Aviation Investigation Final Report

Location:	Quincy, Illinois	**Accident Number:**	CEN15CA033
Date & Time:	October 26, 2014, 14:20 Local	**Registration:**	N62791
Aircraft:	Piper PA-23-250	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	4 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that the airplane departed with 122 gallons of fuel for the cross-country flight from Destin, Florida, to Quincy, Illinois. The airplane's two inboard wing fuel tanks, each having a 36 gallon capacity, were completely full before departure; however, in order to keep the airplane below its maximum gross weight at departure, the two outboard wing fuel tanks were each partially fueled with 25 gallons. The pilot reported that the inboard fuel tanks were used for engine startup, taxi, takeoff, and climb to the initial cruise altitude assigned by air traffic control. After reaching the initial cruise altitude, he switched to the outboard fuel tanks and leaned the mixture setting for optimal fuel consumption. About 2 hours into the flight, the pilot switched back to the inboard fuel tanks after the engines had consumed the useable fuel in the two outboard fuel tanks. The pilot reported that when the flight was about 7 miles from the destination airport, descending through 3,500 feet mean sea level, the right engine lost total power. The pilot feathered the right propeller, secured the right engine, and continued toward the planned destination. Shortly thereafter, the left engine lost total power and the pilot feathered the propeller and secured the engine. The pilot reported that he delayed extending the landing gear until the airplane cleared a row of trees that bordered the harvested soybean field that he selected for the forced landing. After clearing the trees, the pilot attempted to extend the landing gear by moving the landing gear selector handle to the down position; however, because the left engine was inoperative, a normal landing gear extension with the engine driven hydraulic pump was not possible. The pilot immediately attempted to extend the landing gear using the emergency hand-pump, but the airplane impacted terrain before the landing gear was fully extended. Upon contact with the terrain, the nose and left main landing gear collapsed. The left wing and fuselage sustained substantial damage during the forced landing.

A postaccident examination of the airplane established that the inboard and outboard fuel tanks were void of any useable fuel. The pilot reported that the accident flight was about 4 hours 20 minutes in duration and that fuel exhaustion was the reason that both engines had lost total power. Before departing on the accident flight, he estimated that the flight would require about 118 gallons of fuel, and as such, there would be about 4 gallons of fuel remaining at the completion of the flight. However, after the accident, the pilot acknowledged that he failed to account for the 6.8 gallons of unusable fuel within the

fuel system. Additionally, the airplane was equipped with an emergency carbon-dioxide blowdown system that the pilot could have used to rapidly extend the landing gear instead of the more laborious and time consuming emergency hand-pump. The pilot did not offer an explanation on why he chose to use the emergency hand-pump instead of the carbon-dioxide blowdown system. Had the landing gear been fully extended before landing, it is likely that the landing gear would not have collapsed.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper fuel management, which resulted in the total loss of power to both engines due to fuel exhaustion and the subsequent forced landing in a field. Also causal to the accident was the pilot's decision to use the slower emergency hand-pump to extend the landing gear instead of the available carbon-dioxide blowdown system, which resulted in a landing without the landing gear fully extended.

Findings

Aircraft	Fuel - Fluid management
Aircraft	Fuel distribution - Capability exceeded
Personnel issues	Fuel planning - Pilot
Aircraft	Gear extension and retract sys - Incorrect use/operation
Personnel issues	Use of equip/system - Pilot

Factual Information

History of Flight

Enroute-descent	Fuel exhaustion (Defining event)
Enroute-descent	Loss of engine power (total)
Landing	Off-field or emergency landing
Landing	Landing gear not configured
Landing-flare/touchdown	Landing gear collapse
Landing-landing roll	Dragged wing/rotor/float/other

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	47
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	October 30, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 11, 2014
Flight Time:	1499 hours (Total, all aircraft), 54 hours (Total, this make and model), 1325 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N62791
Model/Series:	PA-23-250	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	27-7754028
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 27, 2014 Annual	**Certified Max Gross Wt.:**	5200 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	3693.4 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540-C4B5
Registered Owner:	Great River Aviation, LLC	**Rated Power:**	250 Horsepower
Operator:	Great River Aviation, LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	UIN,769 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	14:54 Local	**Direction from Accident Site:**	140°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.85 inches Hg	**Temperature/Dew Point:**	22°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Destin, FL (DTS)	**Type of Flight Plan Filed:**	IFR
Destination:	Quincy, IL (UIN)	**Type of Clearance:**	IFR
Departure Time:	10:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Quincy Regional Airport UIN	**Runway Surface Type:**	
Airport Elevation:	769 ft msl	**Runway Surface Condition:**	Dry;Rough
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	39.943054,-91.194442(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Douglas Wilson; Federal Aviation Administration - Springfield FSDO; Springfield, IL
Original Publish Date:	February 11, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90330