

Aviation Investigation Factual Report

Location:	Boynton Beach, Florida	Accident Number:	ERA21LA111
Date & Time:	January 24, 2021, 20:00 Local	Registration:	N266ND
Aircraft:	Piper PA-28-161	Aircraft Damage:	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

On January 24, 2021, about 2000 eastern standard time, a Piper PA-28-161, N266ND, was substantially damaged when it was involved in an accident near Boynton Beach, Florida. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

A review of air traffic control voice, Automatic Dependent Surveillance-Broadcast (ADS-B), and weather data revealed that the airplane departed under visual flight rules and turned to a southerly heading before contacting air traffic control. While in cruise flight about 1,000 ft, the pilot requested visual flight rules flight following and routing "along the shoreline." The controller approved the request, issued the altimeter setting, and instructed the pilot to proceed offshore and "follow the shoreline northbound at or below 500 feet." At 1958:37, the pilot acknowledged the instructions and repeated the altimeter setting as the airplane began a descending left turn to the east.

The target identified as the accident airplane continued an eastbound descent on a heading about perpendicular to the shoreline when the controller assigned the airplane a new transponder code. When the pilot acknowledged, the airplane was at 300 ft and descending. At 1959:25, the accident airplane displayed a transponder code one digit off of the assigned code. At that time, the airplane was crossing the beach at 225 ft and descending. Once over water, the airplane's track depicted a shallow, descending left turn.

At 2000:00, the controller repeated the transponder instructions, but the airplane's target had disappeared and there were no further communications with the airplane.

According to Federal Aviation Administration (FAA) records, the pilot held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. The pilot's most recent FAA first class medical certificate was issued October 4, 2019. The pilot was enrolled at 2Fly Airborne in an airline pilot training curriculum and, according to school records, had accrued about 190 total hours of flight experience, 95 hours of which were in the accident airplane make and model. The pilot earned his instrument airplane rating on January 20, 2021.

Review of the pilot's logbook revealed that he had accrued 19.8 total hours of night flying experience, of which 8.9 hours was in the accident airplane make and model. He had accrued 8.0 hours of solo flight experience at night.

According to FAA records, the airplane was manufactured in 2000 and was equipped with a Lycoming O-320-D3G, 160-horsepower engine that drove a fixed-pitch propeller. The airplane's

most recent 100-hour inspection was completed January 7, 2021, at 16,366 total aircraft hours.

At 1953, weather recorded at West Palm Beach International Airport (PBI), 9 miles north of the accident site, included scattered clouds at 2,000 ft above ground level (agl) and 25,000 ft agl. The visibility was 10 miles. The temperature was 23°C, the dew point was 19°C, and the altimeter setting was 30.11 inches of mercury.

At the location of the accident, for an observer at sea level, sunset occurred at 1757 and civil twilight ended at 1821. Moonrise occurred at 1509 and moonset occurred at 0430 on January 25, 2021. At the time of the accident, the moon was located at an altitude of 42.28° and an azimuth of 278.50°, with 87.1 percent of its disk illuminated.

The airplane was recovered by a commercial salvage operator January 26, 2021, and was examined at their facility under the supervision of two FAA inspectors.

The engine cowlings were impact-damaged, the engine mounts were broken, and the engine rested in a "nose-down" attitude in relation to the airframe.

The cockpit and cabin areas appeared intact. The pilot's seatbelt and shoulder harness were not buckled/attached and appeared intact.

Flight control continuity was confirmed from the cockpit to all flight control surfaces. The right wing was separated by impact and remained attached by the aileron control cable and electrical harness. Wing-mount fractures revealed failure features consistent with overload.

The main and standby vacuum pumps and the vacuum-operated attitude indicator were disassembled and revealed no pre-impact anomalies. The electric fuel boost pump operated normally with electrical power applied.

The engine was rotated by hand at the propeller and continuity was confirmed from the powertrain through the valvetrain to the accessory section. Compression was confirmed at each cylinder using the thumb method. The position of each magneto was confirmed before they were removed, drained, dried, and remounted in their as-found positions. Ignition timing was confirmed, and when actuated, both magnetos produced spark at all terminal leads.

The carburetor was damaged by impact, but the engine controls all remained attached.

The engine-driven fuel pump was removed and functioned as designed when actuated by hand.

Examination of the airframe and engine revealed no pre-impact mechanical anomalies.

The Palm Beach County Sheriff's Office (PBSO) recovered an on-board video recorder from the airplane, successfully downloaded the data, and forwarded a video of the accident flight.

The view was directly out the front windscreen and did not capture the airplane's instrument panel. From engine start, taxi, takeoff, initial climb, and final descent, the sound of the engine was smooth and continuous throughout. Changes in engine sound were consistent with the changes in flight mode.

During the final portion of the flight, the airplane was in cruise flight on a southerly heading over a well-lit north/south interstate highway that bisected a developed urban/suburban area. To the east, the coastline was discernable due to its illumination. The water beyond was black with no visible horizon. There was no ambient light on or above the water providing illumination. The engine sound reduced, and the view was consistent with a shallow turn and descent on an easterly heading.

The airplane crossed the coastline with illuminated homes and roadways clearly visible, but once over the water, the view in the windscreen was completely black with no discernable horizon. The attitude of the airplane could not be determined. For the final 25 seconds of the recording, the view remained completely black, while the sound of the engine was smooth and continuous until water contact.

According to the Australian Transport Safety Bureau, "An overview of spatial disorientation as a factor in aviation accidents and incidents":

Types of spatial disorientation Three basic types of SD have been described, for the purposes of classification. These types are Type I (unrecognized), Type II (recognized) and Type III (incapacitating).

Type I (unrecognized) In this form of disorientation, the pilot is unaware that they are disoriented or that they have lost situational awareness. The pilot, unaware of the problem, continues to fly the aircraft as normal. This is particularly dangerous, as the pilot will not take any appropriate corrective action, since they do not perceive that there is in fact a problem. The fully functioning aircraft is then flown into the ground, with often fatal results. This form of SD is clearly dangerous, and accounts for the majority of SD accidents and fatalities (Braithwaite et al., 1998b).

Pilot Information

Certificate:	Private	Age:	24,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	October 4, 2019
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 190 hours (Total, all aircraft), 95 hours (Total, this make and model), 101 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N266ND
Model/Series:	PA-28-161 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	2000	Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	2842066
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	January 7, 2021 100 hour	Certified Max Gross Wt.:	2440 lbs
Time Since Last Inspection:	77.2 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	16366 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:		Engine Model/Series:	0-320-DG3
Registered Owner:	EURO 2000 INC	Rated Power:	160
Operator:	2Fly Airborne	Operating Certificate(s) Held:	Pilot school (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	KPBI,21 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	19:53 Local	Direction from Accident Site:	339°
Lowest Cloud Condition:	Scattered / 2000 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	7 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.11 inches Hg	Temperature/Dew Point:	23°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lantana, FL (LNA)	Type of Flight Plan Filed:	Company VFR
Destination:	Merritt Island, FL	Type of Clearance:	VFR
Departure Time:	19:55 Local	Type of Airspace:	Class C

Airport Information

Airport:	PALM BEACH COUNTY PARK LNA	Runway Surface Type:	Asphalt
Airport Elevation:	14 ft msl	Runway Surface Condition:	Dry
Runway Used:	10/28	IFR Approach:	None
Runway Length/Width:	3489 ft / 75 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	26.54121,-80.03705

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Damian Galbraith; Piper; Vero Beach, FL Ryan Enders; Lycoming; Williamsport , PA Rick Beckstrom; FAA/FSDO; Miramar, FL
Report Date:	January 25, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=102547

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available <u>here</u>.