



Aviation Investigation Final Report

Location:	San Juan, Puerto Rico	Accident Number:	ERA17LA227
Date & Time:	July 4, 2017, 17:21 Local	Registration:	N9427J
Aircraft:	Piper PA28	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	4 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot reported that, before the local, personal flight, the airplane was fueled and that he performed a preflight inspection and an engine run-up with no issues noted. The takeoff was normal; however, during the initial climb, about 250 ft above ground level, the engine started to run roughly and lose power. The engine did not respond to throttle inputs. The pilot contacted the air traffic control tower and stated that he intended to return to the departure airport to land. He did not recall the remainder of the accident sequence. A passenger, who was also a certificated pilot, stated that, as the pilot was turning the airplane left back to the airport, he saw that the airspeed was decreasing and that the stall warning light was flashing. Subsequently, the airplane entered an aerodynamic stall and spun into a canal. A review of a video taken by a witness corroborated the passenger's account.

Examination of the airframe and engine did not reveal any preaccident mechanical malfunctions or failures that would have precluded normal operation. Sound spectrum analysis of onboard video revealed that the engine rpm decreased by about 300 and then increased by about 300 twice but then remained steady near full power for about 6 seconds before impact. The reason for the rpm changes could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A partial loss of engine power during initial climb for reasons that could not be determined and the pilot's subsequent exceedance of the airplane's critical angle of attack, which resulted in an aerodynamic stall.

Findings

Not determined	(general) - Unknown/Not determined
Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Initial climb	Loss of engine power (partial)
Initial climb	Attempted remediation/recovery
Initial climb	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On July 4, 2017, at 1721 Atlantic daylight time, a Piper PA28-180, N9427J, operated by Horizon Aviation, was substantially damaged when it impacted the San Antonio Canal shortly after takeoff from Fernando Luis Ribas Dominicci Airport (SIG), San Juan, Puerto Rico. The private pilot and three passengers were not injured. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

According to the pilot, the purpose of the flight was to fly to a designated practice area, and return. Prior to the flight, the airplane was fueled. The pilot also calculated the weight and balance, performed a preflight inspection of the airplane and an engine run-up, with no issues noted.

During the takeoff roll on runway 9, the engine instruments were "in the green" and the engine developed full power. During the initial climb at an altitude of about 250 ft above ground level, the engine started to run rough and lose power. The engine did not respond to throttle inputs. The pilot informed the air traffic control tower that he intended to return and land on runway 27. As the airplane flew toward a marina, the pilot recalled seeing people on the ground and wanted to avoid them. He did not recall the remainder of the accident sequence.

One of the passengers was also a certificated pilot. He stated that the takeoff roll was normal, he observed the airspeed indicator at 60 knots, and liftoff was normal. The pilot flying then reported the engine was rough and radioed the control tower to request to return to runway 27. The passenger estimated the altitude to be around 200 to 300 ft at that time and he also noticed the engine roughness and loss of power, accompanied by vibrations. He stated that the pilot tried hard to avoid people on the ground. As the pilot was turning left, the passenger observed that the airplane was losing airspeed, and he saw the stall warning light flashing and he called out to the pilot "airspeed" a few times. He then recalled the airplane in a stall/spin attitude.

A witness located at the marina recorded a portion of the flight on a video camera. A review of the recording revealed that about 20 seconds before impact, the airplane was flying relatively level in an easterly direction, for about 5 seconds, before being obscured by a water drop on the camera lens. About 7 seconds later, the airplane was visible again and on a southerly heading, toward the camera, in a left descending turn. The airplane's bank angle increased to about 90° left wing down, before it impacted the canal.

The pilot held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. His most recent first-class medical certificate was issued on October 9, 2012. Review of the pilot's logbook revealed that he had accrued a total flight experience of about 142 hours. His previous flight was on April 10, 2017, which was a "rental check" in the accident airplane.

Review of the airplane's maintenance records revealed that the most recent 100-hour inspection was performed on March 25, 2017, about 90 hours prior to the accident. Additionally, the most recent annual inspection was completed on July 19, 2016, about 193 hours prior to the accident. The engine had accrued a total of 4,233 hours since new, and 937 hours since overhaul.

Initial examination of the airplane by a Federal Aviation Administrator (FAA) inspector revealed that left wing was separated from the fuselage at the root, the right wing was partially separated at the root. The empennage was crushed in several locations, the left stabilator was partially separated and bent upward about 90° at its root.

The throttle and mixture controls were found in the full-forward position, the carburetor heat control was in the off position. The fuel selector handle was in the right tank position, the electric fuel pump switch was in the "on" position. Both fuel caps were secure with their seals intact.

The engine was drained of sea water, oil, and sediment for examination by an FAA inspector. The inspector removed the spark plugs and did not observe any wear or damage. The carburetor was removed from engine and no damage was noted. The inspector was able to rotate the propeller and obtain compression on all cylinders. The examination did not reveal any preimpact anomalies.

An on-board video recording and the witness video recording were forwarded to the National Transportation Safety Board Vehicle Recorder Laboratory, Washington, DC. Review of the onboard video revealed that the airplane lifted off about 35.2 seconds elapsed time (all times are elapsed times). At 1:16.3, the airplane rolled slightly right. Between 1:18.7 and 1:19.7, the engine noise decreased. At 1:20.0, the airplane rolled level and the engine noise further decreased between 1:27.2 and 1:30.1. At 1:30.8, the airplane began to bank left. At 1:34.9, the airplane was in a descending left bank turn. Between 1:34.0 and 1:36.6, there was a momentary increase in background noise, consistent with an increase in engine noise. Between 1:36.8 and 1:37.7, the background noise decreased slightly, and remained at the same levels between 1:36.6 and 1:44.3. The sound of impact was recorded at 1:44.6.

A sound spectrum study of the onboard video revealed that engine rpm was at 2,265 for about 7 seconds as the airplane was in the right bank. It then decreased to 1,980 rpm and the airplane began to bank left. The rpm momentarily increased to 2,292 about 5 seconds later, followed by a momentary decrease to 1,950, but remained stable between 2,373 to 2,451 rpm for about 6 seconds leading up to impact.

The recorded weather at SIG, at 1729, was: wind from 070° at 14 knots; visibility 8 miles; thin scattered clouds at 3,500 ft; scattered clouds at 8,000 ft; temperature 29° C; dew point 25° C; altimeter 30.01 inches of mercury.

Review of an FAA Carburetor Icing Chart for the given temperature and dew point revealed "Icing (glide and cruise power)."

Pilot Information

Certificate:	Private	Age:	26, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	October 9, 2012
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 142 hours (Total, all aircraft), 50 hours (Total, this make and model), 64 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N9427J
Model/Series:	PA28 180	Aircraft Category:	Airplane
Year of Manufacture:	1966	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	28-3538
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	March 25, 2017 100 hour	Certified Max Gross Wt.:	2400 lbs
Time Since Last Inspection:	90 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	4323 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed	Engine Model/Series:	O-360-A3A
Registered Owner:	LATITUDE AVIATION LLC	Rated Power:	180 Horsepower
Operator:	Horizon Aviation	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	TJIG,10 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	17:29 Local	Direction from Accident Site:	260°
Lowest Cloud Condition:	Scattered / 3500 ft AGL	Visibility	8 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	14 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.01 inches Hg	Temperature/Dew Point:	29°C / 25°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Juan, PR (SIG)	Type of Flight Plan Filed:	None
Destination:	San Juan, PR (SIG)	Type of Clearance:	VFR
Departure Time:	17:20 Local	Type of Airspace:	Class D

Airport Information

Airport:	FERNANDO LUIS RIBAS DOMINICCI SIG	Runway Surface Type:	Asphalt
Airport Elevation:	9 ft msl	Runway Surface Condition:	Dry
Runway Used:	09	IFR Approach:	None
Runway Length/Width:	5539 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	3 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	4 None	Latitude, Longitude:	18.458333,-66.089447(est)

Administrative Information

Investigator In Charge (IIC):	Brazy, Douglass
Additional Participating Persons:	Jorge Echehoven; FAA/FSDO; San Juan, PR
Original Publish Date:	April 20, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95494

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 [here](#).