



Wreckage Examination Summary

NTSB ACCIDENT NUMBER: ANC22FA005

AIRCRAFT REGISTRATION/AIRCRAFT TYPE: N540AK, Gerald Jones 2+2

ACCIDENT LOCATION: Kodiak, AK

HISTORY OF FLIGHT

On November 07, 2021, about 1405 Alaska standard time, a Gerald Jones 2+2 homebuilt airplane, N540AK sustained substantial damage when it was involved in an accident near Kodiak, Alaska. The pilot and sole occupant was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot had departed from Kodiak Municipal Airport (KDK), Kodiak, Alaska destined for a remote off-airport landing site near Saltery Cove. A friend of the pilot reported that the purpose of the flight was to transport hunting gear to the remote location to establish a hunting camp.

Numerous witnesses reported that shortly after departure from KDK, the airplane made a steep right turn, the nose dropped, and the airplane entered a spiraling descent in a near vertical attitude. None of the witnesses reported any unusual sounds emanating from the engine.

The airplane impacted a hard gravel road at an elevation of about 92 ft. A video surveillance camera captured the impact sequence and showed the airplane impacted in a right wing low near vertical attitude. The airplane came to rest about 25 feet from the initial impact site in a heavily forested area and sustained substantial damage to the fuselage, wings, and empennage.



PERSONNEL INFORMATION

The pilot age 39 held a private pilot certificate with a single engine land rating. According to his logbook entry dated Aug 28, 2020, his total time was 157.4. A family member stated he had about 50 hours in the accident airplane.

AIRCRAFT INFORMATION

- Gerald Jones 2+2 Homebuilt
- S/N 001

METEOROLOGICAL INFORMATION

TAF PADQ 071729Z 0718/0818 33009KT P6SM BKN060 TEMPO 0718/0722 3201 IKT 4SM -SHSN SCT015 OVC025 FM080000 32012KT P6SM FEW025 BKN050 FM080600 32006KT 5SM -SHSN BR BKN025=

COMMUNICATIONS

AIRPORT INFORMATION:

Kodiak Municipal Airport (KDK), Kodiak, Alaska, is a public-owned, non-tower-controlled airport 2-miles northeast of Kodiak, AK, 5-miles northeast of the Kodiak (ADQ) Airport, at an estimated elevation of 139 feet msl. At the time of the accident, the airport was served by one asphalt surfaced runway and a float pond at the west end both oriented in a 02/20 configuration. The pavement width varied from 20 ft on the approach end of runway 20 to 30 feet on the approach end of runway 02. The total length for the surfaced runway was 2,475 ft long and 40 feet wide.

ADDITIONAL INFORMATION:

The following cargo was removed from the airplane was weighed:

- 2 Cots – 31 lbs
- 2 Rifles – 19 lbs
- Bag 2 lbs
- Tent 21 lbs
- Backpack 32 lbs
- 2 Sleeping bags 37 lbs
- Bag 24 lbs
- Survival bag 17 lbs
- Food 30 lbs
- Propane bottles 20 lbs
- Heater 12 lbs
- Bag 30 lbs
- Boot heater 2 lbs
- Yamaha generator 44 lbs (weight from manufacture website)
- Fuel can 14 lbs
- Battery electric fence – 35 lbs (estimated)
- Miscellaneous traps, ropes a/c tie downs 20 lbs

WRECKAGE AND IMPACT INFORMATION

Wreckage Location

The on-scene examination and surveillance video that captured the accident revealed that the airplane impacted right wing low in a near vertical attitude on a gravel road on the east side of Benny Benson Drive across from East Elementary School, Kodiak, Alaska.

N57.80558328931202, - W152.3657593067559.

Cockpit/Fuselage

- Fuselage exhibited extensive impact damage.
- Both main landing gear separated from the airplane after impact with ground.



Empennage

- The empennage was bent about 90 degrees to the right.
- The right horizontal stabilator remained attached to its respective attach points.
- The right elevator remained attached to its respective attach points but sustained impact damage.
- The vertical stabilizer aft of empennage sustained impact damage.
- The rudder horn fractured from the rudder post; however, the left and right rudder cables remained attached to their respective attach points
- The tail wheel remained attached to its respective attach points and sustained impact damage
- The left horizontal stabilator remained attached to its respective attach points and was relatively undamaged.
- The rudder separated from its lower attach point but remained attached at its upper attach point.
- The left elevator remained attached to its respective attach points and was relatively undamaged.

Right Wing

- The right wing exhibited extensive leading edge impact damage about 10 feet from root outboard to the tip.
- The right aileron remained attached to its respective attach points and sustained impact damage.
- The right flap separated from all its attach hinge points but remained attached by its push-pull tube.
- The right flap exhibited impact damage.
- The right wing tip separated at impact and was found in front of the direction of travel .
- The right wing remained attached at its rear attach point but separated near the spar by the forward attach point.



Left Wing

- The left wing separated from both its front and rear attach points.
- The leading edge of the left wing exhibited minor impact damage
- The left flap separated from all its hinge attach points, the trailing edge near the root had a large elliptical impact area consistent with impact damage from a large tree.
- About 20 gallons of fuel was drained from the left wing's fuel tank.



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 aileron. Control continuity was also established in the balance cable.
- Rudders- Control continuity was established from the rudder pedals to the rudder horn.
- Flaps – The flap handle was found in the down and locked position. Control continuity was established in the flap control cables from the right flap to the flap handle, and from the left flap to the point where the cable fractured with a features consistent with tension overload to the flap handle.
- Elevator – Control continuity was established in the control cables from the elevators to the elevator bell crank. A push/pull tube from the bell crank to the control column fractured near the control column consistent with impact damage.

Engine/Propeller

- No data tag was located on the engine; however, the engine was identified as a six-cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (carburetor), internal combustion engine.

- The airplane was equipped with a Catto three bladed wood propeller. The propeller has a laminated wood core covered in carbon-fiber glass. The propeller was destroyed and splitter into to very small pieces due to impact damage.
- Thumb compression was verified on all six cylinders in correct firing order. The number six cylinder had weak compression that was attributed to a significantly bent exhaust push rod.
- The gascolator was drained and a small amount of clean blue fluid was present consistent with 100 LL Avgas with no evidence of water observed.
- Valve train continuity was established.

Magnetos

- Left – Impulse Coupling – Yes
- Right – impulse Coupling – No

Magneto Notes:

The left and right magnetos remained securely clamped at their respective mounting pads. The ignition harness was secure at each magneto, but the harness was damaged at multiple locations, consistent with impact damage. Both magnetos were removed and rotated by hand, or an electric drill and spark was observed in rotational order at the cut ignition leads.

Spark Plugs – Tempest REM40E

- 1 Top – Undamaged Electrode Normal
- 1 Bottom – Damaged Spark Plug but Undamaged Electrode
- 2 Top - Undamaged Electrode Normal
- 2 Bottom - Undamaged Electrode Normal/Oil Soaked
- 3 Top - Undamaged Electrode Normal
- 3 Bottom - Undamaged Electrode Normal
- 4 Top - Undamaged Electrode Normal
- 4 Bottom - Undamaged Electrode Normal/Oil Soaked
- 5 Top – Undamaged Electrode Normal
- 5 Bottom – Undamaged Electrode Normal
- 6 Top – Undamaged Electrode Normal/Oil Soaked
- 6 Bottom – Undamaged Electrode Normal/Oil Soaked

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 plugs was attributed to the engine positioning during recovery.

Engine Summary

The subject engine was examined on November 9, 2021, in Kodiak, AK, under the auspices of the National Transportation Safety Board, Investigator-in-Charge (NTSB-IIC).

The powerplant is a six-cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (carburetor), internal combustion engine. The engine was removed from the airframe during recovery. The engine had sustained extensive impact damage to the underside and right side. The exhaust system had been displaced aft. Visual examination of the engine revealed no evidence of pre-impact mechanical malfunctions or fire.

The propeller hub remained attached to the crankshaft; however, the propeller blades were shattered and splintered due to impact damage. The spark plugs were removed from each cylinder and the crankshaft was rotated by hand at the crankshaft flange. The crankshaft was free and easy to rotate in both directions and exhibited rotational scoring. "Thumb compression" was observed on all six 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 except for the number six cylinder that had weak compression that was attributed to a significantly bent exhaust push rod. 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 significant ductile bending of the exhaust system components.

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



