



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation
Safety Alaska Region

November 6, 2018

AIRFRAME AND ENGINE EXAMINATION SUMMARY

ANC18FA036

A. ACCIDENT

Location:	Whittier, Alaska
Date:	May 12, 2018
Aircraft:	Piper PA-28-180 N7061W
Investigator-in-Charge (IIC):	Noreen Price
Parties to the Investigation:	William Lowen, FAA Aviation Safety Inspector IIC Matthew Carey, FAA Aviation Safety Inspector Troy Helgeson, Lycoming Engines, Senior Air Safety Investigator Jonathon Hirsch, Piper Aircraft Inc., Air Safety Investigator

B. DETAILS OF THE INVESTIGATION

1.0 Background

On May 12, 2018, about 0940 Alaska daylight time, a Piper Cherokee PA-28-180 airplane, N7061W, sustained substantial damage after impacting remote, mountainous, snow-covered terrain about 1 mile south-southeast of Whittier, Alaska. The student pilot, the only occupant, sustained fatal injuries. The airplane was registered to and operated by the pilot as a 14 *Code of Federal Regulations* Part 91 visual flight rules solo cross-country flight. Visual meteorological conditions existed at the departure airport and no flight plan was filed. The flight originated at the Merrill Field Airport (MRI,) Anchorage, Alaska, about 0859, and was destined for the Valdez Pioneer Field Airport (VDZ,) Valdez, Alaska.

The purpose of the flight, according to family members, was for the pilot to reposition his airplane from MRI to VDZ for the summer. He wanted to depart earlier in the week however the weather was bad. According to the Federal Aviation Administration (FAA) Air Traffic Control records, the airplane departed MRI at 0859 and preceded to the Turnagain Arm waterway where the pilot reported Bird Creek point at 0916. There was no known further communication with the pilot. The area between Anchorage and Valdez consists of remote inland fjords, coastal waterways, and steep mountainous terrain.

The archived images from the FAA aviation weather cameras on the morning of May 12 at Whittier and Portage Glacier indicate low cloud ceilings with obscured mountain tops in the area near the accident site.

On May 13, 2018, The Alaska State Troopers and Alaska Mountain Rescue Group recovered the pilot. The NTSB and FAA IICs were present at the recovery site in Whittier. In September 2018, the airplane was recovered from the mountain and slung to Big Lake Airport, Big Lake, Alaska, where it was disassembled and transported to the Alaska Claims Recovery Facility in Wasilla, Alaska. A Garmin GPS Aera 500 and a personal iPhone was recovered and sent to the NTSB Recorder Lab.

The pilot had a student pilot certificate 4004070 dated May 13, 2017. His most recent and only aeromedical examination was 11/17/2015, 1st class medical with no restrictions. The pilot logbook has not been located. Total hours unknown.

The family reported that the pilot had stomach bypass surgery within the last year. The toxicology report had substances listed that were most likely for treatment of that surgery. An NTSB aeromedical review and FAA aeromedical review was conducted with no causal factors attributed to the medications or the overweight condition of the pilot.

2.0 Accident Site

GPS Coordinates: 60.76380, -148.71597
Elevation: 1,939 ft msl

The NTSB participated in a flyover of the accident site. However, due to hazardous terrain and snow conditions, an on-site examination was not conducted. The Alaska Mountain Rescue Group, on behalf of the Alaska State Troopers, retrieved the pilot and took photographs of the wreckage. A review of photographs taken of the wreckage revealed that the accident site was on the side of a mountain on the south side of portage pass on an incline of about 40 °in deep snow. The airplane came to rest in a slightly nose up, level attitude heading 110° with the nose displaced upward and right and the wings each rotated about 30° to the right around the vertical axis with significant leading-edge crush damage. All airplane major components were attached and present in the confined area. (figure 1)

The wreckage was located about 1 mile south of Whittier Airport. The wreckage was slung by helicopter off the mountain after the snow melt in September. The recovery crew noted that the wreckage had slid

part way down the mountain since the accident.



Figure 1. N7061W at the accident site.

C. AIRFRAME EXAMINATION

N7061W

Airframe SN: 28-813, 1962

TTAF: 3275.4 at last annual inspection, 4/25/18

On November 6, 2018, the airframe was examined at Alaska Claims in Wasilla, Alaska, by the NTSB IIC, Piper Aircraft Inc air safety investigator, and the FAA IIC and another FAA aviation safety inspector. See figure 2.



Figure 2. N7061W wreckage during detailed airframe exam.

The engine and wings were manually separated from the fuselage during the recovery process after the airplane was slung off the mountain in September 2018. The engine fuel, oil, controls and electric lines were disconnected from the airframe and the cut ends were taped forward of the engine firewall. The engine truss mount and nose landing gear structure were removed from the airframe.

The overall fuselage exhibited extensive damage to the forward section and circumferential buckling at FS 138 aft of the baggage compartment. The top of the cabin was ripped up and aft from the front windshield support post and pillar fractures back to the top of the door frame. The front windshield was fragmented into multiple pieces, some of which were in the cockpit and cabin. The left front sidewall was buckled inward into the left pilot station and separated from the floor board. The cockpit floor was bucked upward with

significant inward and upward floor buckling at the pilot station. The instrument panel was buckled forward with most of the instruments intact. The engine firewall was deformed and buckled throughout and displaced upward and right. The forward cabin door was separated from the fuselage and had fractured sections around the window frame.

The right and left flight station control columns were impact damaged and deformed downward and right. The right control column was fractured at the instrument panel. Flight control cable continuity was confirmed from cockpit controls to the stabilator and rudder. The aileron cables were continuous from the control column chain to recovery separations aft of the main wing spar except for an overload separation of the chain along the tee-bar. The manual flap handle was in the stowed position (flap up.) The flap cables were continuous from the handle to the torque tube.

The throttle lever was in the full forward position and the mixture lever was fractured and separated. The fuel tank selector was observed near the Right Tank placard position. Examination of the handle and valve revealed that the valve was in between the Right Tank and Left Tank position. The valve was removed, and air was applied to the Right Tank inlet port and it passed out of the valve to the engine supply port. The fuel strainer bowl and screen were intact and free of debris. No fuel was observed in any of the fuel lines. The instruments/switches/CBs were as noted:

Airspeed	0
VSI	-280
Turn and Slip	30° right AOB, full right ball
DG	120°
Altimeter	1,800 ft, 30.13 Kollsman setting
Suction	0
Fuel L, R, P	below 0
Primer	in, unlocked
Master	Off
Magnetos	Off (key was not present. Note- on-scene photographs and AMRG statements indicate the magnetos/key was in the Both position and the electric master switch was On.)
Fuel Pump	Off
Avionics	Off
Carb Heat	In
CBs	CM2, GPS, ADF, Dome, Starter, TACH, OPT, CHT all out (others in)

The empennage remained attached and intact. Minor buckling was evident below the vertical stabilizer fairing and significant buckling deformation inboard of stabilator on the right side. The rudder was attached and intact with trailing edge impact damage. The stabilator was attached and rotated to the left around the vertical axis about 40 ° with the trim tab stuck full up with impact damage throughout. (on scene photographic evidence indicated that the stabilator and trim tab had no deformation.)

The left wing main spar indicated a saw cut at the airframe, (wing separated for transport,) along with cut fuel line and fractured flap control rod. The leading edge exhibited significant fore to aft accordion crush damage across the entire wing span. Crush damage extended from the leading edge skin to the main spar and indicated some upward deformation. The aileron control cables were disconnected (by transport crew) at the turnbuckle. The aileron remained attached to the wing and the pushrod remained attached to the bellcrank. The aileron control cables were continuous from the fuselage to the bellcrank, which was secured to the wing with stops in place. The flap was attached and intact in the up position. The inboard flap control rod was attached to the flap torque tube in the fuselage. The fuel tank was crushed and breached and indicated no debris or fuel. The fuel sender was attached and moved freely. The fuel tank cap was secure without anomalies. The left main landing gear assembly and strut were separated from the wing. The pitot tube had impact damage. The stall warning "loss of lift" detector was separated from the leading edge and attached by wire. The vane would not move due to impact damage.

The right wing main spar was fractured through at the fuselage. Fractures were dull and grainy in appearance. The right flap control rod and fuel lines were clean cut (by transport crew,) as well as wing upper skin portions. The leading edge exhibited significant fore to aft accordion crush damage across the entire wing span. Crush damage extended from the leading edge skin to the main spar and indicated some upward deformation. The aileron control cables were disconnected (by transport crew) at the turnbuckle. The aileron remained attached to the wing and exhibited downward semicircular deformation and trailing edge fractures at the outboard half. The aileron pushrod remained attached to the bellcrank. The aileron control cables were continuous from the fuselage to the bellcrank, which was secured to the wing with stops in place. The flap was attached and intact in the up position. The fuel tank was crushed and breached and indicated no debris or fuel. The fuel sender was attached and moved freely. The right wing fuel cap was not attached, and it was not recovered. The right main landing gear assembly and wheel were attached and bent aft.

The restraint system was a traditional AmSafe three point design with inertial reel shoulder harnesses. The front left pilot seat outboard lap belt was pulled out of the left fuselage mounting structure by the rivets on the lap belt connector. See figure 3. The rivets were “pull type” fasteners that did not comply with the solid rivets (MS20470) required by the manufacturer. The right side of the pilot lap belt was attached and intact. The shoulder harness was still attached to the upper fuselage structure and the inertial reel worked properly. The shoulder harness connecting hardware on the lap belt and the shoulder harness exhibited no deformation or surface marks to indicate stress during impact. (On-scene photographic evidence shows the lap belt was buckled, however the left mount separated from the airframe structure and no shoulder harness was connected to the lap belt.)

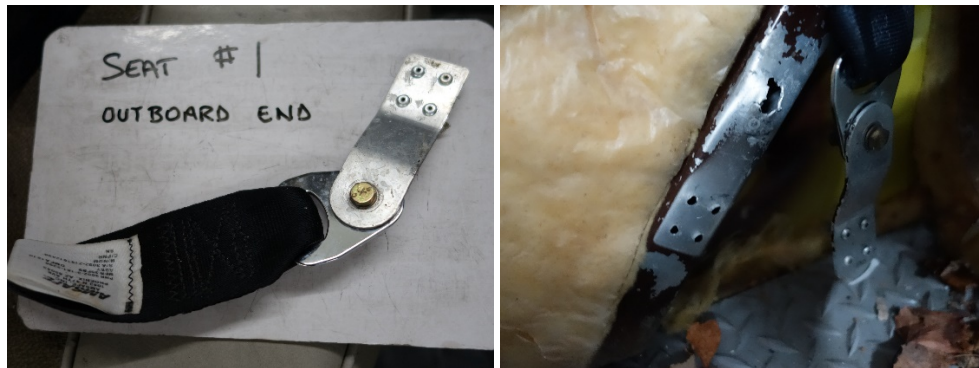


Figure 3. Pilot's outboard lap belt mount and attachment structure.

Cabin Contents were as follows:

- 18 beer cans and case box (likely 24- 12 oz cans, written on box)
- Vodka box and one vodka bottle top (likely more based on pictures and alcohol at scene)
- Electric fireplace - weight 15 lbs
- Sleeping Bag - 5 lb
- White bag misc. - 4 lb
- Backpack - 11 lb
- iPad - 3 lb
- Misc. Bag - 6 lbs
- 1 Alaska Chart Supplement, expired 15 Sep 2016
- 1 US Terminal Procedures Alaska Vol1, expired 24 July 2014
- ASA carbon detector - white
- For Sale ribbon sign
- Ames shovel (left by AMRG)
- Jet Boil - 1 lb

2 Water bottles
2-1 qt empty x/c aviation 20W-50 oil cans
PA-28 POH

D. ENGINE EXAMINATION

Lycoming O-360-A3A
SN: L4920-36
180 HP@ 2,700 rpm
SMOH: 238.2 as of last annual inspection 4/25/18



Figure 4. Engine and propeller.

The engine was examined on 10/24/2018 at the facilities Alaska Claims Services Inc (Wasilla, Alaska). The engine was hung from a hoist for the examination.

The propeller remained attached to the engine. The propeller indicated mild aft bending and minimal torsional twist, indicative of impact with engine power into deep snow-covered terrain.

The valve covers, accessories and top sparkplugs were removed for the examination. The top sparkplugs #1, #3 and bottom #2 and #4 were found corroded. Top plugs #2 and #4 appeared normal as compared to the Champion Aviation Check a Plug Chart AV-27. Bottom plugs #1 and #3 were found oil wetted. The cylinders were borescope inspected and no anomalies were noted. The crankshaft was rotated by hand and thumb compression was obtained at all cylinders. Engine drive train continuity was established throughout. The oil pickup screen was found free of debris. Both magnetos were rotated by hand and spark was observed from all leads. No visual damage was noted. The carburetor was found broken free at its flange, with the control cables still attached. The control cables had been cut between the engine and firewall by the recovery personnel. Continuity was confirmed to the cut points. The carburetor was disassembled, and no anomalies noted. The engine driven fuel pump produced pressure when operated by hand.

No evidence of pre-impact mechanical anomalies or malfunction was observed with the engine.

E. SUMMARY

There were no pre-impact anomalies discovered during the airframe and engine exam that would have resulted in impact with terrain. Full flight control continuity was confirmed, with all controls attached and operable. The wing leading edge fore to aft crush signatures are indicative of impact in high speed forward flight. The engine exhibited crank shaft and valve continuity with positive thumb compressions and accessory functionality. The propeller indicated mild aft bending and minimal torsional twist, indicative of impact with engine power into deep snow covered terrain.