Aviation Investigation Final Report

Location:	Naples, Florida	**Accident Number:**	ERA19FA170
Date & Time:	May 11, 2019, 15:30 Local	**Registration:**	N7650Y
Aircraft:	Piper PA 30	**Aircraft Damage:**	Destroyed
Defining Event:	Birdstrike	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While on approach to the destination airport in visual meteorological conditions, the airplane deviated unannounced from its intended flight path, descended, and impacted the ground. Postaccident examination of the airframe, flight controls, engines, engine systems, and propellers revealed no evidence of preimpact failure or malfunction. Remains of a 3.8-pound Black Vulture was found in the wreckage. A rear seat headrest and two inflatable lift vests located about 440 ft from the main wreckage were found to contain either DNA and/or microscopic feathers from a Black Vulture. Because the Black Vulture was located among the wreckage and because the airplane's flight path deviation was unannounced, it is likely that the Black Vulture directly impacted and then penetrated the windshield in front of the pilot's position, which incapacitated him, resulting in an uncontrolled descent. The airplane was certificated in accordance with Civil Air Regulation 3, which specified no minimum standard for window or windshield structure strength, or bird penetration.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Incapacitation of the pilot due to a birdstrike through the windshield in front of the pilot's position, while on approach to land.

Findings

Aircraft	Flight compartment windows - Capability exceeded
Environmental issues	Animal(s)/bird(s) - Contributed to outcome
Personnel issues	Illness/injury - Pilot
Organizational issues	Equip certification/testing - FAA/Regulator

Factual Information

History of Flight

Approach-IFR final approach	Birdstrike (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On May 11, 2019, about 1530 eastern daylight time, a Piper PA-30, N7650Y, was destroyed when it was involved in an accident near Naples, Florida. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

According to Federal Aviation Administration (FAA) communication and radar data, the airplane departed from Key West International Airport (EYW) for a cross-country flight to Naples Municipal Airport (APF). At 1513, the pilot established contact with the Southwest Florida International Airport (RSW) air traffic control tower and advised the controller that the airplane was at an altitude of 4,000 ft, with automated terminal information service tango. The controller advised the pilot to expect the RNAV runway 23 approach to APF, which he acknowledged. The flight continued toward APF, and at 1518, the pilot was advised that he would be vectored onto the downwind leg of the airport traffic pattern and would be following a Cessna Citation. Three minutes later, the pilot advised the controller that APF was in sight, and he requested a lower altitude. The pilot was instructed to descend and maintain 3,100 ft, followed by 2,000 ft, which he acknowledged. At 1527, the pilot was cleared for a visual approach to runway 23 and instructed to contact the APF air traffic control tower, which he did. About 1528, while flying at an altitude of about 2,185 ft mean sea level, the pilot advised the APF controller that he was on a 5.5-mile final, which was his last communication. The airplane continued toward APF and its altitude varied around 2,200 feet until 1529:42, at which time a gradual, arcing, left descending turn occurred. The last radar target was recorded at 1529:55, when the airplane was less than 0.25 nautical mile from the accident site at an altitude of 750 ft. The airplane impacted a residential area, immediately adjacent to a home, about 4.3 miles and 052° from the approach end of runway 23.

According to a deputy with the Collier County Sheriff Department (CCSD) who was on a traffic stop with another CCSD employee about 1,900 ft east-southeast of the accident site, he reported hearing a loud sound then a "thud." He looked up and saw something like silver Christmas tinsel floating. He never saw the airplane, and he did not hear any "clunking" sound from the engine(s). The other CCSD employee reported he too heard a thud sound, which he thought was a truck passing over a road. He did not see the airplane and did not hear any "sputter" sound.

According to the home owner, he heard the noise from an airplane getting closer and swooping over his house, then he felt the house shake. He estimated that he heard the airplane for about 8 to 10 seconds; during that time he did not hear any abnormal sounds, and he did not hear any sputtering. He equated the sound to something similar to a mosquito-control airplane.

Pilot Information

Certificate:	Private	**Age:**	71,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	February 12, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 22, 2018
Flight Time:	(Estimated) 2419 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7650Y
Model/Series:	PA 30 No Series	**Aircraft Category:**	Airplane
Year of Manufacture:	1965	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30-729
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 15, 2019 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	89 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	4681 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C126 installed	**Engine Model/Series:**	IO-320-B1A
Registered Owner:		**Rated Power:**	160 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane was certificated in accordance with Civil Air Regulation 3, which specified no minimum standard for window or windshield structure strength, or bird penetration. The regulation specified windshields must be comprised of non-splintering safety glass.

At the time of manufacture, the airplane was equipped with a two-piece windshield that was 0.125-inch thick. Subsequently, on January 15, 1979, a one-piece windshield was installed in accordance with Supplemental Type Certificate (STC) SA-209GL. As part of the STC, the center post was removed and not re-installed.

According to the designer and manufacturer of the STC windshield, the design criteria consisted of

testing loads by using the dynamic pressures and projected frontal area. There was no requirement for bird strike resistance; therefore, bird penetration testing was not performed..

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	APF,8 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	15:32 Local	**Direction from Accident Site:**	231°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	14 knots /	**Turbulence Type Forecast/Actual:**	Unknown / Unknown
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	Unknown / Unknown
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	31°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Key West, FL (EYW)	**Type of Flight Plan Filed:**	IFR
Destination:	Naples, FL (APF)	**Type of Clearance:**	IFR
Departure Time:	14:45 Local	**Type of Airspace:**	

Airport Information

Airport:	Naples Municipal Airport APF	**Runway Surface Type:**	
Airport Elevation:	8 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	Visual
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	26.202499,-81.707221

Several tree limbs immediately adjacent to the house were damaged; the highest was about 30 ft above

ground level. Numerous tree limbs, 4 to 7 inches in diameter, exhibited 45° cuts consistent with propeller contact.

A 14-ft-long ground scar, oriented on a magnetic heading of 172° was observed adjacent to the house, and was associated with both wing leading edges. Within the ground scar were two craters associated with each engine. The left crater contained a separated propeller blade, propeller hub with attached propeller blade, and a portion of crankshaft. The right crater contained a piece of flap, wing skin, engine nacelle, and part of a fuel bladder tank.

Further examination of the accident site revealed fragmented parts of the airplane, including and windshield and other window pieces. All structural components necessary to sustain flight, and all primary and secondary flight controls remained attached or were located at the accident site. All primary flight control surfaces' counterweights were accounted for except the right aileron. Examination of the right aileron bellcrank revealed neither stop was damaged. Examination of the flight control cables for roll, pitch, and yaw revealed they exhibited either tension overload or were cut for recovery; there was no evidence of preimpact failure or malfunction. The pitch trim actuator was extended 8 threads from the bottom which equated to full airplane nose down trim. The rudder trim actuator was separated, and the actuator rod was fractured at the actuator. The flap actuator was separated from the airplane and the jackscrew was extended 1.750 inches, or 11 threads, which equated to between 0° and 10° of flap extension. Both main landing gear were retracted in their wheel wells; the nose landing gear actuator position could not be determined due to impact damage.

Examination of the lower front window retainer revealed it was fragmented in three pieces. Screws were observed in place in the retainer. Examination of the upper window retainer revealed it was fractured and four screws were missing; however, the full span was accounted for. No window pieces were noted in either upper or lower retainer channel, and sealant was noted in the lower and upper channels. Recovered windshield pieces were examined and the maximum thickness was 0.250 inch.

A dead bird weighing 3.8 pounds was located among the wreckage. Feathers were found adhering to a blanket located near the separated inboard section of the right wing. The bird and feathers were retained for analysis by the Smithsonian Institution Museum of Natural History.

The rear seat headrest and two inflatable life vests were located about 440 ft north-northwest from the accident site. These items were swabbed for analysis by the Smithsonian Institution Museum of Natural History. Additionally, swabs from the upper surface of the glare shield and also from the interior portion of the upper headliner were also analyzed.

According to a report from The Smithsonian Institution Museum of Natural History, the bird was a Black Vulture, and the swabs from the glare shield and the headliner, did not contain bird DNA or feathers. The swabs from the headrest and life vests contained either DNA and/or microscopic feathers from a Black Vulture.

Examination of both engines and propellers revealed no evidence of preimpact failure or malfunction.

Medical and Pathological Information

A postmortem examination of the pilot was performed by the District Twenty Medical Examiner's Office, Collier County, Naples, Florida. The cause of death was listed as airplane crash. The autopsy noted the presence of black bird feathers.

Forensic toxicology was performed on specimens of the pilot by the FAA Forensic Sciences Laboratory, Oklahoma City, Oklahoma, and also by the Miami-Dade County Medical Examiner's Department. According to FAA's toxicology report, testing for carbon monoxide and cyanide was not performed. The results were negative for volatiles and tested for drugs. According to Miami-Dade ME's Department the results were negative for all tested for drugs.

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy		
Additional Participating Persons:	Tracey L Egan; FAA/FSDO; Miramar, FL Damian Galbraith; Piper Aircraft; Vero Beach, FL		
Original Publish Date:	January 28, 2021	**Investigation Class:**	3
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99411		