Aviation Investigation Final Report

Location:	Amarillo, Texas	**Accident Number:**	CEN13FA432
Date & Time:	July 25, 2013, 09:00 Local	**Registration:**	N8306Y
Aircraft:	Piper PA-30	**Aircraft Damage:**	Substantial
Defining Event:	Fuel contamination	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot of the twin-engine airplane contacted air traffic control (ATC) and requested visual flight rules flight following and was cleared for departure. Three minutes later, he checked in with the controller, and about 6 minutes later, he radioed to ATC that he was going to return to the departure airport because he was having engine trouble. Shortly thereafter, the pilot reported that his left engine had stopped. The controller asked if he wanted to declare an emergency; the pilot declined and reported that he had the airport in sight. Security camera video showed the aircraft returning to the airport at a very slow speed, then the aircraft turned sharply to the left and rapidly descended below the trees. About 0.8 miles from the approach end of the runway, the airplane impacted nose down into the yard of a home within a dense populated residential area. A witness reported that he saw the airplane turning and that the airplane's left propeller was not turning and not feathered. Examination of the wreckage revealed that the left propeller assembly showed little deformation, consistent with little or no rotation or power at impact. The right propeller had deformation signatures consistent with rotation/power at impact. No mechanical anomalies were found during detailed examination of the left engine and its components.

Thunderstorms and significant amounts of rain had passed through the area during the week before the accident. The airplane had been parked outside on the ramp during the heavy rain. All fuel flow components through the left and right fuel sumps and filters were located and examined. Examination of the left sump and filter revealed it to be contaminated with about 75-percent water as well as a dark sand-like substance. The right side sump contained mostly fuel with only a trace amount of water. The airplane was fueled 3 days before the accident and the source of the fuel was tested; no water contamination was found. It is likely that water entered the fuel system while the airplane was parked outside in the rain and that the pilot did not sump the fuel tanks before takeoff and the left engine stopped producing power due to water contamination. It is unknown why the pilot could not maintain control of the airplane with the right engine producing power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain airplane control after a loss of left engine power due to water-contaminated fuel. Contributing to the accident was the lack of a proper preflight that could have detected water accumulation in the fuel system before takeoff.

Findings

Aircraft	Fuel - Fluid condition
Personnel issues	Incorrect action performance - Pilot
Aircraft	(general) - Not attained/maintained
Personnel issues	Preflight inspection - Pilot

Factual Information

History of Flight

Initial climb	Fuel contamination (Defining event)
Emergency descent	Loss of control in flight

HISTORY OF FLIGHT

On July 25, 2013 at 0900 central daylight time, a Piper PA-30 twin-engine airplane, N8306Y, privately registered airplane was substantially damaged when it crashed into a residential area while attempting to return to the Amarillo Tradewind Airport (TDW), Amarillo, Texas, after the loss of power to the left engine. The pilot, who was the sole occupant, sustained fatal injuries. The flight was being conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions and dissipating thunderstorm activity prevailed in the vicinity. The flight originated at 0855 from TDW and its intended destination was Lubbock, Texas.

After takeoff from Runway 17 at TDW, the pilot contacted Amarillo Approach for VFR flight following. The pilot radioed that he was having problems with the airplane's left engine and that he was going to return to the airport. The controller asked if he wanted to declare an emergency and the pilot responded that he had the airport in sight and the left engine stopped. The controller followed the airplane on radar until it disappeared from the radar screen. The airplane impacted nose down into the yard of a home within a dense populated residential area. There were no ground injuries.

An TDW security camera video showed the aircraft returning to the airport at a very slow speed, then the aircraft turned sharply to the left and rapidly descended below the trees. The video resolution was poor. A single witnesses (who was a local pilot) reported that he saw the airplane turning and stated to investigators that the airplane's left propeller was not turning and that the propeller was not feathered.

Details of the Flight as Reported by FAA Air Traffic Control (ATC)

At 0830:18: The pilot called Amarillo Approach (AMA) advising that he was ready for departure from TDW. He requested VFR flight following to Lubbock, Texas with an enroute altitude of 7,500 feet. AMA advised the pilot that the departure frequency would be 119.5 and assigned transponder code 2633. The pilot acknowledged the frequency and transponder code.

At 0833:06, the pilot checked in with AMA at 4,500 feet. AMA radar identified the aircraft 2 miles south of TDW. AMA issued the current altimeter setting of 30.17 and cleared N8306Y to proceed direct to Lubbock. The pilot acknowledged the instructions.

At 0836:29, N8306Y called AMA to advise they were returning to TDW. After AMA asked if he needed any assistance, the pilot responded that he was having engine trouble and would let AMA know if he needed assistance.

At 0836:59, AMA issued a traffic advisory to N8306Y about another airplane inbound to TDW. When N8306Y acknowledged the traffic call, the pilot advised AMA that the left engine was out. After being queried by AMA, the pilot stated that he did not want to declare an emergency. After the pilot reported the airport in sight, AMA terminated radar service and approved a frequency change. There we no further communications between AMA and N8306Y.

PERSONNEL INFORMATION

The pilot held a private pilot's certificate, issued March 23, 2013, with ratings for single and multi-engine land aircraft, issued March 23, 2013. The pilot was issued an FAA Second Class medical certificate in November 11, 2011, with the restriction to wear corrective lenses. According to available records (which were incomplete) the pilot had logged about 50 hours of flight time in the accident airplane.

AIRCRAFT INFORMATION

The airplane was a 1967 PA-30 Piper Twin Comanche originally manufactured in Lock Haven, PA. A review of the accident history found it had been involved in two previous accidents both occurring in 1967. The first occurred in Waterloo, IA, in August 1967 and the aircraft was listed as substantially damaged. The second accident occurred in October 1967 and the aircraft was listed as destroyed.

TDW fuel records showed that 22 Gallons of 100LL aviation grade fuel was added on July 22, 2013.

Left Engine

According to available records, the left engine was overhauled by Aviall/Mattuck Inc. on June 12, 1987. The last annual inspection of the left engine was completed on April 1, 2013 with a Hobbs time of 1,876.0 hours. The total time of the left engine at the annual inspection was 5,836 hours.

Right Engine

According to available records, the right engine was overhauled by G&N Aircraft Inc. on June 12, 1990. The last annual inspection of the right engine was completed on April 1, 2013, with a Hobbs time of 1,876.0 hours. The total time of the right engine at the annual inspection was 3,755 hours.

METEOROLOGICAL INFORMATION

The nearest weather reporting station was located at Amarillo International Airport (AMA) about 6.5 miles east-northeast of the accident site. A review of NEXRAD radar data from the Amarillo station noted the passing of a line of thunderstorms just prior to the departure of the accident airplane.

Progressive Decoded METAR Reports

The 0804 METAR weather observation for AMA was wind from 100 degrees at 14 knots. The visibility was 8 statute miles in thunderstorms with light rain. There were scattered clouds at 4,300 feet, broken clouds at 9,000 feet, and overcast clouds at 11,000 feet. The temperature was 18 degrees C, and the dew point was 17 degrees C. The barometric altimeter setting was 30.14 inches of mercury.

The 0853 METAR weather observation for AMA was wind from 120 degrees at 12 knots with gusts to 16 knots. The visibility was 10 miles with thunderstorms in the area. There were broken clouds at 5,500 feet and 7,000 feet with overcast clouds at 9,000 feet. The temperature was 18 degrees C and the dew point was 17 degrees C. The barometric altimeter setting was 30.18 inches of mercury.

The 0904 METAR weather observation for AMA was wind 120 degrees at 13 knots. The visibility was 2.5 miles with thunderstorms in the area. The Runway Visual Range (RVR) for runway 4 was 5,000 feet with a reportable value of 6,000 feet in thunderstorms with light rain and mist. There were broken clouds at 5,500 feet and broken clouds at 6,500 feet. The temperature was 18 degrees C and the dew point was 17 degrees C. The barometric altimeter setting was 30.17 inches of mercury.

Thunderstorms and a large amount of rain had passed through the area all that week. The airplane had been parked outside on the ramp during the week of heavy rain..

RADAR INFORMATION

Supporting documents of RADAR information for N8306Y are included in the NTSB ATC Group Chairman's Factual Report. The ATC report can be found in the public docket material supporting this report.

WRECKAGE AND IMPACT INFORMATION

General

The accident crash site was located in the yard adjacent to a residential home about 0.8 miles from the approach end of runway 17 at TDW. Evidence at the site showed that the airplane impacted the rear portion of the home, separating the right wing and coming to rest near the front door. There was no post impact fire. The distance from the accident site to the approach end of runway 17, at TDW was 4,619 feet on a magnetic heading of 189 degrees. Initial observations of the accident site: The left propeller assembly was not feathered and displayed no indications of rotational signatures upon impact. The right engine propeller assembly was separated from its flange and displayed signatures consistent with it being driven at the time of impact. The landing gear was partially extended. The left side fuel system main fuel sump was drained. It was found about 75 percent full of water (Kolor Kut Water Disclosing Paste was used to test the recovered fuel).

Fuselage

The fuselage displayed substantial impact damage. The top of the fuselage and main cabin door had been removed for the pilot's extrication. The four seats were in good condition, in position and secure to their respective seat tracks. The left front seat lower seat structure had partially collapsed. The left front seat belt was buckled but the outboard section of the belt attach point was separated from the fuselage. The aircraft was not equipped with shoulder harnesses.

The instrument panel displayed impact damage to the center section and engine controls. The engine controls were deformed but generally all were in the forward position. The cowl flaps were open and the landing gear switch was down. The flap control switch was down but examination of the flap actuator revealed it was not extended and the flaps had been in the fully retracted position upon impact.

Airframe Fuel System

The fuel control panel, located between the front seats, showed both selector levers to be positioned between the main and axillary fuel tanks. Examination of the airframe fuel distribution valves found them to be consistent with the fuel selector handles. Impact damage was evident in the vicinity of the fuel valves, so their exact position upon impact could not be determined. Additionally, the aircraft was equipped with fuel tip tanks which, when selected, will flow, via a fuel solenoid switch, into the auxiliary fuel supply line. The left side switch was found positioned on 'TIP' position and the right side was positioned on the 'AUX' position. Both fuel selectors were selected between the 'MAIN' and 'AUX' positons. The left side fuel tank selector switch was in the 'TIP' position. The right side was selected to the 'AUX' position.

All fuel flow components through the left and right fuel sumps and filters were located below the fuel valves. Both left and right engines have individual fuel sumps and filters. Examination of the left sump and filter revealed it to be contaminated with about 75 percent water as well as a dark sand-like substance and about 25% fuel. The water was confirmed on site by revealing paste. The left side filter was removed and found free of blockage.

The right side sump contained mostly fuel with only a trace amount of water, also confirmed with revealing paste. The right side filter was removed and found to be free of blockage.

Empennage

The horizontal stabilizer was in place and secure at its hinge points. The stop bolts were in place, secure and the stabilator was free to move full travel. The right side of the stabilator showed upward impact deformation. The balance bar and weight were in place and both control cables were also secure. The cables were continuous forward to the cockpit flight controls. The pitch trim drum inner shaft extension was 5-6 threads and consistent with a neutral pitch setting.

The vertical stabilizer and ruder were in place and secure. The rudder hinge bolts and stop bolts were in place and the rudder was free to move full travel. Both control cables were secure to the rudder bellcrank and continuous to the rudder control bar in the cockpit. The rudder trim rod showed about 7 threads extension consistent with a neutral setting and the cockpit trim control knob and mechanical indicator also showed neutral position.

Left Wing

The inboard left wing remained secure to the aircraft. The outboard section, between the flap and aileron, was separated but remained attached by the control cables. The separation was broomstrawed consistent with impact overload. Both cables were secure to the aileron bellcrank and continuous to the fuselage. The left control cable was continuous to the control wheel and the balance cable was continuous to the right side nacelle area where the left wing was separated.

The flap and aileron both displayed impact damage. The flap was secure and found in the retracted position. The aileron was separated from the inboard hinge point due to impact but remained with the outboard wing section. The landing gear was found partially extended. The thermos type fuel filler caps were found in place. The wing was equipped with tip tanks which were breached but still contained some fuel. The main and axillary tanks were breached and also contained a small amount of fuel.

The left engine was in place on its nacelle, but deflected upward by the impact. The left propeller was in place and secure to the engine. One blade was bent aft and the other blade was straight and displayed little indication of rotation/power upon impact.

Right Wing

The outboard right wing from the nacelle to the tip tank was separated and found inside the home. The separated section showed impact deformations. Leading edge impact damage was most extensive in the area between the flap and aileron and extended aft to the trailing edge. The aileron was in place with the control rod secure and both control cables secure to the bellcrank. Both cables were broomstrawed at the wing separation. The remaining control cable was continuous to the cockpit controls and the balance cable continued to the left bellcrank.

The landing gear was extended and locked. The flap was separated into two sections. The inboard section was found with the inboard portion of the wing. The outboard section was recovered with the outboard wing section. Both flap sections and the aileron displayed substantial impact damage. The fuel tanks were breached and contained no fuel.

Left Engine

The left engine as first viewed was located in position on the left wing. The propeller remained attached in the un-feathered position. The engine cowling remained attached to the engine with impact damage. For a more detailed examination, the engine was removed on site by the investigation team with assistance from the local fire department and a wrecker service. The cowling was removed and all rear accessories. The exhaust system was removed. The complete fuel system was removed. All spark plugs were removed and had color consistent with normal combustion when compared to the Champion spark plug wear guide. All of the valve rocker covers were removed.

A turning tool was installed in to the vacuum pump drive adapter and the engine was rotated by hand. Thumb suction and compression were observed on all cylinders. Valve movement was observed at all rocker arms. No evidence of an internal mechanical engine anomaly was found.

Left Engine Fuel/Oil/Ignition/Vacuum System Observations

Approximately 4.5 quarts of used engine oil was observed in the oil sump. Fuel was observed in and around the engine. The engine driven fuel pump was removed from its location on the accessory housing. Fuel was observed draining from the inlet and outlet lines of the pump. This fuel was retained and tested for water using Kolor Kut water disclosing paste, the tests resulted in a positive indication for water in the fuel sample. The fuel injector was removed and the inlet fuel screen was removed, no contaminants were observed on the screen. It was noted that the attach point for the fuel injector was impact broken. The cylinder numbers 2 and 4 fuel injector nozzles were observed blocked. Injector nozzles for the other two cylinders were free of contaminants. The fuel flow divider was removed and dismantled. Nothing was observed that would have precluded the flow divider from normal function. The fuel lines were observed intact, with the exception of necessary prescribed cuts by the investigation team to facilitate engine removal from the airframe. Both magnetos were removed and rotated by hand. They furnished spark at all outlet points. The vacuum pump was removed and rotated by hand. It furnished thumb suction and compression.

Left Propeller Assembly

The left propeller was in place and secure to the engine. The blades were marked for identification. The 'A' blade appeared to be straight with no significant rotational power signatures. The 'B' blade displayed a gentle aft bend along the full span. about 45 degrees with no significant rotational power signatures.

Right Engine

The right engine as first viewed was located in its position on the right wing. The propeller was impact separated at the crankshaft from the engine and was located approximately 20 feet away from the engine. The engine cowling remained attached to the engine with impact damage. For detailed examination, the engine was removed on site by the investigative team with assistance from the local fire department and a wrecker service. The cowling was removed and all rear accessories. The exhaust system was removed. The complete fuel system was removed. All spark plugs were removed, except for the number one cylinder bottom plug. The plugs had color consistent with normal combustion when compared to the Champion spark plug wear guide. The valve rocker covers were removed.

A turning tool was installed in to the vacuum pump drive adapter and the engine was rotated by hand. Thumb suction and compression were observed on all cylinders. Valve movement was observed at all rocker arms. No evidence of an internal mechanical engine anomaly was found.

Right Engine Fuel/Oil/Ignition/Vacuum System Observations

An unmeasured amount of used engine oil was observed in the oil sump. The engine driven fuel pump was removed from its location on the accessory housing. Fuel was observed draining from the inlet and outlet lines of the pump. This fuel was retained and tested for water using Kolor Kut water disclosing paste, the tests resulted in a negative indication for water in the fuel sample.

The fuel injector was removed and the inlet fuel screen was removed, no contaminants were observed on the screen. It was noted that the attach point for the fuel injector was broken due to impact. All fuel injector nozzles were removed and examined, they were observed free of contaminants. The fuel flow divider was removed and dismantled. Nothing was observed that would have precluded the flow divider from functioning normally. The fuel lines were observed intact, except for prescribed cuts by the investigative team to facilitate the removal of the engine from the airframe. Both magnetos were removed and rotated by hand. They furnished spark at all outlet points. The vacuum pump was removed and rotated by hand. It furnished thumb suction and compression.

Right Propeller Assembly

The right propeller was found separated from the right engine near the initial impact point. The blades were marked 'A' and 'B' for identification. Both blades were found loose in the hub. Both blades showed evidence of rotation/power upon impact. The 'A' blade was bent aft and twisted toward low pitch. The 'A' blade displayed leading edge polishing with paint erosion as well as nicks and chordwise surface scratches. The 'B' blade was bent forward along the outboard 2/3 span and twisted toward low pitch. The leading edge showed polishing and paint erosion as well as nicks and chordwise surface scratches.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy on the pilot was performed on July 27, 2013, by the South Plains Forensic Pathology Lab, Lubbock, Texas. The cause of death was listed as blunt force injuries. Toxicology tests conducted by the FAA Civil Aeronautic Medical Institute, Oklahoma City, Oklahoma, were negative for drugs, alcohol, and carbon monoxide.

ADDITIONAL INFORMATION

The airplane was released to the owner's representative.

Pilot Information

Certificate:	Private	**Age:**	53
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 1600 hours (Total, all aircraft), 50 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8306Y
Model/Series:	PA-30	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30-1445
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	April 1, 2013 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	50 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	4023 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	IO-320 SERIES
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AMA	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	20°
Lowest Cloud Condition:	Few	**Visibility**	10 miles
Lowest Ceiling:	Broken / 5500 ft AGL	**Visibility (RVR):**	5500 ft
Wind Speed/Gusts:	12 knots / 16 knots	**Turbulence Type Forecast/Actual:**	/ Unknown
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/ Unknown
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	18°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Amarillo, TX (TDW)	**Type of Flight Plan Filed:**	
Destination:	Lubbock, TX	**Type of Clearance:**	Traffic advisory
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Tradewind Airport TDW	**Runway Surface Type:**	
Airport Elevation:	3649 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.190555,-101.82333

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Gordon B Morris; FAA FSDO Lubbock; Lubbock, TX
Original Publish Date:	February 8, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=87566