National Transportation Safety Board
Aviation Accident Factual Report

Location:	Pontiac, MI	**Accident Number:**	CHI04LA039
Date & Time:	12/03/2003, 1033 EST	**Registration:**	N65455
Aircraft:	Cessna 152	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

On December 3, 2003, at 1033 eastern standard time, a Cessna 152, N65455, piloted by a certified flight instructor (CFI), sustained substantial damage during an in-flight collision with trees and terrain while performing a forced landing near Pontiac, Michigan. The CFI reported a loss of engine power while on a 3 mile final for runway 27L at Oakland Pontiac International Airport (PTK). Visual meteorological conditions prevailed at the time of the accident. The instructional flight was operating under the provisions of 14 CFR Part 91 without a flight plan. The CFI was not injured and his dual-student was seriously injured. The flight departed Macomb Airport (57D), New Haven, Michigan, at 1018.

According to an interview with the CFI and his written statement, the purpose of the flight was to practice takeoffs and landings at a tower-controlled airport. The CFI reported that prior to the flight he and his student both visually ascertained the airplane's fuel quantity. He reported that both fuel tanks were half full (13 total gallons or 11.5 usable gallons), which correlated with the indications displayed on the cockpit fuel quantity gauges. He stated that the engine run-up and systems checks were normal prior to the takeoff from 57D. The CFI reported they climbed to 3,000 feet mean sea level (msl) prior to setting cruise engine power and leaning the fuel mixture. He stated they contacted PTK tower approximately 8 miles from the airport and the tower controller instructed them to report a 3 mile final for runway 27R. Approximately 5 miles from the airport, the student enriched the mixture to full rich and reduced engine power to initiate a descent to 2,000 feet msl. The CFI stated that while they were on a 3 1/2 mile final for the runway the tower controller issued new approach instructions for runway 27L. The CFI acknowledged the runway change and he was subsequently cleared to land.

The CFI reported that shortly after he received the landing clearance, at approximately 1,100 feet above ground level (agl), the airplane experienced a loss of engine power. He immediately took aircraft control from his student and advanced the throttle. The CFI reported the engine "appeared to surge and lose power from 2,000 to 1,000 rpm." He informed the tower controller of the engine power loss and continued for the runway. The CFI established best glide airspeed and verified the fuel selector position. He additionally verified the mixture control was full rich, the throttle control was full forward, the magneto switch was on both, and the primer was secured. The engine did not respond to the completed emergency checklist items. The CFI stated that the airplane was approximately 800 feet agl after he completed the

checklist items and that he did not have sufficient altitude to land on the runway. He elected to perform an off-airport landing in a small field positioned approximately 1/2 mile east of the airport. The CFI stated that prior to the landing he moved the mixture control to idle cut-off position. The airplane impacted a tree line that bordered the field in which the forced landing was made. The airplane came to rest inverted, resting on its left side.

The CFI stated he unbuckled his safety belt/harness and extracted himself from the wreckage. His student was partially trapped under the left side of the airplane and "a steady stream of fuel was pouring on his left side." The CFI stated that the local police and fire departments were on-site within a couple of minutes and performed the extraction of the student pilot.

Inspectors from the Federal Aviation Administration (FAA) and an investigator from Cessna Aircraft Company performed an on-site investigation. According to the inspectors, there was no noticeable fuel smell or evidence of a fuel spill at the accident site. The vegetation around the main wreckage was not blighted when examined a day after the accident.

The left fuel tank was found ruptured and no fuel was recovered and/or quantified. The right fuel tank had no apparent damage and no fuel was recovered and/or quantified. The fuel system was examined. The fuel lines were not contaminated and no obstructions were noted when air was blown throughout the system. Both fuel tanks had vented filler caps. The right cap was loose when in the locked position. No anomalies were noted with the left cap. The gascolator and carburetor were void of fuel when examined at the accident site.

The engine remained attached to the airframe and the propeller remained attached to the engine. Engine crankshaft and valve train continuity was established by rotating the propeller by hand. Air was drawn into and expelled out of all cylinders as the crankshaft was rotated. Both magnetos produced a spark on the upper spark plug lead wires while the engine crankshaft was rotated. There was evidence of a fuel leak on the number one cylinder induction tube. There was fuel staining noted on the exterior of the carburetor, the engine oil sump, and nose landing gear. The electrode and insulator of the upper sparkplug from the number one cylinder was stained a blue color. The remaining upper spark plug electrodes and insulators were light gray/brown in color.

The CFI provided flight logbook entries, fuelling records, and aircraft utilization records that substantiated the fuel quantity aboard the airplane prior to its last departure.

Emergency room documentation confirmed the dual-student had suffered chemical burns on his left shoulder, chest and back.

The airport temperature (-01 degrees Celsius) and dew point (-08 degrees Celsius) would produce the likelihood of light carburetor icing accumulation during cruise and/or descent engine power settings, according to a carburetor icing probability chart developed by Transport Canada.

According to the 1978 Cessna 152 pilot operating handbook (POH), the average fuel burn at cruise engine power is 5-6 gallons/hour at 3,000 feet pressure altitude.

Flight Instructor Information

Certificate:	Flight Instructor; Commercial	**Age:**	23, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane Single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	07/22/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	04/30/2003
Flight Time:	325 hours (Total, all aircraft), 22 hours (Total, this make and model), 246 hours (Pilot In Command, all aircraft), 27 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student Pilot Information

Certificate:	Student	**Age:**	28, Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	11/11/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	13 hours (Total, all aircraft), 13 hours (Total, this make and model), 1 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N65455
Model/Series:	152	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Utility	**Serial Number:**	15281562
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	10/09/2003, Annual	**Certified Max Gross Wt.:**	1670 lbs
Time Since Last Inspection:	47.3 Hours	**Engines:**	1 Reciprocating
Airframe Total Time:	7907.1 Hours at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-235-L2C
Registered Owner:	On file	**Rated Power:**	110 hp
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	PTK, 980 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	1053 EST	**Direction from Accident Site:**	90°
Lowest Cloud Condition:		**Visibility**	10 Miles
Lowest Ceiling:	Broken / 25000 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.56 inches Hg	**Temperature/Dew Point:**	-1°C / -8°C
Precipitation and Obscuration:			
Departure Point:	New Haven, MI (57D)	**Type of Flight Plan Filed:**	None
Destination:	Pontiac, MI (PTK)	**Type of Clearance:**	VFR
Departure Time:	1018 EST	**Type of Airspace:**	Class D

Airport Information

Airport:	Oakland County International (PTK)	**Runway Surface Type:**	Asphalt
Airport Elevation:	980 ft	**Runway Surface Condition:**	Dry
Runway Used:	27L	**IFR Approach:**	None
Runway Length/Width:	6200 ft / 150 ft	**VFR Approach/Landing:**	Forced Landing; Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 None	**Latitude, Longitude:**	42.665278, -83.418611

Administrative Information

Investigator In Charge (IIC):	Andrew T Fox
Additional Participating Persons:	Serge Cote; Federal Aviation Administration - Detroit FSDO; Belleville, MI Robert August; Cessna Aircraft Company; Wichita, KS
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.