Aviation Investigation Final Report

Location:	Grayslake, Illinois	**Accident Number:**	CHI08LA273
Date & Time:	August 27, 2008, 19:00 Local	**Registration:**	N6664N
Aircraft:	Beech C23	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The airplane experienced a hard landing during a student pilot instructional flight. The student pilot had performed two landings at the accident airport before attempting a third landing. During the third landing attempt, the airplane had a high descent rate while on final approach. The flight instructor stated that he repeatedly told the student to check the vertical speed indicator while the airplane was between final and short final. The student pilot said that before the airplane landed, the flight instructor did not say anything when engine power was reduced to idle, which resulted in the airplane slowing too much and dropping.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequate flare by the student pilot and the inadequate supervision and delayed go-around performed by the flight instructor. Contributing to the accident were the student pilot's failure to attain/maintain a stabilized approach.

Findings

Aircraft	Landing flare - Not attained/maintained
Personnel issues	Aircraft control - Student/instructed pilot
Personnel issues	Monitoring other person - Instructor/check pilot
Personnel issues	Delayed action - Instructor/check pilot
Aircraft	Descent/approach/glide path - Not attained/maintained

Factual Information

History of Flight

Approach-VFR pattern final	Attempted remediation/recovery
Landing-flare/touchdown	Hard landing (Defining event)

HISTORY OF FLIGHT

On August 27, 2008, about 1900 central daylight time, a Beech C23, N6664N, operated by The Flight Center Inc. as a rental/instructional airplane, received substantial damage during a hard landing on runway 09 (3,274 feet by 40 feet, asphalt) at Campbell Airport (C81), near Grayslake, Illinois. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 instructional flight was not operating on a flight plan. The certified flight instructor and student pilot were uninjured. The flight originated from Chicago Executive Airport, Chicago/Prospect Heights/Wheeling (PWK), Illinois, about 1600.

The flight instructor stated that they performed several maneuvers over the Chain of Lakes and during their return to PWK, flew to C81 to perform takeoffs and landings, which according to the student pilot, were discussed before the flight.

The student pilot stated that they performed two landings before a attempting a third landing at C81. One of the landings was a full stop taxi back while another was a stop and go. The third landing attempt was supposed to be a stop and go. The student pilot stated that there was no sun glare. It started getting dark, and he did not see runway lights on. The airplane was configured with full flaps during final approach. The student pilot said he knew that he maintained proper speed and altitude because the flight instructor did not “complain” about it. Before the airplane landed, the flight instructor didn’t say anything when the student pilot reduced engine power to idle. The student pilot didn’t know how many feet the airplane was above the runway when he pulled “too far back on the yoke,” which made the airplane “slow too much and drop.” The flight instructor then said “power power,” and the airplane hit hard, bounced, and banked to the right. Within several seconds, the airplane slowed down and impacted the runway. The flight instructor then applied full engine power and performed an aborted landing. He does not recall if the flight instructor told him to check the vertical speed indicator during the third approach. He was told to check the vertical speed indicator on previous approaches. They then flew back to PWK where the student pilot performed the landing which he said was “almost perfect.” After their arrival, the flight instructor looked under the airplane and checked the landing gear wheels but did not say anything so the student pilot thought the airplane was undamaged. They then went into the operator’s office and scheduled another instructional flight.

The flight instructor stated that the first two landing touchdowns were “smooth.” On the base

leg of the third approach for landing, the student pilot maintained an altitude of about 700 feet above ground level and was not descending. The flight instructor told him to increase his descent angle. The student pilot reduced engine power and selected full flaps. The airplane was on the extended centerline to the runway but was descending “too fast.” The flight instructor repeatedly told the student to check the vertical speed indicator while the airplane was between final and short final. The flight instructor took control of the yoke and put his hand over the student pilot’s hand which was on the throttle to push the throttle forward. The student pilot reacted by pulling the throttle backwards. The airplane “hit” the runway and bounced. The flight instructor knocked the student pilot’s hand away from the throttle control and pushed the throttle control full forward and kept the airplane in-flight. The airplane did not touch down a second time. Damage to the airplane reportedly included wing spar damage.

The accident was discovered by Federal Aviation Administration inspectors on August 29, 2008, during a base inspection of the operator due to a unrelated complaint. During that inspection, the president of the The Flight Center Inc. told inspectors of the accident.

AIRCRAFT INFORMATION

The 1983 Beech C-23, N6664N, serial number (S/N) M2386, airplane underwent its last maintenance inspection during a 100-hour inspection dated July, 7, 2008, at a tachometer time of 5,240.1 hours and a Hobbs meter time of 5,992.6 hours. The airplane was powered by a Lycoming O-360-A4K, serial number L-30425-36A, engine.

The airplane was involved in a propeller strike that occurred during a student solo flight in the previous fall or winter of 2008. The propeller was then changed, and the airplane was flown under a ferry permit to PWK after which it was not flown until the engine was rebuilt. On April 7, 2008, the engine was disassembled and new parts were installed as per the manufacturer’s latest overhaul manual, at a tachometer time of 5,136.6 hours.

PERSONNEL INFORMATION

The student pilot accumulated a total flight time of 31.4 hours all of which was in Beech C23 airplanes. The pilot’s first logbook entry was dated October 24, 2007, and during his eighth flight on April 24, 2008, he first flew to C81 from PWK. Three landings were logged during that flight. On June 22, 2008, the student pilot began flying with the flight instructor and all of the subsequent three flights, with the last being the accident flight, were with that flight instructor. The accident flight was the second time that the student pilot had flown into C81. The majority of flights and landings were performed at PWK and Waukegan Regional Airport, Waukegan, Illinois. The student pilot had not performed a solo flight and had not taken the private pilot written exam at the time of the accident.

The flight instructor accumulated a total flight time of 1,480 hours of which 133.4 hours were as an instructor and 24.2 hours were as an instructor in Beech C-23 airplanes.

On February 26, 1983, he was issued a private pilot certificate with an airplane single-engine land rating.

On July 24, 2001, his private pilot certificate was suspended for 60 days and his third class medical certificate was revoked.

On April 21, 2002, he was issued a glider rating on his private pilot certificate.

On May 02, 2004, he failed the practical portion of the instrument airplane rating examination and was to be reexamined in the following: III. Air Traffic Control Clearances and Procedures, A. Air Traffic Control Clearances; IV. Flight By Reference to Instruments, F. Steep Turns, G. Recovery from Unusual Flight Attitudes; VI. Instrument Approach Procedures, A. Nonprecision Instrument Approach.

On May 17, 2004, he failed the practical portion of the instrument airplane rating examination and was to be reexamined on the entire flight portion of the examination.

On July 9, 2004, he was issued an instrument airplane rating on his private pilot certificate.

On August 15, 2006, he failed the practical portion of the commercial pilot certificate with a single-engine land airplane rating examination. Upon reapplication for the exam, he was to be reexamined on the following: V. Performance Maneuvers, C. Chandelles (ASEL and ASES); IX. Emergency Operations, A. Emergency Approach and Landing (Simulated) (ASEL and ASES).

On August 26, 2006, upon reexamination, he was issued a commercial pilot certificate with an airplane single-engine land rating.

On November 21, 2007, he was issued an airplane multi-engine land rating on his commercial pilot certificate.

On April, 22, 2008, he was issued a ground instructor certificate with advanced and instrument ratings after obtaining a 92 percent score on the Fundamentals of Instructing knowledge exam and a 76 percent score on the Advanced Ground Instructor knowledge exam.

On June 2, 2008, he failed the practical portion of a flight instructor certificate exam and was to be reexamined in area of operation IV-XIV. Areas of Operation IV-XIV are: IV. Preflight Lesson on a Maneuver to be Performed In-Flight; V. Preflight Procedures; VI. Airport and Seaplane Base Operations; VII. Takeoffs, Landings, and Go-Arounds; VIII. Fundamentals of Flight; IX. Performance Maneuvers; X. Ground Reference Maneuvers; XI. Slow Flight, Stalls, and Spins; XII. Basic Instrument Maneuvers. At the time of his examination, he accumulated 1,173 hours as pilot-in-command or solo, 175 hours instrument, and 365 hours of dual instruction received.

On June 11, 2008, upon reexamination, he was issued a flight instructor certificate with an

airplane single-engine land rating.

The flight instructor received approximately 1 hour of flight training by the operator when he was hired. That training was conducted in a Beech 23 and included airwork and one landing. The flight instructor did not receive any flight training in the operator's Cessna airplanes.

TESTS AND RESEARCH

The student pilot learned of the operator through an advertisement and went on an introductory flight with one of their flight instructors. Upon completion of the introductory flight, he then met with the president of The Flight Center Inc. and the flight instructor. They told him that it will take some people 60 or 80 hours to obtain a private pilot certificate, but it is dependent upon the student's pace and comprehension. They told him that age did not make a difference as they had younger students who took more time to obtain a private pilot certificate than some of the older students. He did not fly with the instructor who was on the introductory flight again. The student pilot stated that his pace was "a little slow" due to his work schedule, which only allowed him to fly approximately once per week. The operator had provided all of the student pilot's training.

The operator assigns a different instructor for every flight so that a student could choose which one they felt most comfortable with. The school owner asked him to fly with three different instructors so that he can choose which instructor he wanted to fly with. After flying with the third instructor, he told the president of The Flight Center that he wanted to use the third instructor because if you kept changing the instructors, he would have to get used to their teaching method and style. The third flight instructor quit after flying with the student pilot twice because he wanted to return to Minnesota. He then flew with a fourth instructor for a couple of lessons, before that flight instructor later left for military deployment. He then flew with a fifth instructor who told the student pilot that he didn't know how much longer he was going to work for the operator. The student pilot had only one ground school lesson with the fifth instructor. The school assigned a sixth instructor who joined the school and after a few lessons, the instructor left the school and returned to Oklahoma. The school then assigned the flight instructor that was on the accident flight with him and who was new to the school and looking for students. The student pilot told the flight instructor what his weaknesses were and what his schedule was. The student pilot had flown with the flight instructor on the accident flight 3-4 times and described his lesson presentation and conduct during flights as "good."

He said that when he flew with his sixth instructor they did several go-arounds and landings. His sixth flight instructor "never really complained" about his flying. He said that the sixth flight instructor told him to focus on the runway during landing and as the runway gets bigger a determination can be made if the approach is too fast or too slow, which was something also told to him by the accident flight instructor. He did not recall any of the instructors telling him to change his area of focus during landing along different points of the runway. None of the instructors discussed runway illusions but they might have said, "keep an eye on the runway" but did not did not discuss runway illusions.

The operator uses or has used the following “assumed” business names.

AAA Flight Training
Meigs Flight School
1800IWILLFLY.COM
Palwaukee Flyers
Palwaukee Flight School
Palwaukee Airport Flight School
The Flight Center
The Flight Center at Service Aviation Inc.
Chicago Executive Flight School.

An active web site is still available for Meigs Flight School at www.meigs-flight-school.com and the listed phone number directs the caller to Flying Lessons Chicago and an automated system used by The Flight Center.

The FAA aircraft registry lists 12 airplanes registered to the operator. The company president stated that 6 airplanes were being used. According to registry information, the registered aircraft were:

Cessna 150L, N1478Q, S/N 15072778
Cessna 150L, N747KA, S/N 15073454
Cessna 150L, N11239, S/N 15075273
Cessna 172R, N737J, S/N 17280669
Cessna 172S, N87JA, S/N 172S8012
Cessna 172S, N1403R, S/N 172S9877
Beech C23, N6664N, S/N M-2386
Beech C23, N6718Y, S/N M-2270
Beech C23, N3841T, S/N M-2307
Beech C23, N6715X, S/N M-2260
Beech C24R, N5293M, S/N MC-572
Beech 76, N6002L, S/N ME-123

The operator provides flight training/aircraft rental under 14 CFR Part 91 and had not been issued a pilot school certificate to operate under 14 CFR Part 141. Additionally, the operator did not hold an air carrier operating certificate to conduct commercial operations. The DuPage Flight Standards District Office has no record of the operator submitting or being issued an application for a Letter of Authorization to provide air tours as required by FAA Regulation 91.147 Passenger Carrying Flights for Compensation or Hire.

The operator advertised within in its online store five different types of introductory flights each of which were titled as a Total Immersion Flight/Introductory Flight. The “#1 Intro Flight” offers 30 minutes of flight time while the Total Immersion Flight #1 – North Shore Adventure

describes that 35-45 minutes of flight time is provided.

The #2 Downtown Adventure “doubles” the flight time. The description for this flights states, in part:

“…the student will take off from Palwaukee Airport, fly over Glenview, Deerfield, Northbrook, Winnetka, Wilmette, Evanston, out to Lake Michigan then just over Bahai Temple. From there he will turn right and fly south down Lake Shore Drive, circle the Loop, the Sears Tower, and Hancock Building. Returning along Chicago’s great North Side, the student will be able to fly over Wrigley Field, Skokie, Lincolnwood, Morton Grove…”

The #3 Lake Geneva Getaway description states, in part:

“Give this to a beginner or an experienced pilot! Our Ultimate Twin Engine Intro is one that will be remembered for a lifetime. Just as with our other flights, the ground portion will introduce you to the basics of flight preparation, but this is a cross-country flight that leaves the State of Illinois and lands in Madison, WI, in fantastic style. …"

“…this flight is a short cross country flight that leaves the State of Illinois and lands in Lake Geneva, WI. Flying north over Mundelein, Libertyville and Lincolnshire to Great America (Gurnee), you will turn left and head northwestward towards the Chain of Lakes and the City of Lake Geneva before actually landing at the Grand Geneva Airport! From there you can enjoy a beverage or light lunch at the Grand Geneva Spa and Resort before returning to Palwaukee. This wonderful flight is made more special by upgrading to the larger plane and bringing a friend…”

The #5 Ultimate Twin Engine Intro description states, in part:

Additionally, the operator advertised “Valentine’s Day Specials” on the company website in the form of three packages all of which included “scenic” flights.

The following accident and incidents are recorded in the Federal Aviation Administration and/or National Transportation Safety Board (NTSB) records.

On May 29, 2003, a Beech C23, N6715X, received minor damage during a student solo flight after the pilot made several attempts to land on runway 23. During the final landing attempt, the airplane experienced a hard landing, which resulted in the nose landing gear collapsing.

On April 17, 2004, a Beech C23, N6715X, received minor damage during an instructional flight. The student pilot was practicing takeoff and landing at 3CK when the airplane experiences a bounced landing and the flight instructor attempted a recovery. The airplane departed the runway side into a grass area and ground looped. The left main landing gear and nose landing gear collapsed.

On May 7, 2005, a Cessna 150L, N11239, was involved in an accident investigated under NTSB accident number CHI05LA110, The NTSB determined the probable cause(s) as follows: “A loss of engine power due to fuel exhaustion during approach, inadequate preflight planning/preparation by the certified flight instruction (CFI), and the unsuitable terrain encountered by the CFI during the forced landing. An additional cause was the improper training of the CFI by the company. Contributing factors were the lack of familiarity with the airplane by the CFI and the night light conditions."

On September 12, 2007, a Beech C23R, N5293M, received minor damage during a gear-up landing at 3CK. The pilot received all of his flight instruction from The Flight Center Inc. and accumulated a total time of 27 hours in the Beech C23R.

On July 6, 2008, a Beech C23, N6715X, was involved in an accident investigated under NTSB accident number CHI08CA181. The narrative of the report states, “…the airplane veered off to the left during landing. [The pilot] attempted to correct using right rudder input, but the airplane did not respond. The airplane subsequently exited the left side of runway 29, went down an embankment, and stuck small trees.” The NTSB determined the probable cause(s) as follows: “The pilot’s inadequate compensation for crosswind and his failure to maintain directional control during landing. Contributing to the accident were the gusting crosswind and the embankment.”

The following incident was not recorded in the Federal Aviation Administration and/or National Transportation Safety Board (NTSB) records and was discovered by the NTSB Investigator-In-Charge.

On August 11, 2008, a student pilot and a flight instructor reportedly experienced the effects of carbon monoxide poisoning during an instructional flight in a Cessna 150L, N747KA. The flight instructor stated they flew to Waukegan, Illinois, and performed takeoff and landings and then flew to the Fox Lake area where they experienced symptoms of carbon monoxide poisoning while they were over the Fox Lake area with the intent of performing some flight maneuvers. The flight instructor stated he asked the student pilot some questions relating to the airplane’s direction of flight, but the student pilot responded with answers that seemed “odd.” The flight instructor and student pilot experienced headaches during the flight. The flight instructor looked at the “sticker” carbon monoxide detector in the airplane, but it was not providing an indication of carbon monoxide. He did not know whether the expiration date of the detector had expired. The flight instructor opened the windows and closed the vents, which alleviated his symptoms. They then returned to the PWK and reported it to the president of the Flight Center. The flight instructor took the rest of the day off. They both began to feel better about an hour after returning.

The student pilot was told that there was an exhaust leak that allowed exhaust to enter the cabin. The carbon monoxide detector was later replaced. The student pilot continued receiving flight instruction at the operator and received a student solo endorsement but has not yet received an airman certificate. He stated that he plans on returning to the operator this

summer for additional flight instruction in order to receive an airman certificate. He also stated that the flight instructor was an “excellent” instructor.

Logbook records for N747KA dated August 14, 2008, show that the left front exhaust stack riser, part number 0450338-69 was removed and replaced at a tachometer time of 9,457.8 hours. The airplane was powered by a Continental O-200A, S/N 285229R, which had am engine time since overhaul of 3,302.9 hours. Teledyne Continental Service Information Letter SIL98-9 lists the time between overhaul for the O-200A engine, of 1,800 hours.

The student pilot of N747KA stated that as a customer of the operator, he had no knowledge of the time in service of the airplanes, engines, propellers, or other airplane maintenance related information. The student pilot was unaware that N747KA had been involved in an off airport landing on Grayslake following a loss of engine power. He knew that one of the operator’s airplanes was recently involved in a hard landing in Grayslake during an instructional flight.

ADDITIONAL INFORMATION

The operator is located within the service area of the DuPage Flight Standards District Office.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Glider	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1	**Last FAA Medical Exam:**	November 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 11, 2008
Flight Time:	1480 hours (Total, all aircraft), 25 hours (Total, this make and model), 1326 hours (Pilot In Command, all aircraft), 174 hours (Last 90 days, all aircraft), 58 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	None	**Age:**	45,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:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 21, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N6664N
Model/Series:	C23	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	M-2386
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 7, 2008 100 hour	**Certified Max Gross Wt.:**	2450 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6082 Hrs at time of accident	**Engine Manufacturer:**	
ELT:	Installed, not activated	**Engine Model/Series:**	
Registered Owner:	Flight Center Inc	**Rated Power:**	
Operator:	The Flight Center Inc	**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:**	Dusk
Observation Facility, Elevation:	UGN,727 ft msl	**Distance from Accident Site:**	11 Nautical Miles
Observation Time:	18:52 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	21°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Wheeling, IL (PWK)	**Type of Flight Plan Filed:**	Unknown
Destination:	Wheeling, IL (PWK)	**Type of Clearance:**	None
Departure Time:	16:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Campbell Airport C81	**Runway Surface Type:**	Asphalt
Airport Elevation:	788 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	None
Runway Length/Width:	3270 ft / 40 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	42.324722,-88.074165

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Craig Decker; Federal Aviaiton Administration; West Chicago, IL
Original Publish Date:	November 9, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=69036