Aviation Investigation Final Report

Location:	COLLEGE STATION, Texas	**Accident Number:**	FTW00LA081
Date & Time:	February 13, 2000, 16:30 Local	**Registration:**	N7878P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

On final approach at the destination airport, the airplane's engine 'stopped.' The pilot switched fuel tanks and turned on the fuel pump. Engine power was not restored. Upon realizing that the approach glidepath would put the airplane into trees, the pilot elected to land in a field short of the trees. Continuity of the fuel system was confirmed. Physical evidence of contamination (ferrous and nonferrous) was found throughout the fuel system (fuel strainer, selector valve, electric fuel pump, left wing fuel cavity, and carburetor) indicating that water had been present at some time and was allowed to remain in the system. During the preflight, it is necessary for the pilot to select each tank with the fuel selector valve then individually drain it, from the cockpit, prior to flight, using the drain valve on the fuel selector. The individual tanks are not equipped with drain sumps. If a fuel tank, that was not drained properly, was selected during flight, water and/or contaminants could be introduced into the engine causing a partial loss of power or engine stoppage. The engine was removed from the airframe, and during an engine run, no apparent anomalies were found.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to fuel system contamination. A factor was the lack of suitable terrain for the forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (C) FLUID,FUEL - CONTAMINATION

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
2. (F) TERRAIN CONDITION - NONE SUITABLE
3. OBJECT - TREE(S)

Factual Information

On February 13, 2000, at 1630 central standard time, a Piper PA-24-250, single-engine airplane, N7878P, sustained substantial damage when it impacted the terrain short of the runway following a loss of engine power. The private pilot, who owned and operated the airplane under 14 Code of Federal Regulations Part 91, and his passenger received serious injuries. Visual meteorological conditions prevailed for the personal cross-country flight, which departed Conroe, Texas, at 1600. A flight plan was not filed.

During personal telephone interviews, conducted by the NTSB investigator-in-charge (IIC), with local authorities, air traffic control personnel, the FAA inspector, and the pilot, the following information was revealed. The airplane cruised en route from Conroe, Texas, to College Station, Texas, at 4,500 feet msl. Approximately 15 miles from the Easterwood Field Airport, near College Station, the pilot was cleared to land the airplane on runway 28. On a 1.4 nautical mile final approach the engine "stopped." The pilot "immediately switched [the] fuel tank [and] checked fuel pump on." There was "no response from the engine." Upon realizing that the current glidepath would put the airplane into trees, the pilot decided to land in a field short of the trees. Once the airplane was on the ground, the pilot secured the cockpit, released his seat belt, exited the airplane through the cockpit door, and awaited assistance from local authorities.

A review of the pilot records revealed that the private pilot held airplane single-engine land and instrument ratings. He was issued a third class medical certificate on February 24, 1999. On the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) the pilot reported a total accumulated flight time of 510.7 hours of which 260.7 hours were in the make and model of the accident aircraft.

The FAA inspector responding to the site, which was approximately 1 mile east of the approach end of runway 28, found structural damage to the right wing spar, firewall, and engine mounts. The main landing gear and propeller sustained damage.

On April 25, 2000, the airplane was examined at Lancaster, Texas, under the supervision of a FAA inspector. Continuity of the fuel system was confirmed. The FAA inspector reported finding contamination (ferrous and nonferrous) in the fuel system. The fuel selector valve was examined and there was a "line of corrosion present that extended to the top of the bowl, and caused corrosion on the selector valve housing above the fuel strainer. This indicates that at one time a great deal of water had been present in the selector valve." The electric pumps were examined and there was "evidence of corrosion debris in the bowl of these pumps, indicating that there had been water present in the electric pumps." The fuel pump strainer was removed, and "there was a great deal of debris in the strainer, as well as external to the strainer housing." The inspector stated that "the presence of contamination beyond the

strainer indicates that the strainer did not contain all the contaminants." There was a "great deal of corrosion [found] in the L/H [left hand] wing, outboard cavity."

During an engine run at 2,450 rpm, the fuel pressure dropped to less than 1 PSI. However, the engine ran with "no apparent anomalies."

Following the engine run, the carburetor was disassembled. There was debris in the float bowl "consistent with the contamination found throughout the fuel system." The FAA inspector stated "it is obvious from the inspection of the aircraft fuel system that this aircraft has had a water contamination and deterioration of the fuel system."

The engine (Textron Lycoming) representative reported that the carburetor float valve was not attached to the float valve clip on the float and lever assembly. Therefore, the "float valve would not be opened by the float when the fuel lever in the carburetor bowl went down. The float valve would then have to be opened by fuel pressure and gravity."

The airplane (The New Piper Aircraft) representative reported that "examination of the engine, airframe, and fuel system found no indication of mechanical deficiency. However, significant amounts of material contamination, corrosion and rust were found in the low areas of the fuel system indicating that water had been present at some time and was allowed to remain in the system." He added that "it is necessary for the pilot to select each tank with the fuel selector valve then individually drain it, from the cockpit, prior to flight, using the drain valve on the fuel selector. The individual tanks are not equipped with drain sumps." He further stated that "if a fuel tank, that was not drained properly, were switched on during flight, water and/or contaminants may be introduced into the engine causing a partial loss of power or engine stoppage."

Pilot Information

Certificate:	Private	**Age:**	49,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 24, 1999
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	511 hours (Total, all aircraft), 261 hours (Total, this make and model), 481 hours (Pilot In Command, all aircraft), 34 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7878P
Model/Series:	PA-24-250 PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-3104
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 18, 1999 Annual	**Certified Max Gross Wt.:**	2800 lbs
Time Since Last Inspection:	35 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3453 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-540-A1D5
Registered Owner:	ALAN A. MOORE	**Rated Power:**	250 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CLL ,321 ft msl	**Distance from Accident Site:**	
Observation Time:	16:52 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / 17 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	27°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	CONROE , TX (CXO)	**Type of Flight Plan Filed:**	None
Destination:	(CLL)	**Type of Clearance:**	
Departure Time:	16:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	COLLEGE STATION CLL	**Runway Surface Type:**	Asphalt
Airport Elevation:	321 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	28	**IFR Approach:**	
Runway Length/Width:	5159 ft / 150 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	30.599802,-96.309356(est)

Administrative Information

Investigator In Charge (IIC):	Roach, Joyce
Additional Participating Persons:	JACOB D JOHNSON; HOUSTON , TX
Original Publish Date:	March 2, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=48629