



Aviation Investigation Final Report

Location:	WILMINGTON, Delaware	Accident Number:	IAD02LA035
Date & Time:	February 25, 2002, 18:55 Local	Registration:	N2192W
Aircraft:	Beechcraft C23	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and private pilot were returning to their home airport after a 1.9 hour instructional flight. On final approach, the engine stopped producing power. The flight instructor took control of the airplane and landed on an embankment short of the runway. According to a police officer, who arrived on the scene an hour after the accident, the left fuel tank was found empty, and the fuel selector valve was found positioned to the left tank. The tank was not breached and there were no signs of leakage. However, fuel was observed in the right fuel tank. When the fuel selector valve was positioned to the right fuel tank, fuel flowed freely from the fuel strainer fuel line. Eighteen gallons of fuel were then drained from the right fuel tank. According to the Beechcraft Sundowner C23 Pilot's Operating Handbook (POH), the fuel selector handle was located on the floorboards between the pilot and copilot seats. According to the published before landing checklist, item 2 stated: "Fuel Selector Valve-SELECT TANK MORE NEARLY FULL (feel for detent and check visually)." No mechanical deficiencies were noted with the engine, or fuel system.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the flight instructor's improper fuel management which resulted in fuel starvation. A factor in the accident was the flight instructor's failure to follow the published checklist procedures.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - CIRCLING (IFR)

Findings

1. (C) FLUID,FUEL - STARVATION
2. (C) FUEL MANAGEMENT - IMPROPER - PILOT IN COMMAND(CFI)
3. (F) CHECKLIST - NOT FOLLOWED - PILOT IN COMMAND(CFI)

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings

4. TERRAIN CONDITION - DROP-OFF/DESCENDING EMBANKMENT

Factual Information

On February 25, 2002, at 1855 eastern standard time, a Beechcraft C23, N2192W, was substantially damaged after it experienced a total loss of engine power while on final approach to runway 19 at New Castle County Airport (ILG), Wilmington, Delaware. The certified flight instructor and private pilot were seriously injured. An instrument flight rules flight plan was filed for the flight that originated at ILG about 1600. Visual meteorological conditions prevailed for the instructional flight conducted under 14 CFR Part 91.

In a written statement, the flight instructor said:

"After shooting various instrument approaches we returned to shoot the ILS on Runway 1 Circle to Land Runway 19 after the ILS was completed. At some point during the circle the engine stopped....Upon realizing a loss of power, I took the controls from [private pilot]....I quickly began the engine failure checklist flow but was unable to finish due to being on short final and limited altitude."

A sergeant with the Delaware River and Bay Authority Police Department interviewed both pilots on the evening of the accident. According to the sergeant's written report, both pilots reported that the engine stopped producing power on final approach to runway 19. The flight instructor said that he took control of the airplane, and tried to flare the airplane to get over a fence. He said the airplane landed hard, in a flat attitude, on an embankment short of the runway.

The sergeant reported that there was an approximately 100-foot-deep embankment that dropped off from the approach end of runway 19.

The sergeant arrived at the accident site at 2000. According to his written report, examination of the fuel tanks revealed that the right fuel tank was filled with approximately 3 1/2 inches of fuel from the bottom of the tank. The left fuel tank was "dry", and the fuel selector switch was positioned to the left fuel tank. He visually inspected the airplane's fuel tanks and observed no damage or leakage.

A Federal Aviation Administration (FAA) inspector examined the engine and fuel system on February 26, 2002. According to the inspector, examination of the fuel strainer revealed that there was a small amount of fuel in the bowl, and that the fuel screen was absent of debris. The inspector then placed the fuel selector to the right tank, and observed fuel flowing freely through the fuel strainer fuel line. The inspector also removed the carburetor screen and found it to be absent of debris.

Eighteen gallons of fuel were then drained from the right tank.

The inspector said that compression was established on each cylinder by manual rotation of the propeller. No mechanical deficiencies were noted with the engine or fuel system.

According to fuel receipts provided by the operator, the airplane was last fueled on February 24, 2002. At that time, the airplane was topped off with fuel.

Examination of airplane records provided by the operator revealed that the airplane had been flown twice on the day of the accident. The first flight began at a Hobbs meter time of 1019.3, and ended at 1019.9.

The next flight was the accident flight, which departed at a Hobbs meter time of 1019.9. At the accident site, the Hobbs meter read 1021.8.

According to the Beechcraft Sundowner C23 Pilot Operating Handbook (POH), page 1-10, each wing fuel tank had a 29.9 gallon capacity, of which 26 gallons were usable.

Examination of the POH also revealed that the fuel selector handle was located on the floorboards between the pilot and copilot seats. According to the published before landing checklist, item 2 stated:

"Fuel Selector Valve-SELECT TANK MORE NEARLY FULL (feel for detent and check visually)."

The pilot reported a total of 471 flight hours, of which 80 hours were in make and model. He also reported that there were no mechanical deficiencies.

The private pilot reported a total of approximately 100 flight hours.

Weather at New Castle County Airport, at 1851, included wind from 160 degrees at 7 knots and clear skies.

Flight instructor Information

Certificate:	Commercial; Flight instructor	Age:	23, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	March 15, 2001
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 10, 2001
Flight Time:	471 hours (Total, all aircraft), 80 hours (Total, this make and model), 355 hours (Pilot In Command, all aircraft), 117 hours (Last 90 days, all aircraft), 61 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Private	Age:	20, Male
Airplane Rating(s):	Single-engine land	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 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	May 9, 2001
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	100 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beechcraft	Registration:	N2192W
Model/Series:	C23	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	M1564
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	November 21, 2001 Annual	Certified Max Gross Wt.:	2450 lbs
Time Since Last Inspection:	100.4 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2623.3 Hrs at time of accident	Engine Manufacturer:	Avco Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-360
Registered Owner:	BRUCE AND JODI HUDSON	Rated Power:	180 Horsepower
Operator:	SKY SAFETY	Operating Certificate(s) Held:	None
Operator Does Business As:	FIXED BASE OPERATOR	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	ILG,80 ft msl	Distance from Accident Site:	
Observation Time:	18:51 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.09 inches Hg	Temperature/Dew Point:	7°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	WILMINGTON, DE (ILG)	Type of Flight Plan Filed:	IFR
Destination:		Type of Clearance:	IFR
Departure Time:	16:00 Local	Type of Airspace:	Class D

Airport Information

Airport:	NEW CASTLE COUNTY ILG	Runway Surface Type:	Asphalt
Airport Elevation:	80 ft msl	Runway Surface Condition:	Dry
Runway Used:	19	IFR Approach:	Circling;Practice
Runway Length/Width:	7000 ft / 200 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 Serious	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	39.760948,-75.53009(est)

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	ORTON OGBORNE; PHILADELPHIA, PA
Original Publish Date:	August 26, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=54254

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