Aviation Investigation Final Report

Location:	Harvest, Alabama	**Accident Number:**	ERA17LA302
Date & Time:	August 28, 2017, 11:10 Local	**Registration:**	N750UP
Aircraft:	PACIFIC AEROSPACE LTD 750XL	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot was conducting a cross-country flight to deliver the airplane to a maintenance facility. The airplane departed with full fuel tanks. The pilot stated that, as the airplane neared the planned fuel stop airport, he thought that there was adequate fuel remaining to reach the maintenance facility, so he did not stop to refuel and continued to the destination. About 4 hours 23 minutes into the flight, which was past the expected fuel exhaustion time of about 4 hours 18 minutes (assuming a fuel burn of 50 gallons per hour, which the pilot used for his initial flight planning), the pilot declared an emergency and advised an air traffic controller that the airplane was out of fuel. The controller provided information to the pilot about nearby airports, but the airplane would not have been able to reach any of them, so the pilot initiated a forced landing to a field. Before touchdown in the field, the pilot descended to avoid power lines ahead, but the airplane hit one of the lines. The airplane touched down in the field, impacted an embankment, and came to rest upright on a road. The airplane sustained substantial damage.

A small amount of fuel was observed on the ground at the accident site, and residual fuel was found in the two forward fuel tanks. Although the amount of the fuel could not be quantified, it was likely equivalent to the unusable fuel amount. Examination of the airframe fuel system components, including the fuel filter, the environmental collector tank, and the fuel lines in the engine compartment, revealed no fuel, which is consistent with fuel exhaustion. Therefore, it is likely that the pilot's improper decision to not to refuel as planned and his improper in-flight fuel planning led to the loss of all engine power due to fuel exhaustion

Probable Cause and Findings

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

The pilot's improper decision to not stop and refuel the airplane as planned and his improper in-flight fuel planning, which resulted in a total loss of engine power due to fuel exhaustion.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Fuel - Fluid management
Personnel issues	Fuel planning - Pilot
Aircraft	Fuel - Fluid level
Environmental issues	Wire - Contributed to outcome

Factual Information

History of Flight

Enroute-descent	Fuel exhaustion
Enroute-descent	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On August 28, 2017, about 1110 central daylight time, a Pacific Aerospace Limited 750XL, N750UP, using call sign Penn 1, was substantially damaged during a forced landing in a field near Harvest, Alabama. The commercial pilot was not injured. The airplane was being operated under the provisions Title of 14 *Code of Federal Regulations* Part 91, as a personal flight. Visual meteorological conditions prevailed at the time and an instrument flight rules flight plan was filed. The flight originated about 0745 from Pennridge Airport (CKZ), Perkasie, Pennsylvania, and was destined for Huntsville International Airport-Carl T Jones Field (HSV), Huntsville, Alabama.

The pilot stated that the purpose of the planned 3.5 hour flight was to fly to HSV for a maintenance inspection, with a planned fuel stop at Rockwood Municipal Airport (RKW), Rockwood, Tennessee. As part of his preflight inspection of the airplane he visually verified each fuel tank was full, and the total usable fuel capacity was 221 gallons. For fuel consumption calculation purposes he used 50 gallons-per-hour.

After takeoff, the airplane climbed to the flight planned altitude of 8,000 ft mean sea level (msl), and proceeded towards the destination airport. When the flight was near the planned refueling location, he verified that the airplane had an adequate supply of fuel to reach the intended destination, but he did not recall the fuel load at that time.

The flight continued towards HSV and according to audio from the HSV air traffic control tower (ATCT), at 1055:23, the pilot requested to descend to 6,000 ft msl, which was approved, then at 1101:11, he was instructed to descend and maintain 4,000 ft msl. At that time, the pilot noted HSV was to his left about 10 miles away. At 1107:47, the controller instructed the pilot to descend and maintain 3,000 feet, and the pilot reported that while descending out of 4,000 ft msl, the annunciator panel lights (including the low fuel pressure light) came on along with alarms. At about 1108:40, or about 4 hours 23 minutes since the flight departed, the pilot declared an emergency and advised the controller that the flight was out of fuel. The pilot was advised by the controller of the distance and location of the destination airport, as well as 2 other airports, but the pilot later stated that he looked in the direction but was not familiar.

He maintained 91 knots indicated airspeed (best glide speed) and maneuvered the airplane for a forced landing in a field. After seeing powerlines ahead he pushed the yoke but hit the bottom wire. The airplane then touched down on the main landing gear near the edge of the field, rolled up a slight embankment, and then onto a road, coming to rest upright. He exited the airplane and called 911 to

report the accident.

Pilot Information

Certificate:	Commercial	**Age:**	33,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
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:**	April 4, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 29, 2017
Flight Time:	1063 hours (Total, all aircraft), 300 hours (Total, this make and model), 772 hours (Pilot In Command, all aircraft), 149 hours (Last 90 days, all aircraft)		

The pilot, age 33, held a commercial pilot certificate with ratings for airplane single and multi-engine land, issued October 15, 2014, and held a 1st class medical certificate with no limitations issued April 4, 2017. On the submitted NTSB Pilot/Operator Aircraft Accident/Incident Report, he reported 1,063 hours total flight time, of which 300 hours were in the accident make and model airplane.

Aircraft and Owner/Operator Information

Aircraft Make:	PACIFIC AEROSPACE LTD	**Registration:**	N750UP
Model/Series:	750XL NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	2007	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	133
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	May 26, 2017 Continuous airworthiness	**Certified Max Gross Wt.:**	7500 lbs
Time Since Last Inspection:	161 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	4910.9 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	C126 installed, not activated	**Engine Model/Series:**	PT6A-34
Registered Owner:	On file	**Rated Power:**	750 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The two-place, low-wing airplane serial number 133 was manufactured in 2007. It was powered by a Pratt & Whitney PT6A-34 engine rated at 750 shaft-horsepower for 5 minutes, maximum continuous 633 shaft horsepower, and equipped with a constant-speed, feathering and reversible, three-bladed Hartzell propeller.

The airplane's fuel system consisted of four fuel tanks having a total capacity of about 227.4 U.S. gallons, of which 221 U.S. gallons were usable. The unusable fuel capacity of each forward fuel tank was 3 gallons.

The NTSB Pilot/Operator Aircraft Accident/Incident report completed by the owner/operator in consultation with the pilot revealed the "no" block was checked to the question was there mechanical malfunction or failure.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HSV,629 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	183°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 21000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	24°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Perkasie, PA (CKZ)	**Type of Flight Plan Filed:**	IFR
Destination:	Huntsville, AL (HSV)	**Type of Clearance:**	IFR
Departure Time:	07:45 Local	**Type of Airspace:**	

At 1053, a surface weather observation taken at HSV located about 14 nm south-southwest of the accident site, reported wind 110° at 7 knots, 10 miles visibility, overcast ceiling at 21,000 ft agl, temperature 24°C, dew point 18°C, and altimeter setting 30.04 inches of mercury.

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	34.86,-86.757499

The accident site was located about 13.6 nautical miles north-northeast of HSV. Examination of the accident site by a Federal Aviation Administration (FAA) inspector revealed damage to a cable adjacent to a road located about 570 ft southwest of the accident site. Marks from all three landing gears were noted in an open field between the contacted cable and resting position of the airplane. The marks continue on the ground, then impact upslopsing terrain adjacent to a road. The airplane slid across the road coming to rest upright with a portion of the right wing over the road about 460 ft from the first observed touchdown point in the field. A cable was wrapped around the propeller spinner, and the nose and the right main landing gear wheel assembly were separated.

Postaccident examination of the airplane by the FAA inspector revealed that each forward fuel tank was breached, while a co-owner of the airplane reported the left rear fuel tank was also breached. The FAA inspector reported there was no evidence of fuel spill across the road along the energy path. A residual amount of fuel remained in both forward fuel tanks although the amount was not quantified, and a slight spill of fuel was noted beneath the left forward fuel tank no bigger than a "dixie plate." The propeller blades were in the feathered position though 1 blade which was bent about 90° was rotated in the propeller hub. The airplane was recovered for further examination.

According to a co-owner of the airplane, no fuel was found in the fuel filter assembly or environmental collector tank. Additionally, no fuel was found in the fuel lines in the engine compartment when the engine was removed from the airframe. The co-owner was requested information about the engine and internal condition of the engine-driven fuel pump to confirm it showed signs of fuel exhaustion, but the information was not provided to NTSB.

Tests and Research

According to an individual that co-owned the airplane, the same flight had been made multiple times, including twice in that airplane; however, that trip had never been attempted non-stop.

According to the Pilot's Operating Handbook, the fuel allowance for start, taxi, and takeoff is 39 pounds, or about 6 gallons. Based on the pilot's flight planning using 50 gallons per hour, and the usable fuel load at takeoff of 215 gallons, the available fuel without reserve allowed for about 4 hours 18 minutes of flight.

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Kyle Cook; FAA/FSDO; Birmingham, AL
Original Publish Date:	December 16, 2019
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=95925