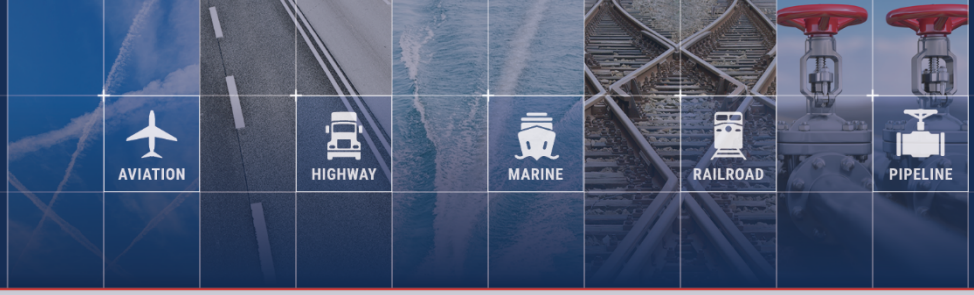

Aviation Investigation Factual Report

Location:	Buffalo Grove, Illinois	**Accident Number:**	CHI05LA110
Date & Time:	May 7, 2005, 23:00 Local	**Registration:**	N11239
Aircraft:	Cessna 150L	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Factual Information

On May 7, 2005, at 2300 central daylight time, a Cessna 150L, N11239, operated by The Flight Center Inc., dba Palwaukee-Flyers, impacted terrain during a forced landing approximately 5 miles northwest of Palwaukee Municipal Airport, Wheeling, Illinois. Night visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 flight was not operating on a flight plan. The certified flight instructor (CFI) received serious injuries, and the student pilot received minor injuries. The flight last departed from Baraboo Wisconsin Dells Airport (DLL), Baraboo, Wisconsin, about 2115 and was returning to PWK.

The CFI stated he and the student pilot departed PWK about 1700 en route to a casino in Hammond, Indiana, with seven other instructors and their students. One of the instructors was the chief flight instructor who was also a company co-owner. While en route, they changed their destination to DLL due to instrument meteorological conditions at their original destination. The CFI said that the accident airplane would "usually burn" about 6 gallons per hour, and he did not lean the mixture during the flight. He stated that before he left, he "made sure that there was full fuel in the tanks." Upon arrival at DLL, he checked the tanks and saw that they "looked only 1/4 empty and determined there would be enough" fuel for the return to PWK. Prior to departure, the CFI stated the he checked the fuel tanks again after he watched the student pilot perform a preflight inspection of the airplane at DLL. The CFI said that he checked the fuel tanks using a flashlight at night.

While at DLL, the CFI said that he reportedly asked the chief flight instructor about the fuel level in each tank, and the chief flight instructor responded by saying it was okay. The CFI did not use a dipstick to check fuel tanks at either location. The CFI stated they departed DLL about 2130 and the weather was "very good and everything was going fine." The engine started to sputter and lost power about two miles from PWK. He stated that he "immediately" started to perform his engine failure checklist but could not restart the engine and declared a Mayday. He stated that his altitude was about 2,200 feet mean sea level (MSL), and he knew that he didn't have much time. He saw nothing but houses and buildings except for a small dark area that looked empty where he attempted a landing on. The area was very small and the airplane impacted between several houses and a water facility.

According to the Buffalo Grove Police Department Incident Report, the CFI said, "the plane had run out of gas."

The student pilot stated that they returned to PWK with full power at an altitude of 3,500 MSL. He stated that there was a "noticeable" headwind and "good" visibility. Approximately 10 miles from PWK they began a decent to 2,500 feet MSL and upon reaching that altitude the engine "abruptly" began shaking and there was a "noticeable" lack of power.

The CFI began employment at The Flight Center Inc. several weeks or about a month prior to the accident. He held a commercial pilot certificate with single-engine and multiengine land ratings and an instrument airplane rating. He also held a flight instructor certificate with airplane single-engine land and instrument airplane ratings. At the time of the accident he accumulated a total flight time of 346.4 hours in all aircraft of which 4.4 hours were in the accident airplane make and model.

Prior to being hired by the company, the CFI accumulated about one hour total flight time in Cessna 150 series airplanes when he received spin training at the University of Illinois. During his employment with the company, he had flown the accident airplane twice for a total of about two hours, both times with students during local instructional flights. The CFI stated that he received about 5 hours of company training that was comprised of flights with the chief flight instructor and two other company CFIs. He stated that he had to pay the company for the airplane rental and company instructors used in his training. The company training did not include a written exam and the check out of airplane systems was described only during the preflight inspection of the airplane. He did not receive any Cessna 150 flight or ground training; all of the check out training was performed in the company's Beech Sundowner airplanes.

The 1973 Cessna 150L, serial number 15075273, airplane was powered by a Continental O200-A, serial number 204906-9-A, engine. The airplane was registered to The Flight Center Inc. on May 31, 1955. The airframe accumulated a total time of 7,412.6 hours and the engine accumulated a total time since major overhaul of 2,413.7 hours.

According to Teledyne Continental Service Information Letter SIL98-9A, Time Between [Major] Overhaul Periods, lists the O-200-A engine overhaul as at least every twelve years, or on an accumulation of 1,800 hours.

The Cessna 150 Owner's Manual lists the maximum glide speed as 70 MPH indicated airspeed.

The airplane was equipped with two standard fuel tanks with a total fuel volume is 26.0 gallons (13 gallons each) and the total usable fuel is 22.5 gallons. The cruise fuel consumption rates listed in the owner's manual are based upon a lean mixture setting. There is no fuel consumption data listed for taxi, takeoff, and landing in the owner's manual. The owner's manual lists the following fuel consumption rates for the following altitudes and engine rpm:

At 2,500 feet:
- 2,750 rpm, 7.0 gallons per hour
- 2,700 rpm, 6.6 gallons per hour
- 2,600 rpm, 5.8 gallons per hour
- 2,500 rpm, 5.1 gallons per hour
- 2,400 rpm, 4.6 gallons per hour
- 2,300 rpm, 4.1 gallons per hour

At 5,000 feet:
- 2,750 rpm, 6.4 gallons per hour
- 2,700 rpm, 6.0 gallons per hour
- 2,600 rpm, 5.3 gallons per hour
- 2,500 rpm, 4.8 gallons per hour
- 2,400 rpm, 4.3 gallons per hour
- 2,300 rpm, 3.8 gallons per hour

Federal Aviation Administration (FAA) Accident Prevention Program publication, "Time in Your Tanks - FAA-P-8740-3, " paragraph 1e. states, "Multiply the usable fuel on board your aircraft by 75 percent and divide the result by your previously confirmed consumption rate. This will be your SAFE FLIGHT limit for the aircraft. Resolve never to exceed it."

Examination of the airplane by an FAA inspector revealed that there was no usable fuel in either wing fuel tank, there was no fuel in the fuel line leading to the engine driven fuel pump, and there was "minimal" fuel in the carburetor. The mixture control was in the full rich position, the throttle was in the full forward position, the carburetor heat was in the off position, the fuel selector was in the off position. A first respondent reported that the airplane strobe light was illuminating upon his arrival.

The Investigator-In-Charge asked the CFI if he knew under what conditions the fuel gauges on small airplanes were accurate and whether he had knowledge of Federal Aviation Administration publication Time In Your Tanks. He said that he was unaware of the conditions of when the fuel gauges would be accurate and "never heard of" Time In Your Tanks and did not know how to calculate the "safe flight time" cited in the publication. The CFI said that the maximum glide speed was "76 or 70 something" and did not know the exact V-speeds but they were similar to the Beech Sundowner.

The CFI said that daylight conditions prevailed when he visually checked the fuel tanks at PWK and night conditions prevailed when he visually checked the fuel tanks with a flashlight at DLL.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	24,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 2	**Last FAA Medical Exam:**	March 1, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 1, 2005
Flight Time:	346 hours (Total, all aircraft), 4 hours (Total, this make and model), 226 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	None	**Age:**	25,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	None	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	10 hours (Total, all aircraft), 9 hours (Total, this make and model), 10 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N11239
Model/Series:	150L	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	15075273
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	June 1, 2005 100 hour	**Certified Max Gross Wt.:**	1600 lbs
Time Since Last Inspection:	3.7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	7412.6 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	O-200
Registered Owner:	The Flight Center Inc.	**Rated Power:**	100 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Palwaukee Flyers	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/bright
Observation Facility, Elevation:	PWK,641 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	22:53 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.8 inches Hg	**Temperature/Dew Point:**	27°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Baraboo, WI (DLL)	**Type of Flight Plan Filed:**	None
Destination:	Wheeling, IL (PWK)	**Type of Clearance:**	VFR
Departure Time:	23:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Palwaukee Municipal PWK	**Runway Surface Type:**	
Airport Elevation:	647 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	Visual
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	42.114166,-87.90139

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Dennis Caravella; Federal Aviation Administration; West Chicago, IL
Report Date:	February 9, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61928