Aviation Investigation Final Report

Location:	Sandy Lake, Pennsylvania	**Accident Number:**	NYC05LA137
Date & Time:	August 24, 2005, 13:30 Local	**Registration:**	N99746
Aircraft:	Ercoupe 415-D	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane experienced a total loss of engine power during cruise flight, and struck a tree during a forced landing. After the accident, the passenger reported the engine driven fuel pump failed. Review of a flight manual for the make and model airplane revealed that a fuel gauge was incorporated into the fuselage (header) fuel tank cap. Fuel flowed from the wing tanks, via the engine driven fuel pump, to the fuselage tank. Once in the fuselage tank, fuel was gravity fed into the engine. Further review of the manual revealed that in case of engine driven fuel pump failure, the engine would continue to function until the 6-gallon fuselage tank was drained. During an examination of the wreckage, the fuselage tank was observed to be empty, except for some residual fuel. The fuel was clear, consistent with 100LL aviation gasoline, and no contamination was observed. The engine driven fuel pump was removed from the engine for inspection. When the pump was actuated by hand, there was no movement or continuity to its mechanical linkage that connected into the engine. The inoperative pump was re-attached to the engine to prevent oil leakage, and 5 gallons of gasoline was added to the fuselage tank. The engine then started on the first attempt, without hesitation, and ran continuously at idle power and partial power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total failure of the engine driven fuel pump, and the pilot's failure to recognize a diminishing fuel supply in the fuselage (header) fuel tank, which resulted in a total loss of engine power during cruise flight and subsequent collision with trees during a forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE

Findings
1. (C) FUEL SYSTEM,PUMP - FAILURE,TOTAL
2. (C) FUEL SUPPLY - NOT RECOGNIZED - PILOT IN COMMAND
3. FLUID,FUEL - STARVATION

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
4. OBJECT - TREE(S)

Factual Information

On August 24, 2005, at 1330 eastern daylight time, an Ercoupe 415-D, N99746, was substantially damaged during a forced landing, following a total loss of engine power near Sandy Lake, Pennsylvania. The certificated private pilot was seriously injured, and the passenger sustained minor injuries. Visual meteorological conditions prevailed for the flight that departed Rostraver Airport (FWQ), Monongahela, Pennsylvania, about 1230; destined for Port Meadville Airport (GKJ), Meadville, Pennsylvania. No flight plan was filed for the personal flight conducted under 14 CFR Part 91.

Prior to departing Monongahela, the pilot added 6.99 gallons of 100LL aviation gasoline to the airplane. Sandy Lake was approximately 70 miles north of Monongahela, and Port Meadville was about 15 miles north of Sandy Lake. A witness, near the accident site, observed the accident airplane and heard engine noise. She then heard no engine noise, and observed the airplane glide into trees. The airplane subsequently came to rest in a 60-foot-tall tree.

The passenger reported to emergency personnel that, "the fuel pump quit."

The airplane was manufactured in 1946. Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed that the airplane was equipped with a 6-gallon fuselage fuel tank (also called a header tank), a 9-gallon right wing fuel tank, and a 9-gallon left wing fuel tank. The right wing fuel tank was compromised, and fuel stains were present on the right wing. In addition, emergency personnel observed fuel leaking from the right wing when they responded to the scene. The left wing fuel tank was also compromised, and leaking fuel. The fuel cap was absent from the fuselage fuel tank. The FAA inspector could not confirm if the cap was ejected during the impact, and he did not recover the fuel cap.

On October 18, 2005, a re-examination of the wreckage was conducted under the supervision of a Safety Board investigator. Some residual fuel was observed in the fuselage fuel tank and gascolator. A sample of fuel was recovered from the gascolator. The fuel was bright, clear, and consistent and color and odor with 100LL aviation gasoline. When water-finding paste was inserted in the fuel sample, the paste remained its original color, indicating that no water was present in the sample. Some sediment was noted at the bottom of the sample.

The engine driven fuel pump was removed from the engine for examination. When the pump was actuated by hand, it was noted that there was no movement or continuity to its mechanical linkage that connected into the engine.

The propeller had bent rearward during the impact sequence. The bent propeller was removed and reinstalled inverted, so that it would not strike the airframe. The inoperative pump was re-attached to the engine to prevent oil leakage, and 5 gallons of gasoline was added to the

fuselage tank. The fuel valve was positioned to the open position, and the engine was primed twice. When the starter was engaged, the engine started on the first attempt without hesitation, and ran continuously at idle power for 15 - 30 seconds. The engine was then shut down using the magneto key switch. The process was repeated two additional times with the engine running continuously at idle and partial power. Due to vibration, the engine was not run to maximum power.

Review of a flight manual for an Ercoupe 415-D revealed that a fuel gauge was incorporated into the fuselage fuel tank cap. Fuel flowed from the wing tanks, via the engine driven fuel pump, to the fuselage tank. Once in the fuselage tank, fuel was gravity fed into the engine. Further review of the manual revealed, "In case of fuel pump failure, the engine will continue to function until the six gallon fuselage tank is drained."

The aircraft logbooks were not recovered, and the date of the last maintenance inspection was unknown.

The most recent entry in the pilot's logbook was dated June 4, 2005. According to the logbook, the pilot had accumulated a total flight experience of approximately 835 hours; of which, about 20 hours were in the accident airplane.

Pilot Information

Certificate:	Private	**Age:**	72,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 1, 2003
Flight Time:	835 hours (Total, all aircraft), 20 hours (Total, this make and model), 730 hours (Pilot In Command, all aircraft), 2 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Ercoupe	**Registration:**	N99746
Model/Series:	415-D	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2369
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	1400 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	C 75-12
Registered Owner:	Joseph F. Mazza Jr.	**Rated Power:**	75
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FKL,1540 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	13:35 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.25 inches Hg	**Temperature/Dew Point:**	22°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Monongahela, PA (FWQ)	**Type of Flight Plan Filed:**	None
Destination:	Meadville, PA (GKJ)	**Type of Clearance:**	None
Departure Time:	12:30 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	41.348056,-80.07917

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Stewart Beck; FAA FSDO-03; Allegheny, PA Jason Lukasik; Continental Motors; Mobile, AL
Original Publish Date:	August 29, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=62323