



# Aviation Investigation Final Report

<b>Location:</b>	Roanoke, Virginia	<b>Accident Number:</b>	NYC02LA021
<b>Date &amp; Time:</b>	November 3, 2001, 12:45 Local	<b>Registration:</b>	N5207Z
<b>Aircraft:</b>	Piper PA-22-108	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

While on departure climb, and less than 1,000 feet above the ground, the pilot moved the fuel selector from the left (main) fuel tank to the right (aux) fuel tank. The engine quit, and the pilot reported he did not have time to focus on the engine out, but only time for the forced landing. The airplane struck a detached garage, and came to rest inverted near a residence. The index plate for the fuel selector was found improperly secured, and obscured the tank index position marks. The pilot reported that it was turbulent when he changed tanks and could not verifying the position of the fuel tank selector or feel its detent. The right tank was placarded use in level flight only.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the pilot ensure the proper position of the fuel selector which resulted in fuel starvation. Factors were the improper placement of the fuel selector valve tank index, and the improper in-flight decision of the pilot to change tanks in accordance with the owner's manual.

## Findings

Occurrence #1: LOSS OF ENGINE POWER  
Phase of Operation: CLIMB - TO CRUISE

### Findings

1. (F) MAINTENANCE - IMPROPER - OTHER MAINTENANCE PERSONNEL

2. (F) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND
3. (C) FUEL TANK SELECTOR POSITION - NOT VERIFIED - PILOT IN COMMAND

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

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Occurrence #3: IN FLIGHT COLLISION WITH OBJECT  
Phase of Operation: DESCENT - EMERGENCY

#### Findings

4. OBJECT - BUILDING(NONRESIDENTIAL)

## Factual Information

On November 3, 2001, about 1245 eastern standard time, a Piper PA-22-108, N5207Z, was substantially damaged, when it made a forced landing about 4 miles east-northeast of Roanoke Regional Airport, Roanoke, Virginia. The certificated private pilot and passenger were not injured. Visual meteorological conditions prevailed for the personal flight. No flight plan had been filed for the flight that was conducted under 14 CFR Part 91.

According to the pilot, the airplane was equipped with two fuel tanks, one in each wing, which had a capacity of 18 gallons each. The left fuel tank was designated the main fuel tank, and the right fuel tank was designated as the auxiliary fuel tank.

The pilot had departed from New London Airport, Forest, Virginia, with full tanks, and flew to Roanoke on the left fuel tank. The takeoff from Roanoke for the return flight to New London was also conducted on the left tank. However, while climbing, and less than 1,000 feet above the ground, the pilot switched to the right fuel tank. Within 2 minutes, the engine lost power. The pilot described the power loss as smooth, with no sputtering, backfiring, or hesitation. The pilot further stated that he did not have time to focus on the power loss, as he was losing altitude, and he needed to set up for a forced landing. He reported that he did not return the fuel selector to the left tank. The airplane struck the edge of a detached garage with the wing, then the ground behind a residence, and came to rest inverted.

According to an inspector from the Federal Aviation Administration (FAA), the airplane was still inverted when he examined it. The fuel tanks had been drained due to leaks from the fuel caps. The fuel selector was on the right fuel tank. The carburetor was separated from the engine and had impact damage. The main fuel strainer was absent of debris.

The airplane was subsequently moved to a nearby airport for further examination. In a follow-up investigation of the airplane the FAA inspector wrote:

"..A review of the Piper Cold (PA 22) owners handbook, section II FUEL SYSTEM, states the AUX tank must be used in LEVEL FLIGHT ONLY...Engine rotation was checked with all ignition systems, engine drive systems, exhaust system, intake system, oil system, and fuel delivery checking normal. The fuel selector outer position ring...was noted as not secure and tank position was difficult to check, or verify. The outer ring has previously been incorrectly attached to the aircraft upholstery with out benefit of the correct location of a backing plate...to positively secure the outer position ring to the aircraft. Each detent of the selector valve...however could be felt but the selector pointer handle obscures the tank position index mark...and the pilot stated he was in turbulence when he switched tanks could not verify or feel the correct detent. He felt it was possible he overran slightly the intended tank selection. A slight overrun was introduced and fuel supply to the engine was blocked as a result."

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	55, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	March 7, 2001
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	October 7, 2000
<b>Flight Time:</b>	267 hours (Total, all aircraft), 216 hours (Total, this make and model), 215 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N5207Z
<b>Model/Series:</b>	PA-22-108	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	22-8877
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	November 1, 2001 Annual	<b>Certified Max Gross Wt.:</b>	1650 lbs
<b>Time Since Last Inspection:</b>	3 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2888 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-235-C1B
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	108 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	ROA,1176 ft msl	<b>Distance from Accident Site:</b>	4 Nautical Miles
<b>Observation Time:</b>	12:54 Local	<b>Direction from Accident Site:</b>	250°
<b>Lowest Cloud Condition:</b>	Few / 12000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	290°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.23 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Roanoke, VA (ROA )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	New London, VA (W90 )	<b>Type of Clearance:</b>	VFR flight following
<b>Departure Time:</b>	12:40 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	Roanoke Regional ROA	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1176 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	37.352779,-79.93

## Administrative Information

<b>Investigator In Charge (IIC):</b>	HANCOCK, ROBERT
<b>Additional Participating Persons:</b>	Edward Hall; Federal Aviation Administration; Richmond, VA
<b>Original Publish Date:</b>	June 18, 2002
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=53710">https://data.ntsb.gov/Docket?ProjectID=53710</a>

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).