National Transportation Safety Board
Aviation Accident Final Report

Location:	Clearwater, Florida	**Accident Number:**	ERA10LA267
Date & Time:	May 16, 2010, 10:13 Local	**Registration:**	XBLTH
Aircraft:	Piper PA-46-350P	**Aircraft Damage:**	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	2 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was loaded more than 500 pounds (about 12 percent) over the certificated maximum gross weight. The airplane lifted off from the 3,500-foot-long runway about one-half to two-thirds down the length of the runway. The pilot retracted the airplane's landing gear and flaps before reaching the airplane manufacturer's recommended retraction speeds. The airplane was unable to gain sufficient altitude and subsequently impacted trees and a house located beyond the departure end of the runway. A postaccident examination of the wreckage and recorded non-volatile memory revealed no evidence of any preimpact mechanical abnormalities.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The overweight condition of the airplane due to the pilot's inadequate preflight planning, resulting in the airplane's degraded climb performance. Contributing to the accident was the pilot's retraction of the flaps prior to reaching the manufacturer's recommended flap retraction speed.

Findings

Aircraft	Maximum weight - Capability exceeded
Personnel issues	Weight/balance calculations - Pilot
Aircraft	Climb capability - Capability exceeded
Aircraft	TE flap control system - Incorrect use/operation
Personnel issues	Incorrect action performance - Pilot

Factual Information

On May 16, 2010, at 1013 eastern daylight time, a Piper PA-46-350P, Mexican registration XB-LTH, was substantially damaged during impact with trees and a house after takeoff from Clearwater Airpark (CLW), Clearwater, Florida. The certificated commercial pilot and one passenger were seriously injured. Another passenger sustained minor injuries. Visual meteorological conditions prevailed, and a defense visual flight rules flight plan was filed for the personal flight, which was destined for Toussaint Louverture International Airport (MTPP), Port-au-Prince, Haiti. The flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The purpose of the flight was to ferry relief supplies to Haiti, and the airplane was full of donated items that the pilot had gathered while in Clearwater. The evening prior to the flight, the pilot's brother-in-law decided to accompany the pilot and one other passenger to Haiti in order to help distribute the supplies.

The pilot stated that he positioned the wing flaps to the 20-degree setting, and initiated the takeoff from runway 16. At an altitude of 150 feet and airspeed of 95 knots, the pilot retracted the landing gear and flaps, and the airplane began to sink. The airplane's stall warning activated, and the pilot shut down the engine in preparation for impact, as there was no runway remaining and insufficient altitude to maneuver.

Upon impact with a tree, the airplane's left wing separated from the fuselage, before the remainder of the airplane collided with a house. The forward portion of the fuselage separated from the cabin, and the airplane came to rest upright in the backyard of the house. The rear seat passenger immediately exited the airplane using the emergency exit door. The pilot remained in the airplane to shut down electrical systems, and he and the front seat passenger were extricated from the airplane with the assistance of bystanders and firefighters who responded to the scene.

A pilot-rated witness, who was working on his airplane in a hangar at CLW, stated that he saw the accident airplane fly past the departure end of runway 16 at a very low altitude, and in a tail-low attitude. He stated that he heard no noticeable problem with the engine sound. The airplane continued towards trees past the end of the runway at a very slow speed, and the tail of the airplane brushed the tree tops. The witness stated that the engine power was "suddenly chopped" and the airplane disappeared below the tree line.

Another witness stated that the airplane lifted off about with about 1/3 of the total runway length remaining, and its climb rate appeared to be poor. About 20 feet above the ground, the landing gear retracted, while the airplane appeared to fly level, or with a low rate of climb. The airplane cleared some trees beyond the end of the runway in a nose-high attitude. He then lost sight of the airplane before hearing the sounds of impact about 10 seconds later. The engine sounded normal throughout the takeoff roll and climb out.

A lineman who fueled the airplane stated that he observed several people loading boxes into the front and rear baggage compartments prior to the airplane's departure. The lineman stated

that the pilot's sister expressed concern about the airplane's weight, and wanted the lineman to ask the pilot about the amount of cargo that was onboard. The pilot replied that he only had about 200 pounds of cargo, and that the weight of the airplane was "okay." During the takeoff, the lineman observed the airplane rotate normally approximately halfway down the runway, and stated that the airplane appeared tail-heavy. He stated that the airplane's pitch oscillated several times and turned sharply left past the end of the runway. He lost sight of the airplane behind trees, and then observed a cloud of black smoke.

The pilot held a Federal Aviation Administration (FAA) –issued commercial pilot certificate with ratings for airplane single engine land and instrument airplane. His most recent FAA second-class medical certificate was issued on April 9, 2010. The pilot reported 2,662 hours total hours of flight experience, 23 hours of which were in the accident airplane.

According to FAA records, the airplane was manufactured in 2007, and was powered by a turbocharged, 350-horsepower Lycoming TIO-540 engine, which was equipped with a three-bladed Hartzell propeller assembly. Its most recent annual inspection was conducted on April 27, 2010, at a total aircraft time of 206.6 hours. The airplane was issued a Mexican registration on May 13, 2010, and the accident pilot was listed as the registered owner of the airplane.

The 0953 recorded weather at St. Petersburg (PIE), located about 5 miles southeast of the accident location, included winds from 130 degrees at 8 knots, clear skies, 10 miles visibility, temperature 27 degrees C, dewpoint 21 degrees C, and an altimeter setting of 30.11 inches of mercury.

FAA records indicated that the elevation of CLW was 71 feet above mean sea level. It was equipped with a single asphalt runway (16-34) which measured 3,500 feet long by 75 feet wide. There were 46-foot-tall trees located 1,755 feet from the threshold of runway 16, and 66-foot-tall trees located 534 feet from the threshold of runway 34.

An FAA inspector examined the airplane at the scene. According to the inspector, the airplane's fuselage was partially fire-damaged. The engine was separated from the airplane. Elevator control continuity was established.

A National Transportation Safety Board investigator, along with representatives of the airframe and engine manufacturers, conducted a follow-up examination of the wreckage on June 10, 2010. Control continuity from the cockpit to the ailerons was confirmed through cable breaks which displayed signatures consistent with tensile overload. Visual examination of the engine revealed no pre-impact mechanical anomalies. Borescope examination of the engine cylinders revealed no anomalies. The engine crankshaft was rotated by hand, and compression was obtained on all cylinders. The spark plugs were removed and examined, exhibited medium-gray color, and had an appearance consistent with normal wear. The left magneto was separated from the engine case on impact. Both magnetos were rotated by hand and produced spark at all towers. Clean blue-colored fuel was observed in the fuel divider manifold.

Postaccident examination of the airplane's contents revealed that the airplane contained a total of 438 pounds of cargo distributed between the forward baggage compartment, main cabin, and aft baggage compartment. Information provided by the pilot indicated that he weighed

180 pounds, the front passenger weighed 220 pounds, and the rear passenger weighed 90 pounds. He also stated that the airplane's fuel tanks were topped off prior to departure with a total of 120 gallons of fuel. Review of the airplane's weight and balance information revealed that it had an empty weight of 3,187 pounds and a maximum takeoff weight of 4,340 pounds. Based on the weight of the cargo found in the airplane, full fuel tanks, and the pilot and passenger weights, the airplane's weight at the time of the accident was calculated as 4,835 pounds. The airplane's forward and aft center of gravity limits at its maximum takeoff weight were 143.3 inches and 147.1 inches aft of datum, respectively. The airplane's estimated center of gravity at the time of the accident was 143.8 inches aft of datum.

Review of the pilot's operating handbook takeoff performance data indicated that the airplane's takeoff ground roll distance and distance to clear a 50-foot obstacle at maximum gross weight with 20 degrees of flaps was approximately 1,600 feet and 2,600 feet, respectively, given the atmospheric conditions present at the time of the accident. The pilot's operating handbook performance charts made no provisions for weights over the maximum certificated gross weight.

The airplane's recommended obstacle clearance takeoff procedure stated that wing flaps should be set to 20 degrees and maximum engine power established before brake release. After liftoff at 69 knots, the airplane should be accelerated to 80 knots until clear of the obstacle, followed by retraction of the landing gear and flaps while accelerating through 90 knots.

The airplane's primary and multifunction flight displays were recovered from the airplane and sent to the National Transportation Safety Board's Vehicle Recorders Lab for download. The primary flight display recorded a gradual increase in engine rpm, followed by an increase in airspeed that reached a maximum of 83 knots indicated. A sharp increase and subsequent decrease in vertical speed and pitch, as well as a decrease in altitude was displayed before the recording of valid data ended at impact.

History of Flight

Prior to flight	Aircraft loading event
Initial climb	Loss of lift
Initial climb	Collision with terr/obj (non-CFIT) (Defining event)

Pilot Information

Certificate:	Commercial	**Age:**	48,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Unknown	**Last FAA Medical Exam:**	April 9, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 30, 2010
Flight Time:	2662 hours (Total, all aircraft), 23 hours (Total, this make and model), 2662 hours (Pilot In Command, all aircraft), 23 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	XBLTH
Model/Series:	PA-46-350P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	4636428
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 27, 2010 Annual	**Certified Max Gross Wt.:**	4340 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	207 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	TIO-540
Registered Owner:		**Rated Power:**	350 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PIE,11 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	140°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	27°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Clearwater, FL (CLW)	**Type of Flight Plan Filed:**	VFR
Destination:	Port-au-Prince (MTPP)	**Type of Clearance:**	VFR
Departure Time:	10:15 Local	**Type of Airspace:**	

Airport Information

Airport:	Clearwater Airpark CLW	**Runway Surface Type:**	Asphalt
Airport Elevation:	71 ft msl	**Runway Surface Condition:**	
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	3500 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 Minor	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious, 1 Minor	**Latitude, Longitude:**	27.995555,-82.751945(est)

Administrative Information

Investigator In Charge (IIC):	Diaz, Dennis
Additional Participating Persons:	Regis Lauer; FAA/FSDO; Orlando, FL Robert Martellotti; Piper Aircraft Company; Vero Beach, FL Edward Rogalski; Lycoming; Williamsport, PA
Original Publish Date:	December 19, 2011
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76018