Aviation Investigation Final Report

Location:	Southside, West Virginia	**Accident Number:**	ERA15LA287
Date & Time:	July 24, 2015, 17:30 Local	**Registration:**	N92653
Aircraft:	Piper J3C 65	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While on a multileg, cross-country flight, the commercial pilot purchased fuel at an intermediate destination. He then departed for the next planned flight leg. The pilot reported that, during that flight leg, the engine stopped producing power while the airplane was in cruise flight. The pilot chose a drag strip for the forced landing, and, during the descent, the engine restarted briefly but then stopped for the remainder of the descent. The pilot stated that he did not secure the engine during the descent because he was focused on reaching the forced landing area. The pilot further stated that, during the landing flare, the engine surged to "cruise power." The airplane then struck a guardrail, nosed over, and came to rest inverted. Although the pilot planned for the flight to be 90 minutes long, time-stamped fuel receipts and a witness statement indicating that the airplane departed immediately after it was refueled showed that the airplane was actually aloft for about 2 hours 30 minutes when the engine power loss occurred.

The pilot reported that fuel was leaking from the airplane after it came to rest; however, a witness reported that he did not see or smell fuel at the accident site, and examination of the accident site did not reveal any evidence of a fuel spillage or blighting to surrounding vegetation. Additionally, there was no odor of fuel at the accident site, and no fuel was found in the fuel tank.

The airplane was equipped with a 12-gallon fuel tank, and engine performance charts illustrated that the fuel consumption rate was between 5.4 and 5.8 gallons per hour. Given the estimated fuel consumption rate and the amount of time the airplane was in flight and that no evidence of fuel was found at the accident site, it is likely that the engine lost power due to fuel exhaustion. Because the pilot had not secured the engine during the descent, it likely surged during the landing due to the sudden change in the airplane's attitude during the landing flare, which would have led to the residual fuel within the tank being suddenly reintroduced to the engine and allowed it to briefly produce power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's exhaustion of the airplane's fuel supply, which resulted in a total loss of engine power. Contributing to the outcome was the pilot's failure to secure the engine before the forced landing.

Findings

Aircraft	Fuel - Fluid management
Aircraft	Fuel - Fluid level
Personnel issues	Lack of action - Pilot
Environmental issues	(general) - Contributed to outcome
Personnel issues	Use of equip/system - Pilot

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On July 24, 2015, about 1730 eastern daylight time, a Piper J3C-65, N92653, was substantially damaged during a forced landing to the Kanawha Valley Dragway race track in Southside, West Virginia, following a total loss of engine power. The commercial pilot/owner sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the flight which departed Cambridge Municipal Airport (CDI), Cambridge, Ohio, about 1500. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

In two separate statements, the pilot reported he was enroute to Florida on a multi-leg flight, and that the destination for the leg of the flight during which the accident occurred was Ashland, Kentucky (DWU). He later stated his destination for the accident flight was Ona, West Virginia (12V).

According to the pilot, the airplane was in cruise flight about 1,000 feet above ground level when the engine stopped producing power. He selected the race track for the forced landing, and during the descent, the engine restarted briefly, and then stopped for the remainder of the descent. As he was preoccupied with reaching his forced landing area, the pilot did not secure the engine during the descent. During the landing flare, the engine surged to "cruise power" before the airplane struck a guardrail, nosed over, and came to rest inverted. The pilot stated fuel was "pouring" from the airplane after it came to rest.

A firefighter who was at the track preparing for a night of racing witnessed the accident, responded to the scene, and was later interviewed by telephone. He said, "It was like he tried to land in the first 1/8 mile and then he went back up, and came back down, and tried to land in the second 1/8 mile." The firefighter said he could not hear if the engine was operating due to the race cars, but he did see the propeller moving.

According to the firefighter, "I was the first one down to him, and at first I didn't see him move, but when he moved the first thing I asked him was 'How's your fuel.' He said, 'Don't worry about the fuel, it's turned off.'" The firefighter said he did not see any fuel spilling and did not smell any fuel odor. He added, "When I asked him what happened, he said 'Engine failure.' Then he said, 'I don't know why I couldn't land here, I had plenty of room.'"

In a telephone interview, an employee at CDI said that he distinctly remembered the accident airplane landing, and taxiing to the self-service fuel point on the day of the accident. The pilot serviced his own airplane with fuel, but he assisted the pilot by chocking the wheels and attaching a grounding strap prior to fueling. He asked the pilot what the fuel capacity of the airplane was, and was told 12 gallons. The witness said the pilot serviced the airplane with "not quite" 5 gallons of fuel.

The witness said he talked briefly with the pilot over a sectional chart about his intended route of flight to Ashland, Kentucky (DWU), as the pilot "didn't want to go anywhere near" the airspace surrounding Charleston, West Virginia. The pilot explained that he did not have a GPS on board, and navigated solely by the sectional chart.

According to a fuel receipt, the airplane was refueled with 4.78 gallons of fuel at 1437. During a telephone interview, the CDI airport manager was asked to verify the time stamp on the fuel receipt for the fuel purchased by the accident pilot. He said the time clock on the credit card machine was 16 minutes slow, and therefore the purchase was at 1453.

Immediately after the airplane was serviced with fuel, the witness removed the grounding strap and the wheel chocks and the pilot hand-propped the airplane for start. On the second attempt, the engine started and ran smoothly and continuously throughout taxi, takeoff, and the departure climb. The witness was an aviation mechanic in the Navy, and had worked at CDI for 16 years prior to the day of the accident. He said he was "fascinated" by J3 Cubs, and was excited when the airplane landed, and made a point of watching the engine start, taxi, and takeoff.

The pilot held a commercial pilot certificate with ratings for airplane multiengine land, single-engine land, single-engine sea, and instrument airplane. He held a flight instructor certificate with ratings for airplane single-engine and instrument airplane, and a ground instructor certificate with ratings for basic and instrument. The pilot also held a Control Tower Operator Certificate with limits for Akron-Canton Air Traffic Control Tower, North Canton, Ohio. His most recent Federal Aviation Administration (FAA) second-class medical certificate was issued December 31, 2014. The pilot reported 1,927 total hours of flight experience, of which 180 hours were in the accident airplane make and model.

The airplane was manufactured in 1945, and was equipped with a Continental A-65 series 65-horsepower engine and a 12-gallon fuel tank. According to the owner's manual, the cruise speed was 73 mph, or approximately 65 knots.

The airplane was not equipped with an electrical system and engine start was accomplished by hand-propping. Its most recent annual inspection was completed on May 11, 2015, and had accrued 1,827 total aircraft hours at the time of the accident.

Examination of the airplane was performed by FAA inspectors at the accident site on July 27, 2015. Examination of photographs and telephone conversations with the inspectors revealed that both propeller blades of the wood propeller were fractured near the hub and the splinters were broomstrawed and bent opposite the direction of rotation. There was no odor of fuel, no evidence of fuel in the airplane's fuel tank, no evidence of fuel staining, and no blighting of the grass beneath the airplane due to fuel spillage.

In a telephone interview, the Chief of the Mason County Fire Department was asked if any remediation efforts were performed or requested at the crash site due to fuel spillage. He said, "Environmental was not called. There was nothing to remediate."

Damage to each wing, the empennage, engine cowling, and the firewall was noted. The carburetor was separated from the engine due to impact; therefore an engine test run could not be performed at the accident scene. The carburetor and the magnetos were removed for examination and testing in West Mifflin, Pennsylvania, on August 6, 2015. Examination of the carburetor revealed no pre-impact

mechanical anomalies. The magnetos were placed on a test bench and each produced spark at operating rpm, and as low as 70 rpm.

The accident site was located 78 nautical miles and 194 degrees from the departure airport. The intended destination was 100 miles and 212 degrees from the departure airport.

Winds reported at Yeager Airport (CRW), Charleston, West Virginia, 30 miles southeast of the accident site were variable at 4 knots.

According to the Continental Motors Corporation Curve No. 1009-1, SEA LEVEL PERFORMANCE CURVES chart, at 60 degrees Fahrenheit and between 1,700 rpm and 2,300 rpm, the "GUARANTEED FUEL CONS.-PROP LOAD" graph line depicted a fuel consumption rate of between 5.4 and 5.8 gallons per hour.

Pilot Information

Certificate:	Commercial; Flight instructor; Private	**Age:**	47,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	December 31, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1927 hours (Total, all aircraft), 180 hours (Total, this make and model), 1900 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N92653
Model/Series:	J3C 65	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	17026
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	May 11, 2015 Annual	**Certified Max Gross Wt.:**	1220 lbs
Time Since Last Inspection:	4 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1827 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	A-65-8
Registered Owner:	GAINES DARREN T	**Rated Power:**	65 Horsepower
Operator:	GAINES DARREN T	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CRW,947 ft msl	**Distance from Accident Site:**	30 Nautical Miles
Observation Time:	16:54 Local	**Direction from Accident Site:**	135°
Lowest Cloud Condition:	Few / 6000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	29°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	CAMBRIDGE, OH (CDI)	**Type of Flight Plan Filed:**	None
Destination:	ASHLAND, KY (DWU)	**Type of Clearance:**	None
Departure Time:	15:00 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	38.721942,-81.961387

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Jeff Halliday; FAA FSDO; West Mifflin, PA
Original Publish Date:	April 4, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91653