



NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety

WRECKAGE EXAMINATION
Anglin Air Recovery, Clayton Delaware
September 29, 2021

A. ACCIDENT ERA21LA267

Location: Easton, MD
Date: June 24, 2021
Time: 1145 Eastern Daylight Time (EDT)
Operator: Trident Aircraft Inc.
Aircraft: Piper PA-28-161
Registration: N2143G

B. PARTICIPANTS:

IIC: Peter Wentz
National Transportation Safety Board
Ashburn, Virginia

Participant: Steven O'Rourke
Federal Aviation Administration
Baltimore, Maryland

Participant: Jon Hirsh
Piper Aircraft Inc.
Vero Beach, Florida

Participant: Ryan Enders
Lycoming
Williamsport, Pennsylvania

C. ACCIDENT SUMMARY

On June 24, 2021, about 1115 eastern daylight time, a Piper PA-28-161, N2143G, was destroyed when it was involved in an accident near Easton Maryland. The pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

A Federal Aviation Administration (FAA) inspector examined the airplane after the accident and reported that the airplane had been consumed by a post-impact fire.

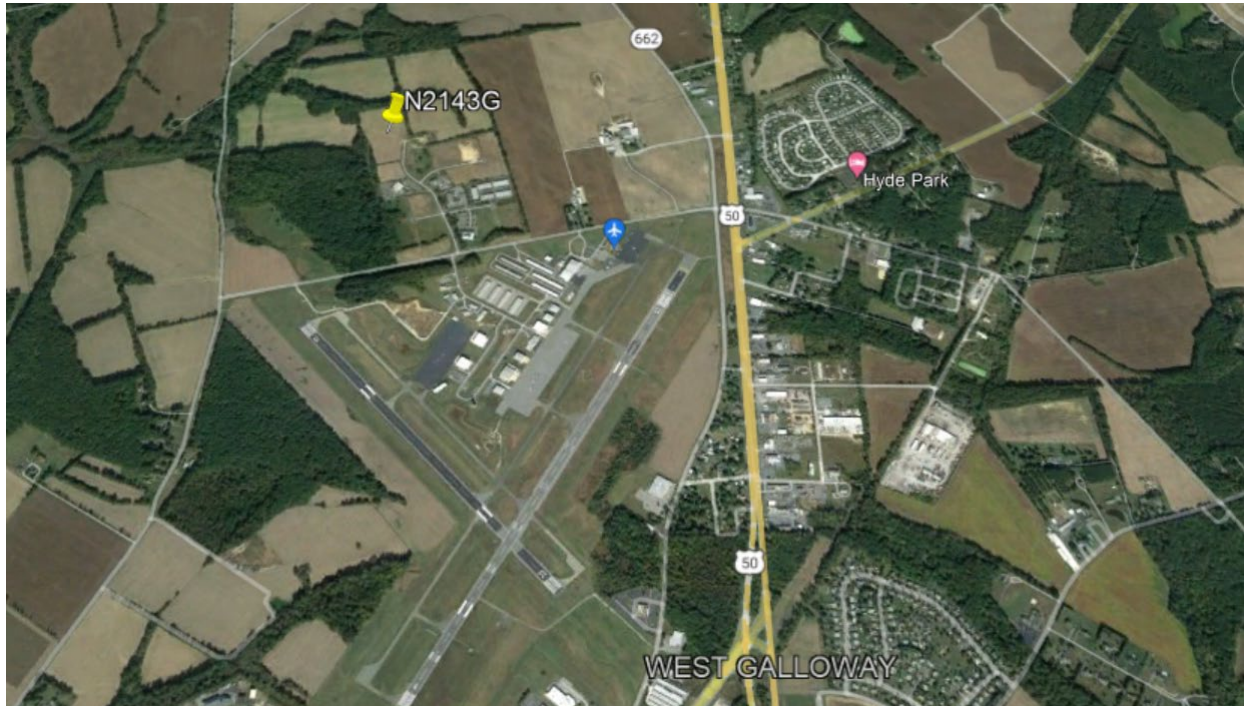


Figure: Accident Location Plotted on Goggle Earth Image

D. DETAILS OF THE EXAMINATION

1.0 Examination Location

The airframe and engine were recovered and stored at Anglin Aircraft Recovery in Clayton Delaware. On September 29, 2021, the group met at Anglin's and both the airframe and engine were found covered with a tarp in the examination area.



Photograph #1 - Airframe covered.



Photograph #2 - Airframe uncovered.



Photograph #3 - Airframe wreckage.



Photograph #4 – Engine.

2.0 Airframe Examination

The fuselage above the lower fuselage skin and structure below the floorboards was consumed by fire. Seat #1 & #2 remained located in their respective locations in the fuselage, however all of the cushion and upholstery material was consumed. The rear bench seat frame was separated from the fuselage and all the cushion and upholstery material was consumed. The main cabin door handles and latch mechanism were observed in the debris; however the door was consumed. The instrument panel was consumed. Most of the instruments, avionics, gauges, and switches were fire damaged and unreadable.

The firewall was separated from the fuselage and the rudder pedal assembly remained attached to the firewall. The rudder cable ends remained attached to the rudder pedal torque tube assembly and exhibited cuts consistent with recovery operations a few inches from the attach points. The tee-bar assembly was separated from its mount and only remained connected to the lower fuselage by the aileron and stabilator cables. The flap control handle appeared to be in the stowed (flaps retracted) position and the cable remained attached to the flap handle and the chain segment on the sprocket attached to the flap torque tube. The upper chain segment on the flap torque tube sprocket was separated. Flight control cable continuity for the aileron, stabilator, and rudder cables were continuous from the cockpit to the respective control surfaces except for separations consistent with recovery cuts near the wing roots and the tailcone.

The fuel selector valve was fire damaged and separated from the fuselage. The fuel selector cover and handle were consumed by fire and not observed. The fuel selector valve shaft retained the screw and knurled inset from the handle. The "D" shaped shaft of the selector valve was oriented to a position part way between the 12 O'clock position (consistent with the Left tank selection) and the 3 O'clock position (consistent with the Right tank selection). The fuel selector valve internal components were consumed by fire allowing the handle shaft to rotate freely through 360 degrees with no detents observed.

The left wing was separated from the fuselage. The wing exhibited fire damage throughout. The portion of the wing inboard of the fuel tank was mostly consumed by fire. The fuel tank remained attached to the wing and the fuel filler cap remained installed in the fuel filler opening. The upper fuel tank skin was compromised due to the fire damage. The fuel tank finger screen was intact and appeared free from blockage. The aileron and balance cable remained attached to the bellcrank and were continuous to the wing root where they exhibited cuts consistent with recovery processes. The aileron remained attached to the wing and exhibited some impact and thermal damage to the outboard end. The flap remained partially attached to the wing and exhibited impact and thermal damage. The pitot mast remained installed at its mount. The lift detector remained installed in the leading edge and exhibited fire damage.

The right wing was separated from the fuselage. The wing exhibited fire damage to the portion inboard of the aileron. The aileron exhibited impact damage and remained attached to the wing. The flap was separated from the wing. A portion of the flap remained attached to the flap torque tube pushrod and was thermally damaged. The remainder of the flap was not observed. The fuel filler cap remained installed in the fuel filler neck opening. The fuel tank finger screen was intact and appeared free from blockage.

The vertical stabilizer remained attached to the tailcone and the rudder remained attached to the vertical stabilizer. The rudder exhibited thermal damage on its left side. The rudder cables remained attached to the rudder horn and were continuous to the recovery cuts in the tailcone. The rudder stops were unremarkable. The stabilator remained attached to the tailcone, however the stabilator and trim tab were cut chordwise about 16" either side of centerline by recovery personnel. The stabilator cables remained attached to the balance tube and were continuous to the recovery cuts in the tailcone. The stabilator trim tab remained attached by its hinge. The stabilator trim jackscrew was not extended above the drum (no threads exposed) which corresponds to a full aircraft nose down trim setting.

3.0 Engine and Propeller Examination

As first viewed, the engine was detached from the airframe by the recovery team and was sitting in a bag on a wooden pallet. The engine was laying upside down on the pallet. The engine was hoisted and positioned upright for the examination. Thermal damage was evident on the exhaust and intake pipes, the accessories, and the accessory housing, and on the engine rocker box covers. The propeller remained attached to the crankshaft flange, but the crankshaft flange was bent from the impact forces.

The engine accessories were removed first to prevent further damage to those components.

The cylinders had "Millennium" rocker box covers. Impact damage was noted on the forward fins of the number 1 cylinder. The airframe baffling was installed and damaged during the impact sequence around the 1 cylinder. The rocker box covers were removed, and no discrepancies were noted. The crankshaft could rotate approximately 270 degrees. The starter and the propeller were removed to allow for full crankshaft rotation with no success. The accessory housing was removed from the engine and photographed. The oil pump spun freely and there was no visible damage to the accessory housing gears. With the accessory housing removed, the engine was capable of

rotating and thumb compressions, valve train movement, and continuity of the camshaft was confirmed.

The cylinders were borescope inspected and minor scoring was noted, likely from surface corrosion dislodge during engine rotation attempts.

The exhaust of the engine displayed minor crush damage and thermal discoloration from the impact sequence and post impact fire. The exhaust stack was broken at the flange at the number 4 cylinder.

All four intake tubes remained installed to the cylinder heads and the airbox, but all four pipes showed thermal discoloration.

The oil dipstick was partially consumed by the post impact fire.

The carburetor was impact separated from the bottom of the engine and was found dangling by the fuel inlet line and remaining control cable attachments. The unit was fractured from the impact forces, which allowed the throttle plate to dislodge from the unit and hang next to the carburetor. The unit was removed and opened for further examination. The fuel inlet screen remained installed with no visible contamination noted. The floats of the carburetor had disintegrated from the post impact fire. The data plate was partially destroyed during the accident sequence.

The fuel pump remained installed on the back of the engine with thermal damage evident. The safety wire was present. The unit was removed for further examination. The fuel pump body was partially melted from the post impact fire. The diaphragms were destroyed by the post impact fire. The lever arm was no longer stiff but did actuate by hand.

Both magnetos remained installed on the back of the accessory housing, however, both units were destroyed by thermal forces. The left-hand magneto impulse coupling did snap.

The spark plugs remained installed in their respective cylinder heads and were removed for further examination. The bottom #2 spark plug was oil soaked. The bottom #4 spark plug had minor carbon debris in it. The static soaking of the spark plugs is consistent with the engine being stored upside down. The spark plugs displayed coloration consistent with normal operation when compared to the Champion Aerospace Aviation Check-A-Plug AV-27 Chart.

The starter remained installed on the engine but displayed signs of impact damage. The data plate for the unit was missing. The starter was removed from the engine by this ASI to facilitate engine crankshaft rotation.

The oil suction screen remained safety wired into the engine oil sump. The unit was removed for further examination and found to be clean. The oil filter showed thermal damage signatures. It remained safety wired to the accessory housing and was removed for further examination. The unit was cut open and the element had been burned from the post impact fire. No contamination was noted.

The propeller remained attached to the crankshaft propeller flange. One propeller blade exhibited a slight aft bend on the outer 6-8 inches. The other propeller blade displayed a

gouge in the trailing edge about 12" from the tip.