



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

# Aviation Investigation Final Report

<b>Location:</b>	Palo Alto, California	<b>Accident Number:</b>	LAX08LA055
<b>Date &amp; Time:</b>	February 1, 2008, 08:30 Local	<b>Registration:</b>	N49811
<b>Aircraft:</b>	Cessna 152	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Hard landing	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Positioning		

## Analysis

Prior to the accident flight, a maintenance inspection was performed. A piece of the baffling was found in the throat of the carburetor venturi. The carburetor was inspected and reinstalled on the airplane. On the accident flight, the pilot/mechanic performed a post maintenance run-up with no mechanical problems noted. She taxied the airplane to the runway for takeoff and performed another run-up. Again there were no mechanical problems noted, and all the gages showed normal indications. On the takeoff roll the engine developed 2,300 rpm's. About 500 feet mean sea level (msl), she noticed a hesitation in the engine and decided to make a 180-degree turn back to the runway. The airplane was still high on the approach, so the pilot reduced the airspeed, performed S-turns, and then slipped the airplane to lose altitude. She was still high, and about halfway down the runway, she further reduced the airspeed, which increased the sink rate. She lowered the nose to slow the sink rate, and was in the process of raising the nose again to flare for landing when the nose struck the runway. An inspection of the engine revealed zero compression of the number 1 cylinder with blow-by past the piston rings and exhaust valve. Maintenance personnel also noted that the bottom number 1 cylinder spark plug was "excessively" fouled with carbon deposits. There were no problems noted with the carburetor.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Loss of engine power during the takeoff initial climb due to lack of compression to a cylinder.

## Findings

<b>Personnel issues</b>	Repair - Maintenance personnel
<b>Aircraft</b>	Recip eng cyl section - Damaged/degraded

# Factual Information

## History of Flight

Prior to flight	Aircraft maintenance event
Takeoff	Loss of engine power (total)
Landing-flare/touchdown	Hard landing (Defining event)

On February 1, 2008, at 0830 Pacific standard time, a single-engine Cessna 152, N49811, experienced a loss of engine power on takeoff and landed hard following an emergency landing on runway 13 at Palo Alto Airport of Santa Clara County (PAO), Palo Alto, California. West Valley Flying Club operated the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a positioning flight. The commercial pilot, the sole occupant, was not injured. The airplane sustained structural damage to the firewall and fuselage. Visual meteorological conditions prevailed for the local area flight that was originating at the time of the accident. The flight was destined for San Carlos Airport (SQL), San Carlos, California, and no flight plan had been filed.

According to the pilot’s written statement, she reported that during maintenance work the previous day, a piece of baffling was found in the throat of the carburetor venturi. The carburetor was removed, cleaned, inspected, and reinstalled. The following morning, she performed a post maintenance run-up inspection and then intended to return the airplane to SQL. After start up, she performed a run-up, and all indications were normal. She taxied to runway 31 where she performed another run-up with no problems noted.

On the takeoff roll, the engine developed 2,300 rpm’s, and all gages were in the "green." On climb out, she reported a 600-foot-per-minute climb at 70 knots. She lowered the nose to reduce the climb rate, but left the throttle and mixture in the full forward position. About 500 feet mean sea level (msl), the engine experienced a "hesitation." The pilot stated that she did not believe she could complete the pattern and land on runway 31, so she made a 180-degree turn back to runway 13 and informed the controller of her intent to land. With the runway in front of her, she reduced the airspeed to just above a stall and performed a "couple of S-turns and then slipped the [airplane]."

The pilot stated that the airplane was still high and she was concerned about overshooting the runway. About halfway down the runway in an attempt to lose altitude, she reduced the airspeed as much as possible and the sink rate increased. She lowered the nose and attempted to slow the sink rate, and then raised the nose again to flare prior to landing; however, the sink rate was too high and she was not able to raise the nose before it struck the runway.

Rossi Aircraft, Inc., Palo Alto, California, performed an engine inspection. The engine

inspection revealed that the bottom number 1 cylinder spark plug was "excessively" fouled with carbon deposits. The other spark plugs exhibited normal operating signatures. Maintenance personnel performed a compression check of all the cylinders. Cylinder numbers 2, 3, and 4 showed normal compression results. The number 1 cylinder had zero compression. Maintenance personnel reported blow-by past the piston rings and exhaust valve of the number 1 cylinder. The carburetor heat box was inspected with no damage noted that would have restricted the airflow; however, the seals were missing. The carburetor was removed and inspected with no mechanical discrepancies noted; they did note about 2 ounces of water in the fuel bowl.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	37,Female
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<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 1 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	July 1, 2005
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	June 3, 2007
<b>Flight Time:</b>	1000 hours (Total, all aircraft), 300 hours (Total, this make and model), 905 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N49811
<b>Model/Series:</b>	152	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	15281332
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	November 1, 2007 100 hour	<b>Certified Max Gross Wt.:</b>	1670 lbs
<b>Time Since Last Inspection:</b>	50 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	6730 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-235-L2C
<b>Registered Owner:</b>	Kevin R Pinger	<b>Rated Power:</b>	110 Horsepower
<b>Operator:</b>	West Valley Flying Club	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PAO,4 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	08:47 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Scattered / 4000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 20000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.29 inches Hg	<b>Temperature/Dew Point:</b>	7°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Palo Alto, CA (PAO )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	SAN CARLOS, CA (SQL )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	08:15 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Palo Alto Airport PAO	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	13	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	2443 ft / 70 ft	<b>VFR Approach/Landing:</b>	Forced landing;Precautionary landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	37.45,-122.099998(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Cornejo, Tealeye
<b>Additional Participating Persons:</b>	James Friel; Federal Aviation Administration; San Jose, CA
<b>Original Publish Date:</b>	December 24, 2008
<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=67462">https://data.nts.gov/Docket?ProjectID=67462</a>

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