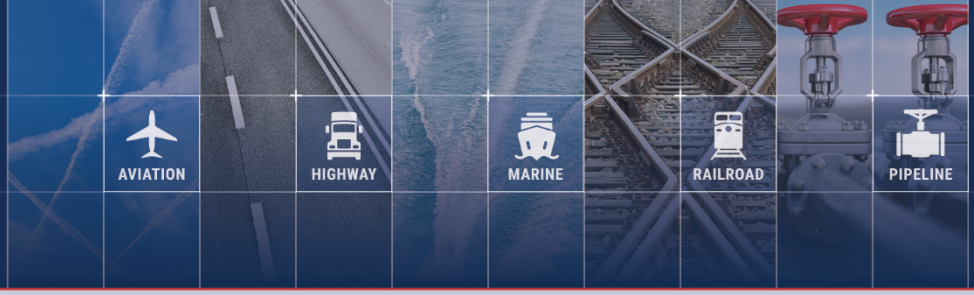

Aviation Investigation Final Report

Location:	Auburn, Washington	**Accident Number:**	WPR22LA213
Date & Time:	June 11, 2022, 18:38 Local	**Registration:**	N7482P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, while approaching the destination airport, he moved the fuel selector from the left main fuel tank to the right main fuel tank. About 5 miles from the airport, he completed the before-landing checklist and reduced the engine power setting to 15 inches of manifold pressure while he slowly advanced the propeller lever forward. Shortly after, the engine lost total power. The pilot immediately verified that the position of the mixture was full rich, and that the fuel boost pump was on. The pilot moved the fuel selector lever from the right main tank to left main tank, but then decided to switch back to the right main tank, as the right tank contained more fuel. The engine briefly started, but again lost all power. The pilot initiated a forced landing to an open field and the airplane impacted a dirt berm during the landing roll, resulting in substantial damage to the right wing.

Postaccident examination of the engine and engine systems revealed no evidence of preimpact mechanical failure or malfunction. Examination of the fuel supply and fuel vent systems revealed no evidence of blockage, and the fuel selector functioned normally when tested. At the accident site, the left main fuel tank contained about one gallon of fuel; the right main, right auxiliary, and left auxiliary tanks all appeared full. Additionally, the pilot reported that he examined the fuel tanks immediately after the accident; the right tank was full, and he could not see any fuel in the left main tank.

Although the environmental conditions at the time of the accident were favorable for serious carburetor icing at glide power or reduced power settings, the pilot reported that he reduced engine power for landing just before the loss of power occurred; therefore, the airplane had not been operating at reduced power settings for an extended period of time; therefore, it is unlikely that carburetor icing resulted in the interruption of the fuel flow.

Although the pilot's statement indicated that he switched fuel tanks several minutes before the loss of engine power, given the distribution of the fuel in the tanks following the accident and the lack of any mechanical anomalies found during postaccident examination, it is most likely that the pilot exhausted the available fuel in the left main tank, resulting in fuel starvation and a total loss of engine power.

Probable Cause and Findings

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

A total loss of engine power due to fuel starvation.

Findings

Personnel issues	Fuel planning - Pilot
Aircraft	Fuel - Fluid management

Factual Information

History of Flight

Approach-VFR pattern final	Fuel starvation (Defining event)
Maneuvering	Off-field or emergency landing

On June 11, 2022, about 1836 Pacific standard time, a Piper PA-24-250, N7428P, was substantially damaged when it was involved in an accident near Auburn, Washington. The pilot and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The total flight time was about 1 hour, and the pilot reported that, about 18 nautical miles from the destination airport, he moved the fuel selector from the left main fuel tank to the right main fuel tank. About 5 miles from the airport, he completed the before-landing checklist and reduced the engine power setting to 15 inches of manifold pressure while he slowly advanced the propeller lever forward. Shortly after, the engine lost total power. The pilot immediately verified that the position of the mixture was full rich, and that the fuel boost pump was on. Simultaneously, the pilot moved the fuel selector from the right main tank to left main tank, but then decided to switch back to the right main tank, as the right tank contained more fuel. The engine briefly started, but again lost all power. The pilot initiated a forced landing to an open field, and during the landing roll, the airplane impacted a dirt berm, resulting in substantial damage to the right wing.

Following the accident, the pilot powered the airplane, moved the fuel selector to the right main tank and turned the electric fuel pump on. Initially, he heard the pump cavitate, but then saw the fuel pressure gauge indicate an increase in fuel pressure. He then turned the power off and placed the fuel selector valve back in the off position. He stated that, in his visual inspection of the fuel tanks after the accident, he could not see any fuel in the left main tank, but the right main tank contained “plenty of fuel.”

Postaccident examination of the airplane and engine did not reveal any preimpact mechanical anomalies. The right main fuel tank, right auxiliary tank, and left auxiliary tank all appeared full of fuel. The left main fuel tank was not breached and contained about one gallon of fuel. The fuel system was traced from each wing tank to the carburetor through the fuel selector, which rotated normally and was unobstructed. The fuel selector was in the off detent when first viewed. Detents were felt at the fuel selector for all four positions (right and left main tanks and left and right auxiliary tanks). The fuel selector was then positioned to each tank position and fuel was seen escaping the fuel strainer/drain. The detents were audible and could be felt. The fuel supply and vent lines in both wing fuel tanks were free of obstructions. The carburetor

was disassembled, and the bowl contained about 5 ounces of fuel; the metal floats were intact and undamaged. The fuel in the carburetor bowl was tested using water finding paste and no water was detected. The accelerator pump functioned when the throttle lever was actuated, and the needle valve and seat functioned when the float was moved by hand.

Mechanical continuity was established throughout the engine rotating group, valvetrain, and accessory section when the crankshaft was manually rotated at the propeller. Thumb compression was achieved at all six cylinders and the valves displayed normal lift when the crankshaft was rotated. Examination of the cylinders' combustion chambers using a lighted borescope revealed normal piston face and valve signatures, and no indications of catastrophic engine failure.

Weather conditions recorded at Seattle-Tacoma International Airport (SEA), Seattle, Washington, at 1753 and 1853 (about 43 minutes before the accident and about 17 minutes after the accident, respectively) indicated that the temperature and dew point were 20°C and 9°C.

A review of the carburetor icing probability chart contained in Federal Aviation Administration Special Airworthiness Information Bulletin (SAIB) CE-09-35, Carburetor Icing Prevention, indicated that based on the reported temperature and dew point around the time of the accident, the conditions were favorable for serious icing at glide power.

Pilot Information

Certificate:	Private	**Age:**	58,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 28, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 1, 2021
Flight Time:	(Estimated) 983 hours (Total, all aircraft), 53 hours (Total, this make and model), 954 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Passenger Information

Certificate:		**Age:**	Male
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7482P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:	1961	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-2675
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 1, 2022 Annual	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:	19 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	8394.43 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, activated, aided in locating accident	**Engine Model/Series:**	O-540-A1D5
Registered Owner:	N9246K CORP LLC	**Rated Power:**	250 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:	KSEA,369 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	326°
Lowest Cloud Condition:	Few / 3000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	20°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Auburn, WA	**Type of Flight Plan Filed:**	None
Destination:	Auburn, WA	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	AUBURN MUNI S50	**Runway Surface Type:**	Asphalt
Airport Elevation:	63 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	3842 ft / 75 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	47.34142,-122.21206(est)

Administrative Information

Investigator In Charge (IIC):	Nepomuceno, Eleazar
Additional Participating Persons:	Mark Cherrix; FAA; Seattle, WA
Original Publish Date:	June 20, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=105246