



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Sarasota, FL	<b>Accident Number:</b>	MIA03LA090
<b>Date &amp; Time:</b>	04/01/2003, 1815 EST	<b>Registration:</b>	N4952J
<b>Aircraft:</b>	Piper PA-28R-180	<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 pilot stated that he had performed maneuvers in the practice area and was on his way back to the Sarasota/Bradenton Airport, Sarasota, Florida, at 1,600 feet, when all of a sudden, the airplane's engine ceased operating. He said he made a forced landing and during the landing rollout the airplane collided with a curb and a sign, incurring damage to the wings. Postaccident examination of the accident airplane revealed that the Bendix magneto had become displaced from its mount. In addition, there was a discontinuity within the engine accessory section. There was the presence of oil in the area of the airframe/engine tubular mount structure, and on the lower left portion of the fuselage. The crankshaft gear bolt was loose and had a flat mark on one of the threads, the lock tab was bent and twisted, and the dowel pin had sheared. The gears within the accessory section of the engine, including the impulse coupling for the left magneto were undamaged. There was also no damage to the crankshaft gear's teeth, and the center internal bore displayed signatures consistent with there having been a side load. The NTSB Metallurgical Laboratory in Washington DC, conducted an examination of the left "Bendix" magneto, the bottom magneto clamp, the dowel pin, the crankshaft gear, the lock tab, the crankshaft, and the crankshaft bolt. The damage noted was consistent with a loss of torque on the crankshaft assembly. The dowel was found to have fatigue fractures emanating from multiple origins at the outer diameter surface, consistent with having been produced by grinding and wear/fretting. Airplane records indicate that on September 1, 1993 the engine had undergone a field overhaul, had accumulated 1450.35 hours since the overhaul. On October 30, 2002, the engine had undergone maintenance, and had both the left and right crankcase halves replaced, about 200 hours before the accident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the crankshaft bolt losing torque, the gear disengaging, and the engine ceasing to operate as a result of inadequate maintenance installation.

## Findings

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

### Findings

1. (C) MAINTENANCE,INSTALLATION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
2. ENGINE ASSEMBLY,GEAR - LOOSE PART/BOLT/NUT/CLAMP/ETC
3. ENGINE ASSEMBLY,GEAR - DISENGAGED

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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

4. OBJECT - SIGN

## Factual Information

On April 1, 2003, about 1815 eastern standard time, a Piper PA-28R-180, N4952J, registered to and operated by Cirrus Aviation, as a Title 14 CFR part 91 personal flight, made a forced landing in Sarasota, Florida. Visual meteorological conditions prevailed, and no flight plan was filed. The private-rated pilot and one pilot-rated passenger were not injured, and the airplane incurred substantial damage. The flight originated in Sarasota, the same day, about 1725.

The pilot stated that he had flown to the practice area and had performed steep turns, slow flight, and steep spirals, and was on his way back to the Sarasota/Bradenton Airport, Sarasota, Florida, at 1,600 feet, when all of a sudden, the airplane's engine ceased operating. He said he saw a road and elected to land on it, but a car later turned onto the road, so he chose to land on a field instead. During the landing rollout the airplane collided with a curb and a sign, incurring damage to the wings.

Postaccident examinations of the accident airplane revealed that the left magneto, manufactured by "Bendix", was found to have wear on the aluminum flange in the area where the bottom mount clamp is normally secured. The clamp installed that was intended for a "Slick" manufactured magnetos, and the Bendix magneto had become displaced from its mount. In addition, there was a discontinuity within the engine accessory section. There was the presence of oil in the area of the airframe/engine tubular mount structure, and on the lower left portion of the fuselage. The crankshaft gear bolt was loose and had a flat mark on one of the threads, the lock tab was bent and twisted, and the dowel pin had sheared. The gears within the accessory section of the engine, including the impulse coupling for the left magneto, were undamaged. There was also no damage to the crankshaft gear's teeth, and the center internal bore displayed signatures consistent with there having been a side load.

The NTSB Metallurgical Laboratory in Washington, D.C., conducted an examination of the left "Bendix" magneto, the bottom magneto clamp, the dowel pin, the crankshaft gear, the lock tab, the crankshaft, and the crankshaft bolt. The damage noted was consistent with a loss of torque on the crankshaft assembly. The dowel was found to have fatigue fractures emanating from multiple origins at the outer diameter surface, consistent with having been produced by grinding and wear/fretting. Airplane records indicate that on September 1, 1993, the engine had undergone a field overhaul, and had accumulated 1450.35 hours since the overhaul. On October 30, 2002, the engine had undergone maintenance and had both the left and right crankcase halves replaced about 200 hours before the accident.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	48, 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
<b>Instrument Rating(s):</b>	Airplane	<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>	08/27/2001
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	08/29/2001
<b>Flight Time:</b>	388 hours (Total, all aircraft), 42 hours (Total, this make and model), 327 hours (Pilot In Command, all aircraft), 19 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N4952J
<b>Model/Series:</b>	PA-28R-180	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	28R-30698
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	02/18/2003, 100 Hour	<b>Certified Max Gross Wt.:</b>	2500 lbs
<b>Time Since Last Inspection:</b>	55 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	5731 Hours at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360
<b>Registered Owner:</b>	Cirrus Aviation	<b>Rated Power:</b>	200 hp
<b>Operator:</b>	Cirrus Aviation	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	
Observation Facility, Elevation:	SRQ	Distance from Accident Site:	
Observation Time:	1753	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	110°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.3 inches Hg	Temperature/Dew Point:	21 °C / 6 °C
Precipitation and Obscuration:			
Departure Point:	Sarasota, FL (SRQ)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1725	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	2 None	Latitude, Longitude:	27.561944, -82.395278

## Administrative Information

Investigator In Charge (IIC):	John W Lovell	Report Date:	03/30/2004
Additional Participating Persons:	Steven Stiyer; FAA FSDO; Tampa, FL		
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](#).