# Aviation Investigation Final Report

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| **Location:** | Belen, New Mexico | **Accident Number:** | DEN03LA049 |
| **Date & Time:** | March 14, 2003, 07:30 Local | **Registration:** | N6960P |
| **Aircraft:** | Piper PA-24-250 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 1 Serious, 1 None |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

According to the pilot, he purchased the airplane on March 11, 2003, and was aware of recent maintenance on the fuel selector valve. He examined the airplane and departed on a cross-country flight back to his home base. He stated that, approximately 2 hours into the flight, the engine "quit," and that he had experienced fuel exhaustion. He switched the fuel selector valve to the left wing-tip fuel tank, restarted the engine and landed at the nearest airport. Upon landing, he examined the fuel tanks and found that the right main and right wing-tip fuel tanks were full, the left wing-tip fuel tank was half full and the left main fuel tank was "dry." He refueled the airplane and departed. During the next 2 hours of flying, he switched the fuel selector valve from the left and right wing-tip tanks, to the main tanks and at approximately 2 hours into the flight the engine "quit" a second time. He was able to restart the engine after switching back to the left wing-tip tank, landed at the nearest airport to refuel and then departed to his destination. On March 14, the day of the accident, he departed on a cross-country flight. During the second hour of flight, he switched the fuel selector valve from the main tanks to the left wing-tip tank, then to the right wing-tip tank and then back to the main tanks in 20-min intervals. Approximately 2 hours into the flight, the engine "sputtered and then stopped." He restarted the engine, but it only ran for a few seconds. He attempted to glide to the nearby Alexander Municipal Airport, but was forced to land approximately 250 feet short of runway 21. The impact resulted in substantial damage to both wings, the firewall, and the separation of all landing gear assemblies.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's improper preflight/in-flight decision making which resulted in the loss of engine power due to fuel starvation. Contributing factors include, the partial fuel selector valve failure,

the pilot's intentional operation with known deficiencies in equipment and the lack of suitable terrain for a forced landing.

## Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: CRUISE - NORMAL

Findings
1. (F) FUEL SYSTEM,SELECTOR/VALVE - FAILURE,PARTIAL
2. (C) PREFLIGHT PLANNING/PREPARATION - IMPROPER - PILOT IN COMMAND
3. (F) FLUID,FUEL - STARVATION
4. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
5. (F) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - INTENTIONAL - 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 TERRAIN/WATER
Phase of Operation: DESCENT - EMERGENCY

Findings
6. (F) TERRAIN CONDITION - NONE SUITABLE

## Factual Information

On March 14, 2003, at approximately 0730 mountain standard time, a Piper PA-24-250, N6960P, operated by the pilot, was substantially damaged when it impacted terrain during a forced landing near Alexander Municipal Airport (E80), Belen, New Mexico. The pilot was not injured, but his passenger sustained serious injuries. Visual meteorological conditions prevailed. No flight plan had been filed for this personal cross-country flight being conducted under Title 14 CFR Part 91. The flight originated from Tucson, Arizona, at approximately 0530.

According to the pilot, he purchased the airplane on March 11, 2003, and was aware of recent maintenance on the fuel selector valve. He examined the airplane and departed on a cross-country flight back to his home base. He stated that, approximately 2 hours into the flight, the engine "quit," and that he had experienced fuel exhaustion. He switched the fuel selector valve to the left wing-tip fuel tank, restarted the engine and landed at the nearest airport. Upon landing, he examined the fuel tanks and found that the right main and right wing-tip fuel tanks were full, the left wing-tip fuel tank was half full and the left main fuel tank was "dry." He refueled the airplane and departed. During the next 2 hours of flying, he switched the fuel selector valve from the left and right wing-tip tanks, to the main tanks and at approximately 2 hours into the flight the engine "quit" a second time. He was able to restart the engine after switching back to the left wing-tip tank, landed at the nearest airport to refuel and then departed to his destination.

On March 13, he flew the airplane from his home base to a nearby airport with a maintenance facility to have a mechanic examine the airplane's fuel selector valve. The mechanic stated that the right fuel selector valve did not have a detent. The pilot had the selector valve repaired. The selector valve was checked and it operated correctly. He then departed back to his home base.

On March 14, the day of the accident, he departed on a cross-country flight. During the second hour of flight, he switched the fuel selector valve from the main tanks to the left wing-tip tank, then to the right wing-tip tank and then back to the main tanks in 20-min intervals. Approximately 2 hours into the flight, the engine "sputtered and then stopped." He restarted the engine, but it only ran for a few seconds. He attempted to glide to the nearby Alexander Municipal Airport, but was forced to land approximately 250 feet short of runway 21. The impact resulted in a cord wise buckle of both the left and right wings approximately 4 feet inboard of the wing tip tanks, the displacement of the engine, the separation of the left side of the firewall from the fuselage, and the separation of the left and right main landing gear and nose landing gear assemblies.

According to an FAA Inspector, there was approximately 60 gallons of fuel remaining on-board the airplane. The fuel was located within the left wing tank and the left and right wing-tip tanks.

The right wing tank was empty.

## Pilot Information

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| **Certificate:** | Private | **Age:** | 57,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 3 Valid Medical--w/ waivers/lim | **Last FAA Medical Exam:** | May 5, 2003 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | May 30, 2002 |
| **Flight Time:** | 191 hours (Total, all aircraft), 42 hours (Total, this make and model), 115 hours (Pilot In Command, all aircraft), 48 hours (Last 30 days, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Piper | **Registration:** | N6960P |
| **Model/Series:** | PA-24-250 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 24-2098 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | March 1, 2003 Annual | **Certified Max Gross Wt.:** | 3000 lbs |
| **Time Since Last Inspection:** | 8 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3000 Hrs at time of accident | **Engine Manufacturer:** | Lycoming |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | O-540 |
| **Registered Owner:** | On file | **Rated Power:** | 250 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | ABQ,5355 ft msl | **Distance from Accident Site:** | 27 Nautical Miles |
| **Observation Time:** | 07:56 Local | **Direction from Accident Site:** | 23° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / 0 knots | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 130° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.14 inches Hg | **Temperature/Dew Point:** | 11°C / -9°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Tucson, AZ (AVQ ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Fergus Falls, MN (FFM ) | **Type of Clearance:** | None |
| **Departure Time:** | 05:30 Local | **Type of Airspace:** | Class G |

## Airport Information

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| **Airport:** | Alexander Municipal E80 | **Runway Surface Type:** | |
| **Airport Elevation:** | | **Runway Surface Condition:** | Unknown |
| **Runway Used:** | | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Forced landing |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 Serious | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Serious, 1 None | **Latitude, Longitude:** | 34.645278,-106.83361 |

## Administrative Information

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| **Investigator In Charge (IIC):** | Mayer, Brannon |
| **Additional Participating Persons:** | James L Malecha; FAA FSDO; Albuquerque, NM |
| **Original Publish Date:** | November 25, 2003 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=56631 |