



# Aviation Investigation Final Report

<b>Location:</b>	ELK FALLS, Kansas	<b>Accident Number:</b>	CHI97LA105
<b>Date &amp; Time:</b>	April 12, 1997, 12:20 Local	<b>Registration:</b>	N8739P
<b>Aircraft:</b>	Piper PA-24	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	4 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

During cruise flight, the pilot switched tanks from the left main tank to the right auxiliary tank. After switching tanks the pilot said the gauges read full and he felt the detent. The pilot had taken off with 30 gallons of fuel in the left main tank. After approximately 2 hour and 7 minutes, the engine lost power. The pilot said he switched the fuel selector to the right main tank and turned on the electrical fuel pump to try and restart the engine. The pilot was unsuccessful and he landed on a gravel road. The aircraft was substantially damaged. Examination of the fuel selector assembly revealed that the cam was separated from the shaft along the line of the braze joint. The O-ring was also separated and indicated a brittle break oriented on helical planes.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: fracture of the fuel selector assembly which resulted in fuel starvation.

### Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF  
Phase of Operation: CRUISE - NORMAL

#### Findings

1. (C) FUEL SYSTEM,SELECTOR/VALVE - FRACTURED
2. (C) FLUID,FUEL - STARVATION

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Occurrence #2: FORCED LANDING  
Phase of Operation: EMERGENCY DESCENT/LANDING  
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Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT  
Phase of Operation: LANDING - ROLL

Findings

3. OBJECT - FENCE
4. OBJECT - TREE(S)

## Factual Information

On April 12, 1997, at 1220 central daylight time, a Piper PA-24, N8739P, sustained substantial damage following a loss of engine power and a forced landing, near Elk Falls, Kansas. The private pilot and three passengers reported no injuries. The personal, 14 CFR Part 91 flight originated in Cherokee, Iowa, at 1008 with a planned destination of Mineola, Texas. Visual meteorological conditions prevailed and no flight plan was filed.

The pilot said that he departed Cherokee, Iowa, with 30 gallons of fuel (full) in the left main tank. After flying for an unspecified time, the pilot said he switched "... fuel tanks from [the] left main to [the] right auxiliary tank." The pilot said that "... all readings and indications were normal (detent felt and quantity gauge read full)." The pilot said that at approximately 1215 cdt the engine lost power. The pilot said he selected alternate air heat, switched the electric fuel pump ON, selected the right main fuel tank with the fuel selector, and adjusted the throttle and mixture for an engine restart. The engine restart was unsuccessful. The pilot said he proceeded "... to the nearest airport at best rate of descent," and chose an off airport landing site on a gravel road.

During the landing roll the pilot said the airplane impacted a fence line and trees. The pilot said that the aircraft had damage to both wings, bent propeller blades, broken lower cowl, and scratched and dented fuselage. The pilot also reported that the nose and left main gear separated and the right main gear was bent.

Parts from the fuel selector were sent to the NTSB Office of Research and Engineering, Materials Laboratory for analysis. Details of the examination revealed that the fuel selector cam was separated from the shaft along the line of the braze joint. Brazing material was found on the surfaces of the shaft assembly and its respective hole. The O-ring separation contained features indicative of a brittle break, oriented on helical planes.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	36, 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>	May 6, 1996
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	443 hours (Total, all aircraft), 140 hours (Total, this make and model), 13 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N8739P
<b>Model/Series:</b>	PA-24 PA-24	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	24-4190
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	May 4, 1996 Annual	<b>Certified Max Gross Wt.:</b>	2900 lbs
<b>Time Since Last Inspection:</b>	36 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3503 Hrs	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-540-D4A5
<b>Registered Owner:</b>	CEDAR AIRCRAFT, INC.	<b>Rated Power:</b>	260 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PPF ,899 ft msl	<b>Distance from Accident Site:</b>	33 Nautical Miles
<b>Observation Time:</b>	11:54 Local	<b>Direction from Accident Site:</b>	270°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Overcast / 1900 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	300°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	1°C / 2°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	CHEROKEE , IA (CKP)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	MINEOLA , TX (3T1)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:08 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	Gravel
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<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>	3 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	4 None	<b>Latitude, Longitude:</b>	37.369647,-96.190696(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Robbins, Wesley
<b>Additional Participating Persons:</b>	VERLE ENGLE; WICHITA , KS
<b>Original Publish Date:</b>	April 24, 1998
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=10543">https://data.nts.gov/Docket?ProjectID=10543</a>

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