

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

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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

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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

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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)

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Administrative Information

Investigator In Charge (IIC): Etcher, Shawn

Additional Participating Paul Hubbard; FAA/FSDO; Portland, ME
Persons:

Original Publish Date: February 3, 2016

Last Revision Date:
Investigation Class: Class

Note:
Investigation Docket: https://data.ntsb.gov/Docket?ProjectID=89243

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.

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