Aviation Investigation Final Report

Location:	Holbrook, Arizona	**Accident Number:**	LAX08LA107
Date & Time:	April 15, 2008, 08:20 Local	**Registration:**	N8442Y
Aircraft:	Piper PA-30	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that prior to takeoff the two main fuel tanks were full to the bottom of the fill cap and the two auxiliary tanks had approximately 8 gallons in each side. About 40 minutes into the flight, and descending to the destination, the right engine lost power. The pilot stated that he did not immediately feather the prop and shut the engine down because it appeared to be a fuel starvation problem. The pilot was attempting to restart the right engine when the left engine lost power. Unable to reach the airport, the pilot initiated a gear-up forced landing to an open field. The airplane landed hard, damaging the fuselage. Recovery personnel reported that the main fuel tanks contained about 27 gallons of fuel each, while the auxiliary tanks were empty. Postaccident inspection of the engines revealed that the fuel lines leading to the engines were dry. The right engine crankshaft's flange was bent, but a test run of the left engine indicated that the engine operated normally. Evidence indicates that the pilot improperly positioned the fuel selectors so that they were on the auxiliary tanks instead of the main fuel tanks. The auxiliary tanks ran dry and the engines lost power due to fuel starvation. The pilot indicated to a Federal Aviation Administration inspector that he had difficulty viewing the fuel selectors on the floor between the seats.

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 as a result of the pilot's fuel system mismanagement and incorrect positioning of the fuel selector valves.

Findings

Personnel issues	Use of equip/system - Pilot
Aircraft	Fuel selector/shutoff valve - Incorrect use/operation
Environmental issues	Rough terrain - Contributed to outcome

Factual Information

History of Flight

Enroute-descent	Fuel starvation
Enroute-descent	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing

On April 15, 2008, approximately 0820 mountain standard time, a Piper PA-30, N8442Y, was substantially damaged during a forced landing near Holbrook, Arizona. The private pilot received serious injuries and his pilot rated passenger received minor injuries. Environmental Technology Inc., Phoenix, Arizona, was operating the airplane under 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the cross-country personal flight, which originated from Mesa, Arizona, approximately 50 minutes before the accident. A flight plan had not been filed, but the pilot reported that his destination was Holbrook, Arizona.

The pilot stated, in his initial interview and in his written statement, that the two main fuel tanks were "full to the bottom of the fill cap and the two inboard tanks had approximately 8 gallons in each side."

The pilot reported that approximately 40 minutes into the flight they were descending towards their destination when the right engine lost power. The pilot stated that, "I did not immediately feather the prop and shut down the engine because it appeared to be a fuel starvation problem and I thought I could probably get the engine started again." While the pilot was attempting to restart the right engine without success, the left engine lost power. Due to the low altitude, the pilot decided to land the airplane in a field.

The pilot rated passenger reported that the forced landing was well controlled, but the gear up touchdown was hard and the terrain was very rough. The airplane's empennage was bent down, and the nose was wrinkled up and back at the forward door support.

The aircraft salvage team personnel who recovered the airplane reported that they drained 27 gallons of fuel from each of the main tanks. Both auxiliary and wing tip tanks were empty. The right side fuel selector was located at 12 o'clock (between the MAIN and AUX positions) and the left side fuel selector was found at 3 o'clock, which is the cross-feed position.

Postaccident examination of the airplane by an inspector from the Federal Aviation Administration (FAA) revealed that the fuel lines leading to the engines were dry. The right engine crankshaft's flange was bent, but a test run of the left engine was successful.

In the aircraft's Service Manual, the manufacturer states that each wing had a main inboard fuel tank that held 30 gallons [27 usable], an auxiliary outboard fuel tank that held 15 gallons

and a wing tip tank that held 15 gallons of fuel. Each engine's fuel selector is appropriately labeled LEFT and RIGHT, respectively, at their 12 o'clock location. Each MAIN tank selection points inboard, i.e., the left selector is at 1:30 position and the right selector is at 10:30 position. Conversely, during AUX tank use the two selectors point outboard, i.e., the left selector should be at the 10:30 position and the right selector should be at the 1:30 position. Additionally, the AUX selected position states LEVEL FLT. ONLY. A separate switch operates an electrically actuated valve, which permits the wing tip fuel to drain into the main tank.

The owner of the airplane said that the pilot had "a lot" of time in Cessna 421s. The Cessna 421 fuel tank selectors operate differently. The left engine's main tank fuel selection is at 10:30 and the right engine's main tank fuel selection is at 1:30. The owner believes that the pilot improperly positioned the fuel selectors so that they were on the aux tanks instead of the main tanks.

The pilot reported 3,478 hours in multi-engine airplanes, with 12 hours in the make and model airplane involved in the accident.

The FAA inspector reported that the pilot stated he had difficulty viewing the fuel selectors on the floor between the seats.

Pilot Information

Certificate:	Private	**Age:**	75,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	May 23, 2007
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	July 13, 2006
Flight Time:	6782 hours (Total, all aircraft), 12 hours (Total, this make and model), 12 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8442Y
Model/Series:	PA-30	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30-1602
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	December 1, 2007 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	3290 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-320-C1A
Registered Owner:	Environmental Technology Inc.	**Rated Power:**	160 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	INW,4885 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	08:56 Local	**Direction from Accident Site:**	290°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	13 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	18°C / -10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Mesa, AZ (FFZ)	**Type of Flight Plan Filed:**	None
Destination:	Holbrook, AZ (P14)	**Type of Clearance:**	None
Departure Time:	07:30 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	34.711387,-110.27111(est)

Administrative Information

Investigator In Charge (IIC):	Struhsaker, James
Additional Participating Persons:	Fred Murray; Federal Aviation Administration; Scottsdale, AZ
Original Publish Date:	April 15, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67825