

Airframe and Engine examination summary
N44HJ Piper PA23-250 Turbo Aztec

Empennage on scene

The stabilator remained attached to an approximate 5 ft section of separated fuselage. The stabilator was intact; however, exhibited cuts in the skin at the left outboard edge of the stabilator. The stabilator balance weight remained attached to the stabilator assembly. The stabilator travel stops remained in place and did not exhibit any evidence of repeated contact. The stabilator control cables remained attached to their respective balance weight mast attach points. The top stabilator control cable measured 30 inches and was fragmented at the turnbuckle. The lower stabilator control cable measured 159 inches and the end exhibited overload. The stabilator trim tab remained attached to the stabilator and did not exhibit any visible major damage.

The stabilator trim barrel assemblies remained attached to its fuselage attach points and the trim tab actuator remained attached to the trim tab as well as to the trim barrel assembly. The trim barrel jack screw had 7 threads protruding from the top of the assembly indicating a neutral to slight nose down trim setting. The right trim cable measured 14 inches and the end exhibited overload. The left trim cable measured 156 inches and the end exhibited overload. Stabilator trim continuity was established from the separated cables to the trim barrel assembly.

The rudder assembly was separated from the fuselage. The rudders lower attach point was fragmented; however, the lower attach point hardware and fragmented hinge remained attached to its fuselage attach point. The rudders right travel stop remained intact and did not exhibit evidence of repeated contact. The left travel stop was fragmented and was not found within the wreckage.

The rudder bellcrank was located approximately 290 feet and 029 degrees from the horizontal stabilator. The right rudder cable remained attached to its rudder attaching point and measured 175 inches with the end being that of overload. The left rudder cable attach point was fragmented. The remainder of the rudder and rudder balance weight was not located within the recovered wreckage.

The vertical stabilizer was separated from the fuselage and was not located within the recovered wreckage.

Fuselage on scene

The fuselage was separated in several places and located in different area of the accident site. The fuselage from fuselage station -31 to 79 was located approximately 192 feet and 095 degrees from the remainder of the fuselage and came to rest on a 146 degree heading. Several tree tops surrounding the separated section of fuselage were observed to have scraping and broken branches. The instrument panel in this section of fuselage was largely intact.

The battery master switch was "ON" The Left engine magneto switches were in the "ON" position; however, the right engine magneto switches were observed in the "OFF" position. The left fuel pump switch was in the "ON" position and the right fuel pump switch was in the "OFF" position. The landing light, windshield heat and pitot heat switches were in the "ON" position. The taxi light was in the "OFF" position. The avionics master switch was in the "OFF" position. The circuit breaker panel assembly was

fragmented. The pilot's attitude indicator was noted to be in a 30 degree left turn. The pilot and copilot control wheels were observed to be canted to the left. The left and right engine mixture controls were full forward "RICH" position. The left and right propeller control levers approximately at half travel. The left throttle lever was in the "idle" position while the right throttle lever was in the "FULL / OPEN" position. The nose gear was in the "UP" position.

The nose baggage door was separated and was located approximately .5 miles and 153 degrees from the nose section of the fuselage. The nose baggage doors hinges remained attached to the door and to the fuselage; however, were fragmented mid span and had aft deformation. The nose door was observed in the closed and locked position. The nose door was noted to have a field repair to the forward and aft latch assembly attach points.

Approximately 4 foot of the left side fuselage was located at the nose section and instrument panel area. The fuselage from FS 91 to approximate FS 261 was located approximately 190 feet on a heading of 030 and was 270 degrees from the nose section of fuselage. Red paint transfer marks and impact damage was noted to the right side of the fuselage approximately between fs 229-240. The number 3 seat was separated from the fuselage and the frame was impact damaged and canted to the left. The number 4 seat remained attached to the fuselage. The number 5 and 6 seat back was separated and located approximately .4 miles and 328 degrees from the remainder of the fuselage.

The fuel selector console was separated from its attach points and was located in this area of the wreckage and was noted to be impact damaged. The left fuel selector was in the inboard main tank selection. The right fuel selector was in the outboard main tank selection. The cross feed was in the "OFF" position. The right cowl flap was "OPEN" and the left was "CLOSED". The oxygen control was in the "ON" position.

Fuselage offsite

The windshield was fragmented from its window retainers. The pilot seat was separated from its attach points. The seat frame was deformed to the right. The seatbelt was latched and was attached to the seat frame; however, the lap belt was cut for recovery. No shoulder harness was installed. The copilot seat was separated from its attach points and the seat frame was noted to have minor deformation. The seatbelt remained attached to the seat frame; however, was noted to be unlatched. No shoulder harness was installed.

The number 3 seat was separated from the seat tracks. The seat frame was deformed to the right and was fragmented. The seatbelt remained attached to the seat frame; however, the seatbelt was cut for recovery and the latch assembly was not located within the wreckage. No shoulder harness was installed. The number 4 seat was separated from the seat tracks and was noted to be deformed to the right. The seatbelt remained attached to the seat frame and was noted to be unlatched. No shoulder harness was installed. The number 5 and 6 bench seat remained partially attached to the fuselage; however, the seat back was separated. The seatbelts remained attached to their respective attach points and were unlatched. No shoulder harnesses were installed. Field test of the recovered lap belt latches determined them to be functional.

Left aileron control cable was attached to the "T" bar chain and measured approximately 29 inches and the separated end was broom straw consistent with overload. The right aileron cable remained attached

to the "T" bar chain and measured approximately 142 and 132 inches from the chain, the separated ends were broom straw consistent with overload.

The stabilator cables remained attached to the "T" bar and measured 77 inches and 92 inches from the attach point. The separated ends were broom straw consistent with overload separation.

The cabin door hinges remained attached to the fuselage; however, the door was separated and was not located within the recovered wreckage.

The turn and bank indicator was impact damaged. Upon disassembly, the rotor was observed to have rotational scoring. Upon disassembly of the electric attitude indicator, no obvious scoring to the rotor was observed. Upon disassembly of the vacuum AH, no obvious scoring was observed on the rotor. Disassembly of the vacuum direction gyro revealed light scoring in the rotor housing. No obvious scoring was observed on the rotor.

Left Wing

The left wing was separated from the fuselage and located approximately 112 feet and 320 degrees from the fuselage in an upright position and a 026 heading. The wing tip tank was separated and was not located in the wreckage area. The engine and propeller remained attached to their respective mounts. A 5 foot propeller ground scar 8 inches deep was observed in front of the engine. One propeller blade was bent forward about 20 degrees approximately 13 inches from the tip. The other propeller blade was bent aft under the engine approximately 7 inches from the propeller hub.

The aileron and flap were separated from their wing attach points and were not located within the wreckage area. The aileron push pull tube was separated from the aileron and the bellcrank and was located .23 miles and 320 degrees from the wing. The push pull tube rod end bearing were fragmented.

Approximately 66 inches of the wings leading edge skin was separated and was not located within the wreckage. Buckling was noted to entire span of the top wing skin. Numerous skin separations were noted to the top of the wing with compression buckling inboard and outboard of the engine nacelle.

The engine cowling was noted to be impact damaged with upward deformation and skin separations. The main landing gear was partially separated and was deformed aft in the down position.

The wings main spar fractures were indicative of overload with upward deformation of the fractured area. Approximately 20 inches of the inboard top spar cap exhibited upward deformation with separation from the spar web. The pitot head remained attached and the ports were clear of debris.

Right wing

The right wing was separated from the fuselage and located inverted approximately 269 feet and 312 degrees from the fuselage. The wing was noted to have a heading of 232 degrees. The engine and propeller was separated from the wing and was not located with the wreckage area. The main landing gear was in the down and locked position.

The flap remained attached to its wing mounts; however, the outboard attach point was separated from the flap. The outboard approximate 34 inches of the flap exhibited downward deformation. The aileron balance weight remained attached to the separated aileron. The aileron was impact damaged and exhibited downward deformation approximately mid span. The aileron cables remained attached to the

bellcrank; however, the push pull tube rod end bearings were fragmented from the bellcrank and the aileron attach point. The aileron bellcrank and surrounding structure was impact damaged.

The outboard approximate 65 inches of leading edge wing skin was separated and was not located within the wreckage. The wings tip tank was separated and was not located within the wreckage. The wings main spar was fractured with downward deformation noted to the fractured areas of the spar. The center of the wing exhibited downward deformation and compression buckling of the wing skin.

The right engine cowling was separated and located approximately 524 feet and 342 degrees from the right wing.

Right engine

Engine was separated from the wing and remained partially attached to the engine mount. The right engine and propeller was not located within the recovered wreckage on scene; however, was located and recovered on 07/14/2017.

The engine sump was fragmented and the data plate was separated and was not located within the recovered wreckage. The engine case was fractured aft of the propeller governor. The throttle and mixture cable rod ends were fragmented from the fuel servo. The left and right magnetos were separated from the engine.

The engine could not be rotated by hand; therefore, thumb compression, crankshaft and camshaft continuity could not be confirmed. The exhaust was impact damaged and partially separated from the engine. Impact damage was noted to the engine and its components.

The right turbo and exhaust components were fragmented and separated from their attach points. The compressor wheel was noted to have rotational damage to the vanes. The turbo control switch on the engine control quadrant was in the off position. The right engine magnetos were separated from the engine and impact damaged. The right magneto produced intermittent spark when rotated with a drill. The left magneto did not produce spark when rotated with a drill.

Vacuum pump was impact damaged and separated from the engine, the drive rotated by hand and upon disassembly, the vanes were intact.

The top and bottom spark plugs from cylinders 2,4 and 6 were gray in color and electrodes were intact. The scavenge oil pump remained attached to engine. The oil filter and adaptor was fragmented from the engine. The filter media had a small amount of debris within the media. The oil filter was impact damage and the oil change according to the oil filter was on 01/03/2017.

Right propeller

The propeller remained attached to the separated engine. One blade was bent 90 degrees over the top of the engine. The other blade was bent forward approximately 30 degrees. No major leading edge damage was noted to this propeller blade. The spinner and propeller dome was fragmented from the propeller and was located when the engine was recovered.

Left Engine

Spark plugs were removed and thumb compression was established on all 6 cylinders when propeller was rotated by hand. The oil filter was cut open and no discrepancies were noted within the filter media. The oil change according to the oil filter was on 01/03/2017. Crankshaft continuity was established to the accessory case gears.

The left engine magnetos remained attached to the engine. Upon removal when rotated with a drill motor, both left and right magnetos produced spark from all towers.

The turbo remained attached to its attach points and the rotor vane rotated by hand. The compressor wheel and housing had rotational scoring. The waste gate controller and exhaust components were fragmented and deformed from impact damaged. The turbo control switch on the engine control quadrant switch was in the off position. The fuel servo screen was clean. The vacuum pump drive was intact, rotated and the vanes were intact. The spark plugs were removed and the electrodes were intact and gray in color. The oil scavenge pump separated and impact damaged.

Left Propeller

One blade was cut to facilitate crankshaft rotation. Both blades exhibited chordwise scoring.

Missing items

Left aileron and flap: recovered-2018

Vertical stabilizer: recovered-March 2018

Rudder skin and balance weight: recovered-2018

Forward cabin door: recovered-March 2018

Emergency exit window: not recovered

Left and right wing tip tanks- recovered March 2018