



Aviation Investigation Final Report

Location:	Tamiami, Florida	Accident Number:	ERA17LA202
Date & Time:	June 10, 2017, 10:50 Local	Registration:	N881AV
Aircraft:	Cessna 172P	Aircraft Damage:	Substantial
Defining Event:	Fuel related	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

Following an uneventful preflight inspection of the airplane, the student pilot and the flight instructor taxied and then began their runup checks of the engine. The flight instructor stated that during the runup he noted a “normal” drop in engine rpm when they tested the carburetor heat, both with power on the engine and with the throttle pulled back to idle. The subsequent takeoff was normal, but at about 350 ft above the ground, the flight instructor heard a slight decrease in engine power; he asked the student pilot if he was guarding the throttle, and he responded that he was. The power then came back. Then, at about 400 ft above the ground, the engine lost power again. The flight instructor stated that this time it was significant, as it dropped to 1,900 rpm and was fluctuating. The flight instructor then took the controls of the airplane, after which the power dropped to 1,100 rpm and continued to fluctuate. There was no available runway remaining and the airplane was losing altitude, so the flight instructor landed the airplane in a grass field on the airport property. He stated that on touchdown, he had very poor braking capability (likely due to the wet grass). The airplane struck a tree with the left wing, then struck the airport fence and substantially damaged the airplane’s wings. Postaccident examination of the airplane revealed an adequate supply of uncontaminated fuel. Test runs of the engine were performed, during which the engine ran without hesitation and displayed no evidence of preimpact failures or malfunctions that would have precluded normal operation. Review of a carburetor icing probability chart revealed that the atmospheric conditions at the time of the accident were conducive to the formation of carburetor ice. Given this information, it is likely that while operating the airplane on the ground prior to takeoff, a period during which the engine would typically be operating at low power, carburetor ice began forming, which continued until the engine began losing engine power during the initial climb.

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 the initial climb due to carburetor icing.

Findings

Environmental issues	Conducive to carburetor icing - Effect on equipment
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Factual Information

History of Flight

Initial climb	Fuel related (Defining event)
Landing	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On June 10, 2017, about 1050 eastern daylight time, a Cessna 172P, N881AV, was substantially damaged when it was involved in an accident in Tamiami, Florida. The flight instructor and student pilot were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight was departing from Miami Executive Airport (TMB), Tamiami, Florida. According to the flight instructor, before the accident flight, the airplane was refueled. He observed the student pilot taking fuel samples to test for contaminants; none were present. They also checked the rest of the airplane to complete the preflight inspection.

The airplane start was normal with the gauges indicating in the green range. They taxied out from the parking ramp, exited the ramp and then continued taxiing to runway 9L via taxiway "Delta." During the taxi, they did not notice any issues with the airplane.

The flight instructor stated that during the engine run-up, they followed the items on the checklist. The flight controls were working correctly, and the engine run-up was completed with no problems noted. He stated that the magnetos had two "good" drops in rpm and that the carburetor heat had a "normal" drop in rpm, both with power on the engine and with the throttle pulled back to idle.

The flight instructor asked the student to demonstrate a soft-field takeoff. The student selected 10° of wing flaps, and they received a takeoff clearance and started the takeoff roll. During the takeoff, they had normal engine indications, and airspeed started to climb. The student pilot then kept the airplane in ground effect to build airspeed, as they were simulating takeoff from a grass strip or rough field. At about 80 knots, the student pilot started to climb out from ground effect. He then retracted the wing flaps at 200 ft mean sea level. Up to this point, all indications were normal.

At about 350 ft mean sea level, the flight instructor heard a slight decrease in power; he then asked the student pilot if he was guarding the throttle, and he responded that he was. The power then came back. Then, at about 400 ft mean sea level, the engine lost power again. The flight instructor stated that this time it was significant, as it dropped down to 1,900 rpm and was fluctuating. The flight instructor then took the controls of the airplane, after which the power dropped to 1,100 rpm and continued to fluctuate. At this point, there was no available runway remaining and the airplane was losing altitude, so the flight instructor decided to land

in a grass field on the airport property. The flight instructor stated that on touchdown, he had very poor braking capability, and even with the use of aerodynamic braking, the airplane felt like it was skidding. The airplane struck a tree with the left wing, then struck the airport fence before coming to a stop. The flight instructor and student pilot then shut off everything, including the fuel, and egressed.

Examination of the accident site revealed that the airplane touched down in the grass about 200 ft past the end of runway 9L and then rolled about 1/4 of a mile before impacting the tree and the fence. The grass was wet due to recent heavy rain. Tire marks were visible in the grass at various points from where the airplane touched down to the tree.

Examination of the wreckage revealed that the left wing had contacted the tree with the landing and taxi light assembly, which was mounted on the leading edge. Further examination revealed that the right wingtip fairing was broken from impact with the fence, and the upper wing skins were wrinkled from the fuel tank filler caps outward to the wingtips. The spinner and propeller were also damaged from impact with the fence.

Engine runs were also performed. Before the engine runs, the cowling was removed, and the engine was completely exposed. The fuel was sampled, and the oil was checked. The fuel and oil showed no signs of contamination and were at appropriate levels. During the first engine run, the engine was started and operated for 8 minutes, 2 minutes of which were at idle, simulating a taxi from the parking ramp to the runway. The engine was then operated for 6 minutes, simulating the run-up and takeoff and was then shut down. During the second engine run, the engine was started and operated for 8 more minutes and then shut down. During both engine runs, the engine ran without hesitation and displayed no evidence of any preimpact mechanical malfunctions or failures that would have prevented normal operation.

At 1053, the weather reported at TMB, included a temperature of 30°C and a dew point 26°C. The calculated relative humidity at this temperature and dewpoint was 79%. Review of the carburetor icing probability chart contained within Federal Aviation Administration Special Airworthiness Information Bulletin CE-09-35 revealed the atmospheric conditions at the time of the accident were conducive to the formation of icing at glide [idle] and cruise engine power settings.

According to FAA Advisory Circular 20-113, "To prevent accident due to induction system icing, the pilot should regularly use [carburetor] heat under conditions known to be conducive to atmospheric icing and be alert at all times for indications of icing in the fuel system." The circular recommended that when operating in conditions where the relative humidity is greater than 50 percent, "...apply carburetor heat briefly immediately before takeoff, particularly with float type carburetors, to remove any ice which may have been accumulated during taxi and runup." It also stated, "Remain alert for indications of induction system icing during takeoff and climb-out, especially when the relative humidity is above 50 percent, or when visible moisture is present in the atmosphere."

Flight instructor Information

Certificate:	Commercial; Flight instructor	Age:	28, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	May 8, 2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 27, 2016
Flight Time:	1488 hours (Total, all aircraft), 1449 hours (Total, this make and model), 1440 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	None	Age:	44, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	August 5, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	95 hours (Total, all aircraft), 95 hours (Total, this make and model), 7 hours (Pilot In Command, all aircraft), 7 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N881AV
Model/Series:	172P	Aircraft Category:	Airplane
Year of Manufacture:	1983	Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	17276056
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	April 19, 2016 Annual	Certified Max Gross Wt.:	2299 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	12828.1 Hrs as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	0-320-D2J
Registered Owner:		Rated Power:	160 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	ADF Airways	Operator Designator Code:	YDFS

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KTMB, 10 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	10:53 Local	Direction from Accident Site:	31°
Lowest Cloud Condition:	Few / 1500 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.05 inches Hg	Temperature/Dew Point:	30°C / 26°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Tamiami, FL (TMB)	Type of Flight Plan Filed:	None
Destination:	Tamiami, FL (TMB)	Type of Clearance:	VFR
Departure Time:	10:20 Local	Type of Airspace:	Class D

Airport Information

Airport:	MIAMI EXECUTIVE TMB	Runway Surface Type:	Asphalt
Airport Elevation:	10 ft msl	Runway Surface Condition:	Dry
Runway Used:	09L	IFR Approach:	None
Runway Length/Width:	5003 ft / 150 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	25.647499,-80.433334(est)

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd	
Additional Participating Persons:	Timothy Jensen; FAA / FSDO; Miramar, FL	
Original Publish Date:	June 10, 2021	Investigation Class: 3
Note:	The NTSB did not travel to the scene of this accident.	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=95343	

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).