Aviation Investigation Final Report

Location:	Warren, Vermont	**Incident Number:**	ERA14IA249
Date & Time:	May 21, 2014, 07:33 Local	**Registration:**	N116WA
Aircraft:	Embraer EMB-110P1	**Aircraft Damage:**	Minor
Defining Event:	Fuel exhaustion	**Injuries:**	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

According to the pilot, 1,000 lbs of fuel was to be added to each fuel tank the night before the incident flight. The next morning, he conducted a preflight inspection and reported seeing 1,000 lbs per side and then departed the home base airport on the cargo flight. The pilot reported that, while in cruise flight, the fuel low-pressure light illuminated, followed shortly thereafter by the right engine and then the left engine shutting down. The pilot subsequently diverted the flight to a nearby airport. Upon touchdown, the pilot used "aggressive braking." The left tire subsequently deflated, the airplane veered left, the left main landing gear departed the paved portion of the runway, and then the right tire deflated.

Following the incident, maintenance personnel conducted a fuel quantity gauge accuracy test, and no abnormalities or malfunctions were noted that would have precluded normal operation. Postincident examination of the fuel system revealed that the fuel tanks were devoid of fuel. The fuel caps were found secure and in place, and no evidence of any preaccident mechanical malfunction or failure was found. There was no evidence of any fuel staining or leakage.

A review of the airplane's fueling records revealed that it was last refueled over a week before the incident; it was not fueled the night before the incident as requested by the pilot. During that week, the airplane was flown about 1.9 flight hours; 1,100 lbs of fuel remained after that flight. Maintenance personnel subsequently conducted multiple engine performance runs and two taxi repositions, which consumed about 600 lbs of fuel, leaving about 500 lbs of fuel, which was also reported by a maintenance technician after the most recent test run before the flight. Given the lack of any preexisting mechanical anomalies and that no fuel was recovered from the airplane, it is likely that the engine lost power due to fuel exhaustion because of the pilot's inadequate preflight inspection.

Probable Cause and Findings

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

The pilot's inadequate preflight inspection, which resulted in a total loss of engine power due to fuel exhaustion.

Findings

Personnel issues	Preflight inspection - Pilot
Aircraft	Fuel - Fluid level

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Enroute-cruise	Fuel exhaustion (Defining event)
Enroute-cruise	Loss of engine power (total)
Emergency descent	Off-field or emergency landing

On May 21, 2014, about 0733 eastern daylight time, an Embraer EMB-110P1, N116WA, experienced a total loss of engine power while in cruise flight. The pilot subsequently made an emergency landing at Warren-Sugarbush Airport (0B7), Warren, Vermont. The commercial pilot was not injured and the airplane sustained minor damage to the left wing flap. The airplane was registered to Piper East, Inc and was operated by Wiggins Airways Inc as Wiggins Airways Cargo Flight 1042, under the provisions of Title 14 Code of Federal Regulations Part 135 as a cargo flight. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight that had departed Manchester International Airport (MHT), Manchester, New Hampshire about 0700 with an intended destination of Burlington International Airport (BTV), Burlington, Vermont.

The pilot reported to personnel with the Vermont Aeronautics division that the "normal procedure" for refueling was that the pilot leaves a fuel order the night prior and that 1,000 pounds per side was "their standard fuel load for this run." He had not observed the fuel upload. During the morning preflight check, he observed the fuel indicators showing about 1,000 pounds per side. While in cruise flight at 8,000 feet above mean sea level, about 10 miles south of 0B7, the fuel low pressure light-boost pump fail light illuminated. Subsequently, the right engine "shutdown" and then the left engine "shutdown." He declared an emergency and selected "nearest airport" on the airplane's gps. However, the nearest airport with a runway greater than 3000 feet in length, a limitation set in the gps, was beyond the airplane's glide capability. He subsequently noticed 0B7 about 5 miles away and began to set up for the approach to the runway. Immediately upon touchdown he utilized "aggressive braking" and the left tire deflated, the airplane veered to the left, the left main landing gear departed the paved portion of the runway, and subsequently the right tire deflated.

According to a Vermont Aeronautics investigator, tire skid marks began about 475 feet after the runway threshold, the left main landing gear departed the paved portion of the runway 942 feet past the initial tire skid marks, and the airplane came to rest 1,509 feet past the initial tire skid marks, with 590 feet of runway remaining. Examination of the fuel tanks utilizing both the airplane's fuel gauges in the cockpit and the dripless stick method revealed that both fuel tanks were devoid of fuel. There was no evidence noted of any fuel leak or staining and the fuel caps were secure and in place.

According to a Federal Aviation Administration (FAA) inspector, the airplane was last fueled on May 13, 2014. Since that refueling, the airplane had flown 1.9 flight hours and consumed about 1,200 pounds of fuel. Also during the time from the last refueling and the incident, maintenance personnel performed multiple engine performance runs and two taxi repositions. One maintenance technician reported to the FAA inspector that during an engine run on May 17, 2014, he noted approximately 500 pounds of total

fuel on board. No refueling records were located after the May 13, 2014 refueling and before the incident flight. Subsequently, following the incident maintenance personnel performed a fuel quantity accuracy test and no abnormalities or malfunctions were noted with the fuel quantity indication system.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; 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):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 22, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Embraer	**Registration:**	N116WA
Model/Series:	EMB-110P1	**Aircraft Category:**	Airplane
Year of Manufacture:	1982	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	110399
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:		**Engine Manufacturer:**	P&W CANADA
ELT:		**Engine Model/Series:**	PT6A-60A
Registered Owner:	PIPER EAST INC	**Rated Power:**	1127 Horsepower
Operator:	WIGGINS AIRWAYS INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Wiggins Airways	**Operator Designator Code:**	AXSA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMPV,1121 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	07:51 Local	**Direction from Accident Site:**	65°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	9°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Manchester, NH (MHT)	**Type of Flight Plan Filed:**	IFR
Destination:	Burlington, VT (BVT)	**Type of Clearance:**	IFR
Departure Time:	07:00 Local	**Type of Airspace:**	

Airport Information

Airport:	WARREN-SUGARBUSH 0B7	**Runway Surface Type:**	Asphalt
Airport Elevation:	1470 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	Visual
Runway Length/Width:	2575 ft / 30 ft	**VFR Approach/Landing:**	Forced landing;Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Minor
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	44.1175,-72.826942(est)

Administrative Information

Investigator In Charge (IIC):	Etcher, Shawn
Additional Participating Persons:	Paul Hubbard; FAA/FSDO; Portland , ME
Original Publish Date:	February 3, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89243