



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	ODESSA, TX	<b>Accident Number:</b>	FTW00LA057
<b>Date &amp; Time:</b>	01/02/2000, 1611 CST	<b>Registration:</b>	N4389W
<b>Aircraft:</b>	Piper PA-46-310P	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The airplane was climbing through 9,000 feet, after departure, when the engine lost total power. The pilot attempted to restart the engine, but was unsuccessful and executed a forced landing north of the departure airport. Postaccident examination of the airplane revealed that there was a hole in the engine crankcase behind the #2 cylinder and the #1 piston pin had separated at its midpoint. Further, examination of the engine revealed that the #1 piston pin failed as a result of fatigue and the #1 connecting rod bushing (piston pin end) was found fragmented in the oil sump.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The separation of the #1 piston pin due to fatigue, which resulted in a total loss of engine power. A factor was the lack of suitable terrain for the forced landing.

## Findings

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

### Findings

1. (C) ENGINE ASSEMBLY,PISTON - OTHER
2. (C) ENGINE ASSEMBLY,PISTON - OTHER

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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: EMERGENCY DESCENT/LANDING

### Findings

3. (F) TERRAIN CONDITION - NONE SUITABLE

## Factual Information

On January 2, 2000, at 1611 central standard time, a Piper PA-46-310P airplane, N4389W, was substantially damaged during a forced landing following a loss of engine power near Odessa, Texas. The private pilot, who was the registered owner and operator of the airplane, and his passenger were not injured. Visual meteorological conditions prevailed for the 14 Code of Federal Regulations Part 91 personal flight and a flight plan was not filed. The cross-country flight originated from the Odessa-Schlemeyer Field Airport, Odessa, Texas, at 1557, and was destined for Clovis, New Mexico.

According to the pilot, he departed from runway 20 with approximately 50 gallons of fuel on board. After departure he turned to a northerly heading, initiated a climb to 12,500 feet, and contacted Midland Approach for VFR flight following. The airplane was approximately 10 miles from Odessa, and was climbing through 9,000 feet, when the engine lost total power. The pilot turned the airplane back toward Odessa, declared an emergency, and attempted to restart the engine by using the fuel boost pump. When the pilot activated the fuel boost pump, the engine ran "for a few seconds and then quit." He tried to re-start the engine again, using the fuel boost pump 4-5 more times, and then realized there was a "strong odor similar to fuel" in the cabin. During the ensuing forced landing to Highway 338, the airplane contacted mesquite bushes and a fence. The airplane came to a stop upright, on Highway 338, 2.1 miles north of the Odessa-Schlemeyer Field Airport.

An FAA inspector examined the airplane at the accident site and reported that there was a hole in the engine crankcase at the base of the #2 cylinder. A crack was observed extending from the hole to the top of the crankcase. The #1 piston pin separated at its mid-point, and one half of the pin was found laying on the ground outside of the crankcase. The section of the piston pin found outside of the crankcase had a crack extending laterally through its entire length. The inspector added that the right wing root was buckled and the right wing spar sustained structural damage.

The 310-horsepower Teledyne Continental TSIO-520-BE engine and the section of the #1 piston pin found outside of the crankcase were examined, under supervision of an FAA inspector, at the Teledyne Continental Motor's (TCM) Manufacturing facility located in Mobile, Alabama. The #1 piston separated at the piston pin boss structure. The upper crown of the piston remained in the cylinder. The #1 cylinder exhaust rocker arm was found fractured and a TCM Metallurgist stated that the fracture surface exhibited signatures typical of overload. Fragments of the #1 piston pin and the connecting rod bushing (piston pin end) were found fragmented in the oil sump. The section of the #1 piston pin, which was found outside of the crankcase, was examined by a TCM Metallurgist and he stated that the fracture surface exhibited signatures typical of fatigue. The #2 piston separated at the piston pin boss section. The aluminum piston pin plug separated and exhibited signatures typical of overload. The #4 and #6 connecting rod bushings (piston pin end) were observed to be worn and not fully seated in the connecting rods.

According to the engine logbook, the engine had accumulated a total of 1,895.0 hours since major overhaul. It underwent its most recent 100 hour inspection on November 13, 1999, at which time it had accumulated 1,868.6 hours. According to a TCM service bulletin (M89-13) the recommended time between overhauls, for this model engine, is 2,000 hours.

## 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>	Seatbelt, Shoulder harness
<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 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	07/27/1998
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	3588 hours (Total, all aircraft), 1800 hours (Total, this make and model), 3588 hours (Pilot In Command, all aircraft), 68 hours (Last 90 days, all aircraft), 9 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>	N4389W
<b>Model/Series:</b>	PA-46-310P PA-46-310P	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	8508050
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	11/13/1999, Annual	<b>Certified Max Gross Wt.:</b>	4180 lbs
<b>Time Since Last Inspection:</b>	27 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3640 Hours	<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	TSIO-520-BE
<b>Registered Owner:</b>	JACK L. MUSE	<b>Rated Power:</b>	310 hp
<b>Operator:</b>	JACK L. MUSE	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0000	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	20 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	149°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	24° C
Precipitation and Obscuration:			
Departure Point:	ODESSA, TX (ODO)	Type of Flight Plan Filed:	None
Destination:	CLOVIS, NM (CVN)	Type of Clearance:	VFR on top
Departure Time:	1557 CST	Type of Airspace:	Class E

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	JASON A RAGOGNA	Report Date:	03/02/2001
Additional Participating Persons:	WILLIAM J FITZGERALD; LUBBOCK, TX		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinquiry@ntsb.gov">pubinquiry@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).