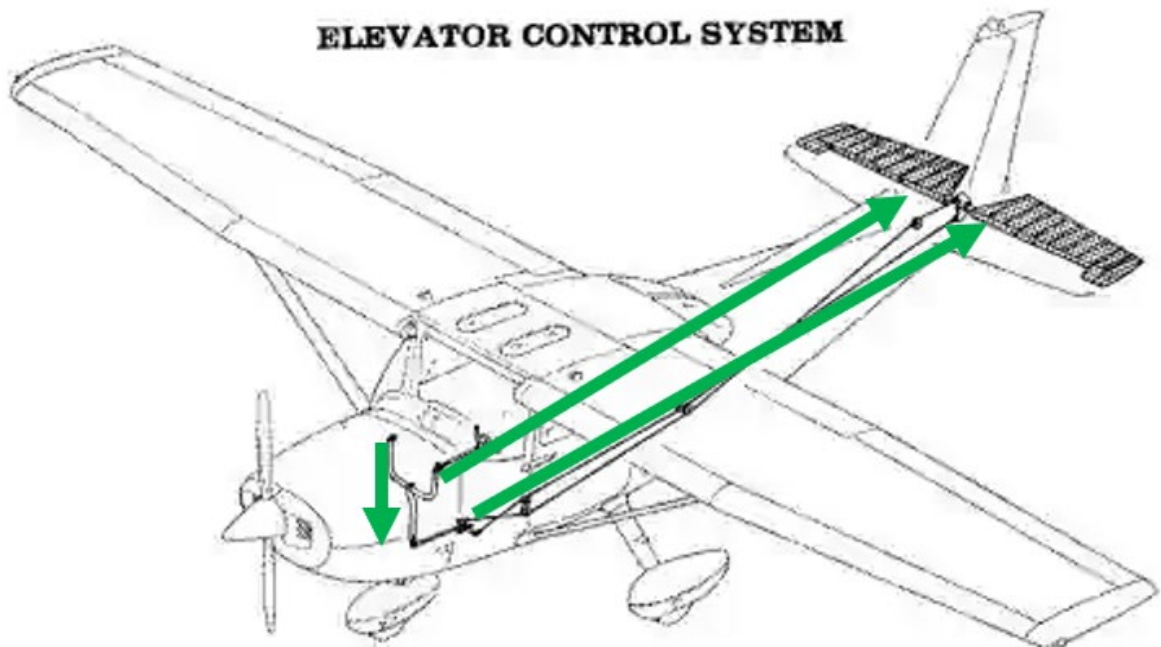
Flight Controls/Flight Control Cables Remarks:



- Ailerons – Control continuity was established.
 - In the direct cables from the control column to both the left and right ailerons.
 - Damage – None, no breaks in control cables.
 - Balance cable – Control continuity was established.
 - Damage – None, no breaks in control cable.

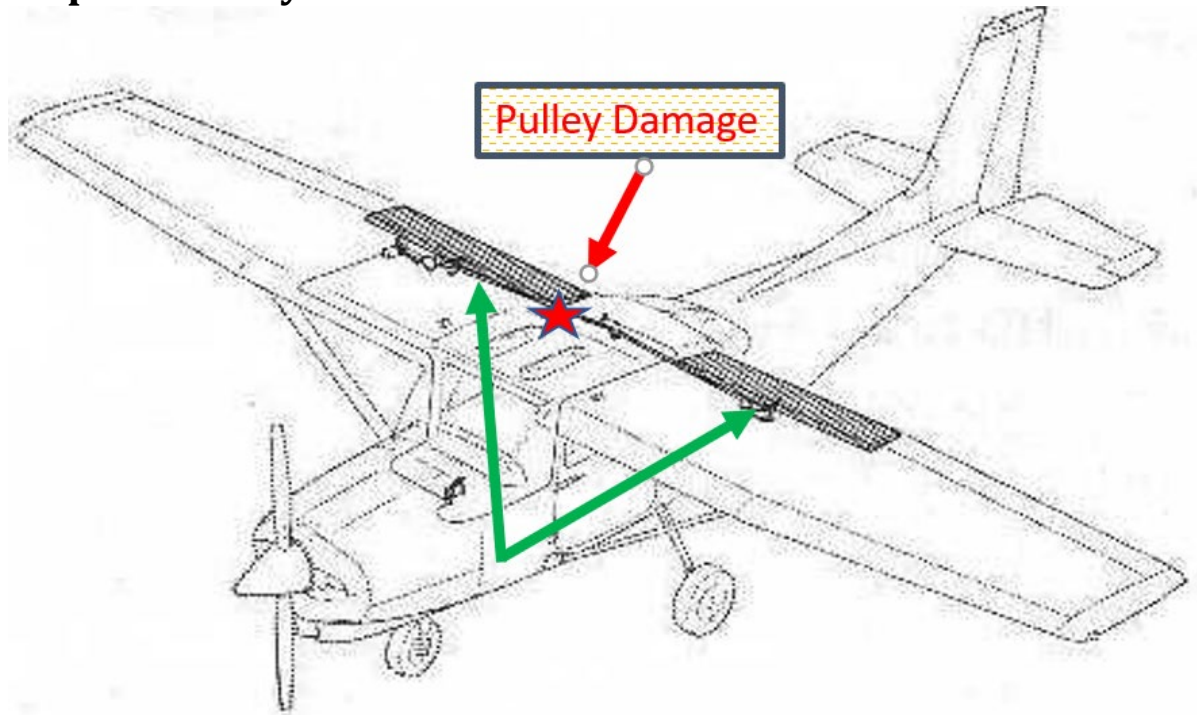


- Rudders- Control continuity was established.
 - From the rudder pedals to the rudder horn - yes
 - Damage, location of disconnect – None, no breaks in control cables.

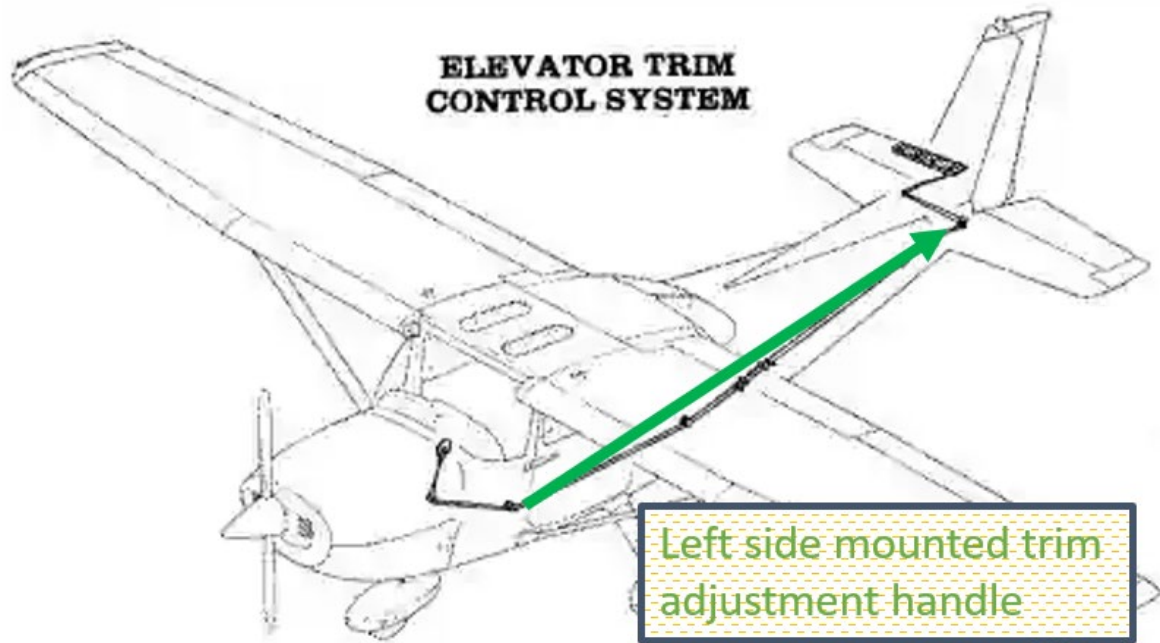


- Elevator – Control continuity was established.
 - In the control cables from the elevators to the elevator bell crank, to the control stick.
 - Damage, location of disconnect – None, no breaks in control cables and/or push/pull tube.

Flap Control System



- Flaps
 - Flap handle was found in the full up position (flaps full down).
 - Control continuity was established.
 - From the flap handle to the push/pull tube rods in the wings and to the flaps.
 - One pulley attachment separated due to impact damage from wing.
 - Flap handle was in the up and locked position. Unable to release the lock to raise the flaps due to impact damage.



- Elevator trim
 - Control continuity was established.
 - In the control cables from cockpit handle to the stabilator elevator.
 - Damage, location of disconnect – No damage from trim handle to elevator.

Engine control Continuity

- Carburetor
 - Control continuity was established from throttle control in the cockpit to the carburetor. The nut and cotter pin were installed.
- Mixture
 - Control continuity was established from the mixture control in the cockpit to the air mixture value on the carburetor. The nut and cotter pin were installed.
 - During the wreckage examination, the cockpit mixture control was found in the full rich position.
- Carburetor heat
 - Control continuity was established from the carburetor heat control in the cockpit to carburetor heat on the engine. The nut and cotter pin were installed.
 - During the wreckage examination, the carburetor heat control was found in the full-on position.

Engine/Propeller

- Engine
 - Superior Lycoming O-360 Experimental, 36B181933
- Propeller
 - WhirlWind GA200L-816
 - The blade structure is made from thermoset epoxy/graphite composite matrix.

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- Damage – Both blades separated at the hub due to impact damage. One blade sustained some tip damage, the other blade was relatively undamaged.
- Data tag information - missing from engine – logbook states 36B181933
- Carb – MA-4-5 Part#104164-1, s/n K-276528
- Thumb compression was verified on
 - All 4 cylinders
 - In correct firing order
- The gascolator
 - Drained, clean fluid consistent with 100 LL Avgas was found.
 - No evidence of water was observed.
- Valve train
 - Mechanical continuity was observed throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft.
 - Valve train observed to operate and appeared to be free of any pre-mishap mechanical malfunction. Normal “lift action” was observed at each rocker assembly.

Magnetos

- Left – Bendix 10-51360-37R DO 30129
 - Impulse Coupling – Yes
 - Tight to engine - Yes, remained securely clamped at their respective mounting pads.
 - Ignition harness secure to mag - Yes
 - Observed spark - Magnetos was removed and rotated by hand, and spark was observed at the distributor.
 - Damage – None – Magneto drive was observed intact and properly safetied.
 - Engine timing to magneto - 24° BTC
- Right – Bendix 10-51360-29R 0011125
 - impulse Coupling –No
 - Tight to engine - Yes, remained securely clamped at their respective mounting pads.
 - Ignition harness secure to mag - Yes
 - Observed spark Magnetos was removed and rotated by hand, and spark was observed at the distributor.
 - Damage – None – Magneto drive was observed intact and properly safetied.
 - Engine timing to magneto - 20° BTC

Spark Plugs – Type – Champion REM40E

Spark Plug Notes:

The spark plugs were secure at each position with their respective spark plug lead attached. The spark plugs were removed, examined and photographed. The spark plug electrodes remained mechanically undamaged according to the Champion Spark Plugs “Check-A-Plug” chart AV-27, the spark plug electrodes displayed coloration consistent with normal operation. The static oil

soaking of the number 1 bottom plug was attributed to the engine positioning during the accident and recovery.

- 1 Top – Undamaged Electrode Normal
- 1 Bottom – Undamaged Electrode Normal/Oil Soaked
- 2 Top - Undamaged Electrode Normal
- 2 Bottom - Undamaged Electrode Normal
- 3 Top - Undamaged Electrode Normal
- 3 Bottom - Undamaged Electrode Normal
- 4 Top - Undamaged Electrode Normal
- 4 Bottom - Undamaged Electrode Normal

Alternator

- Undamaged – model BC425-H, s/n 2D00EON20K

Engine Summary

The subject engine was examined on 1 Dec 2021, in Willow, AK, under the auspices of the National Transportation Safety Board, Investigator-in-Charge (NTSB-IIC).

The powerplant is a four-cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (carburetor), internal combustion engine. The engine remained attached to the airframe and was in good condition. The engine had sustained extensive impact damage to the underside and right side. The exhaust system was in good condition; however, the number 1 cylinder exhaust collector exhibited ductile bending.

The propeller hub remained attached to the crankshaft; however, the propeller blades separated at the hub due to impact damage. The spark plugs were removed from each cylinder and the crankshaft was rotated by hand at the propeller hub. The crankshaft was free and easy to rotate in both directions and the fly wheel exhibited rotational scoring. “Thumb compression” was observed on all four cylinders. The complete valve train was observed to operate and appeared to be free of any pre-mishap mechanical malfunction. Normal “lift action” was observed at each rocker assembly. Mechanical continuity was observed throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft. The combustion signatures observed at the spark plugs displayed coloration consistent with normal operation.

There was no evidence of pre-impact mechanical malfunctions observed during the engine examination.