Aviation Investigation Final Report

Location:	Shelbyville, Indiana	**Accident Number:**	CEN09LA396
Date & Time:	June 28, 2009, 21:25 Local	**Registration:**	N9085L
Aircraft:	Champion 7GCAA	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The pilot and a student pilot were practicing a simulated engine out maneuver. At 150 feet above ground level, the pilot increased the engine power but the engine did not respond. The pilot then attempted a forced landing to a field. During the landing flare, "the engine tried to come back..." After touchdown, the airplane ground-looped and sustained substantial damage. Examination of the engine revealed the mixture cable had fractured and separated. The airframe records showed the airplane's last annual inspection had not been completed in the preceding 12 months. Prior to the flight, the pilot had not reviewed the airplane logbooks to determine if the airplane was airworthy.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The partial loss of engine power due to the failure of the mixture control cable. Contributing to the accident was the inadequate maintenance on the airplane and the pilot's decision to operate the airplane in a condition that was not airworthy.

Findings

Aircraft	Scheduled maint checks - Not serviced/maintained
Personnel issues	Decision making/judgment - Pilot
Aircraft	Mixture control - Failure

Factual Information

History of Flight

Maneuvering	Loss of engine power (partial) (Defining event)
Maneuvering	Collision with terr/obj (non-CFIT)

On June 28, 2009, at 2125 eastern daylight time, a Champion 7GCAA single-engine airplane, N9085L, sustained substantial damage during a forced landing to a field near Shelbyville, Indiana. The airline transport pilot was not injured and the student pilot sustained minor injuries. The airplane was registered to Tecumseh Aircraft Partners, LLC, San Diego, California, and operated by the pilot. Visual meteorological conditions prevailed and a flight plan was not filed for the Code of Federal Regulations Part 91 flight. The flight departed Boggstown, Indiana, at 2020, and was destined for Columbus, Indiana.

According to the pilot, who was seated in the rear seat, he and the student pilot had completed several landings at various airports in the area. After departure from Boggstown, at 1,100 feet mean sea level (msl), the pilot pulled the engine power to idle to practice a simulated engine out maneuver. At 150 feet above ground level, the pilot increased the engine power; however, the engine did not respond. The pilot then attempted a forced landing to a field. During the landing flare, "the engine tried to come back..." After touchdown, the airplane ground looped and sustained substantial damage. The pilot reported to the Federal Aviation Administration (FAA) that the flight was a personal flight, and not an instructional flight. The pilot did not have a flight instructor certificate for single-engine airplanes.

The pilot also reported to the FAA that had the airplane not been damaged during the forced landing, he would have restarted the engine in the field and departed to his intended destination.

According to local authorities who were the first responders to the accident site, the pilot reported to them that "he was instructing [the student pilot] in a maneuver for engine failure/shutdown and also touch and go landings."

The pilot reported he had accumulated a total of 4 hours in the accident airplane.

Examination of the airplane by FAA inspectors revealed the left main landing gear separated from the fuselage, the right main wing spar was broken, and one propeller blade was bent aft. The engine controls, flight instruments, fuel selector, and elevator trim were accessible only by the front seat position, the rear seat position had access only to the throttle and carburetor heat controls. The airplane was recovered for further examination.

Examination of the engine at the accident site by FAA inspectors revealed no anomalies that

would have precluded normal engine operation.

On July 9, 2009, the NTSB investigator-in-charge received a telephone call from the FAA inspector, who was assigned to the accident investigation, regarding a fractured landing gear attach thru-bolt. According to the inspector, the mechanic who recovered the airplane from the field contacted him and stated he observed the left main landing gear attach thru-bolt on the accident airplane had a preexisting crack which led to the failure of the left main landing gear during the forced landing. The fractured bolt was retained by the FAA and forwarded to the NTSB materials laboratory for further examination.

NTSB materials laboratory examination of the landing gear attach bolt showed the bolt shank contained a preexisting crack; however, the fracture surface contained corrosion. After cleaning the fracture surface, the bolt fracture surface contained signatures consistent with fatigue and overload.

According to the airframe manufacturer service letter, at every 500 hour interval, the landing gear attach bolt was to be removed and replaced, or inspected with a magnetic particle inspection. Examination of the airframe records showed that this service letter had not been accomplished in the preceding 500 hours. The airframe records also showed the airplane's last annual inspection had been completed in August 2007, and not within the preceding 12 months. The FAA inspector reported that prior to the flight, the pilot had not reviewed the airplane logbooks to determine if the airplane was airworthy.

On August 7, 2009, two additional FAA inspectors examined the engine. Mechanical continuity was noted in the engine and accessories. The carburetor had been previously removed and disassembled by the cargo company director of maintenance. Examination of the carburetor revealed the mixture control cable was broken near the carburetor control arm attach point, and the carburetor attach hardware and remained cable were found secure. The cable fracture surfaces contained oxidation. The director of maintenance stated that he thought the mixture cable was just loose and had not broken the cable when he removed the carburetor. Inspection of the carburetor showed the carburetor inside throat area was covered in black soot.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	40,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	Glider	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Glider	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	December 5, 2008
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 15, 2009
Flight Time:	4700 hours (Total, all aircraft), 4 hours (Total, this make and model), 3790 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	**Age:**	21,Male
Airplane Rating(s):	None	**Seat Occupied:**	Front
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	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Champion	**Registration:**	N9085L
Model/Series:	7GCAA	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	226-70
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	August 1, 2007 Annual	**Certified Max Gross Wt.:**	1650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	GEZ	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:		**Direction from Accident Site:**	230°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Boggstown, IN (58II)	**Type of Flight Plan Filed:**	None
Destination:	Shelbyville, IN	**Type of Clearance:**	None
Departure Time:	20:20 Local	**Type of Airspace:**	

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:**	39.76889,-85.833885(est)

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	Ken Howe; Federal Aviation Administration; Indianapolis, IN
Original Publish Date:	March 3, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74166