



EXAMINATION SUMMARY

NTSB ACCIDENT NUMBER: CEN22FA069

AIRCRAFT REGISTRATION/AIRCRAFT TYPE: N744Z, Piper PA46-500TP

ACCIDENT LOCATION: Steam Boat Springs, CO

DRAFT FACTUAL NOTES / NARRATIVE

On December 10, 2021, about 1809 mountain standard time, a Piper PA46-500TP, N744Z, was substantially damaged when it was involved in an accident near Steamboat Springs, Colorado. The pilot and sole occupant was fatally injured. The airplane was operated under Title 14 *Code of Federal Regulations* (CFR) Part 91 as a personal flight.

WRECKAGE INFORMATION

Right Wing

- U-shaped impact about 2.2ft from the wing root, about 18" in diameter
- Leading edge aft crushing/tearing about 7.6ft from the wing root, consistent with tree impact
- Right wing tip not located

Left Wing

- Separated at the wing root and fractured into multiple pieces
- Leading edge damage consistent with tree and terrain impact
- Fuel filler neck and cap separated and not located.

Ailerons and Flaps

- Both ailerons separated and not recovered
- Right flap remained attached to the wing and the mid-span and outboard flap rails
- Right flap trailing edge damage beginning about 1.5ft outboard of the inboard edge and 3.5ft inboard of the outboard edge
- Left flap separated, but full length recovered
- Extensive damage to left flap
- Flap actuator found in an intermediate position, consistent with being in transit at time of accident from 10° to fully retracted

Rudder and Horizontal Stabilizer

- Rudder separated from vertical stabilizer and located on-scene but not recovered. Leading edge damage to vertical stabilizer, consistent with tree impact
- Horizontal stabilizer and elevators separated from aircraft during recovery effort
- Both tips of elevator and weight separated at the outboard attach points and not recovered

Fuselage

- Extensive impact damage.
- Top separated during impact with bottom separated during recovery

Engine

- The RGB rear housing with remnants of the fractured front housing was still attached to the engine. The RGB could not be rotated. Impact damage to the bottom of the RGB front housing had fractured away the scavenge tubes housing and magnetic chip detector (MCD) opening the RGB in this region to the environment.

- The right exhaust duct showed mechanical damage and was partially torn, while the left exhaust duct was flattened
- The gas generator case with the air frame components showed occasional mechanical induced deformation on the case
- The CAM box was fractured. The fuel control unit (FCU) connecting rod was in mechanically deformed. The reversing cable was still attached to the CAM box and was fractured from the interconnect rod. The propeller governor (CSU) stop for the reset arm was fractured. The beta lever was mechanically impacted resulting in the carbon block being displaced from the propeller sleeve. The beta valve could be physically depressed.
- The P3 and Py lines remained attached and secured.
- The downstream view of the compressor turbine blades in-situ appeared in good condition, with only circumferential rubbing on all the blades outer firtree region from contact with the upstream inner shroud wall of the power turbine (PT) stator. The CT disc bore lip and the balancing rim lugs showed some circumferential rubbing from contact with the PT stator baffle. The CT disc was removed showing no significant rubbing of the CT blades' tips. The upstream showed no foreign object damages (FOD) and some circumferential rubbing was observed in the firtree region from contact with the CT inner shroud wall. The CT shroud segments showed no significant rubbing contact. The CT stator trailing edge was intact, with circumferential rubbing observed on the inner shroud wall from contact with the upstream side of the firtree region of the CT blades. The upstream view of the CT stator showed no distress or any evidence of FOD impact.
- The power turbine could not be rotated by hand. The upstream side of the first stage power turbine (PT1) stator showed no distress. Circumferential rubbing contact with the CT disc bore lip and balancing rim lugs was observed in the baffle center. Also observed was circumferential rubbing of the PT1 stator inner shroud wall. The downstream side of the PT stator showed no distress, however circumferential rubbing of the PT1 stator inner shroud wall was observed from contact with PT1 blades firtrees (red arrow, Photo No. 30). The PT1 blades shroud housing showed some circumferential rubbing with the PT1 blades shroud tips. The inter-turbine temperature (ITT) probes were in good condition. The PT1 disc in-situ showed no distress of the PT1 blades. The PT1 blades firtrees showed circumferential rubbing from contact with the PT1 stator inner shroud wall. The PT1 blades shroud tips showed circumferential rubbing from contact with the PT1 blades shroud housing. The PT stator housing, thermal temperature busbar and connectors were in good condition. The second stage power turbine (PT2) blades and PT2 stator, which could only be viewed through the exhaust duct ports showed no distress

Prop

- The propeller as-presented for examination had separated from the engine at the AGB and had been recovered to Beegles Aircraft Service. All four blades were still secure to the hub unit. The propeller remained bolted to the propeller shaft flange with all six bolts present and lockwired. The spinner dome was crushed and torn with only fragments still attached to the spinner bulkhead. The blades were numbered #1 through #4 counter-clockwise (in sequence of rotation) as viewed from the aft side.
- Blade #3 was fractured at the tip and the fractured fragment was not recovered. Blades #2, #3 and #4 could be rotated in the hub by hand force indicating a fractured pitch

change knob/bracket. Blades #1 and #2 were bent forward, blades #3 and #4 were bent aft. The #1 counterweight fractured from the blade and was not recovered. There was chordwise/rotational scoring on the camber sides of blades #1, #2 and #3.

- The propeller hydraulic unit (cylinder, piston, feathering spring, pitch change rod) fractured from the propeller assembly and was not presented for examination, presumably not recovered from the crash scene. The pitch change rod fractured at the forward side of the fork. The propeller was disassembled to remove and examine the internal pitch change mechanisms and blade retention components.
- The hub unit was intact with no visible fractures or cracks and all thru-bolts secure. The cylinder mounting thread boss was fractured from the forward hub half. Damage in all four blade retention internal pockets indicated impact forces were in the aft-trailing edge (helical) direction. The bearing races of all four blades exhibited ball bearing impact imprints. The hub side bearing races for blades #1 and #4 were fractured with ball imprints.
- The slot of preload plate #1 had pitch change knob bracket impact marks indicating knob angles of 22° and 31° made sometime during the impact sequence (Photo #3). The pitch change fork had knob impact marks in the slots with clear marks at 1.17" and 1.4" from the fork centerline. Both preload plate impact marks and fork slot marks suggested blade angles in the low range of normal operation and decreased during the impact sequence.

Instrument Panel

- Fuel MOR not in the activated position
- Alternator and Generator switches in the out/off position
- Battery switch in the on/in position
- Avionics switch out/off

Landing Gear

- Extended during post-accident examination.
- Impact damage consistent with being in transit at time of impact
- Fractured linkage on the right main gear aligns with U-shaped impact during retraction
- Right main landing gear door separated and not recovered.
- Damage on left main landing gear door lines up with leading edge damage during retraction.
- Nose gear damage appears consistent with being in transit.