Aviation Investigation Final Report

Location:	Hesperia, California	**Accident Number:**	WPR11LA311
Date & Time:	July 5, 2011, 19:00 Local	**Registration:**	N7392X
Aircraft:	Cessna R182	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane's engine stopped making sufficient power to maintain a climb, so the pilot decided to turn back toward the airport. However, after he flew into a valley, he realized that the airplane would not make it back to the airport. After seeing power lines along the airplane's flightpath, he turned the airplane toward an open field. The airplane subsequently hit the ground hard and then hit a tree, which separated the right wing from the airframe. During the postaccident engine examination, the muffler was disassembled. One internal baffle cone was found separated from the end plate and was blocking the opening of the muffler. Upon shaking the muffler, the baffle cone was free to move around within the muffler assembly. The other baffle cone had a hole eroded in its center. Internal engine failures can cause partial or complete engine power loss by restricting the flow of the exhaust gases. If pieces of the internal baffling break loose and partially or totally block the flow of exhaust gases, an engine failure can occur. It is likely the exhaust gas was partially or totally blocked by the separated baffle cone during the flight, which resulted in a loss of engine power.

Probable Cause and Findings

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

The separation of the end baffle cone inside the muffler, which blocked airflow through the engine after takeoff and resulted in a loss of engine power and an off-airport landing into obstacles.

Findings

Aircraft	Noise suppressor - Damaged/degraded
Environmental issues	Tree(s) - Effect on equipment

Factual Information

History of Flight

Enroute-climb to cruise	Loss of engine power (partial) (Defining event)
Enroute-climb to cruise	Powerplant sys/comp malf/fail
Landing	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On July 5, 2011, about 1900 Pacific daylight time, a Cessna R182, N7392X, collided with a tree during an off airport forced landing following a loss of engine power during climb to cruise altitude after takeoff from Hesperia, California. The pilot/owner was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and one passenger sustained minor injuries; the airplane sustained substantial damage from impact forces. The personal cross-country flight departed Hesperia about 1855 with a planned destination of Adelanto, California. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot stated that he had flown to Hesperia from Adelanto earlier that evening, and purchased about 29 gallons of fuel. During the climb to cruise, the airplane was unable to climb, and the pilot turned back toward the airport. He flew into a valley, and realized that the airplane would not make it back to the airport. He saw power lines in his flight path, and turned toward an open field. The airplane hit the ground hard, and then a tree, which separated the right wing from the airframe. Fuel spray from the wing set a car on fire. The airplane spun around, and came to rest with the nose on the ground, and the left wing and tail resting against a house.

Pilot Information

Certificate:	Private	**Age:**	54
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	June 21, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 21, 2011
Flight Time:	636 hours (Total, all aircraft), 13 hours (Total, this make and model), 644 hours (Pilot In Command, all aircraft), 28 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N7392X
Model/Series:	R182	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	R18200096
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 10, 2011 100 hour	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4159 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-540-J3C5D
Registered Owner:	Chris E Waggener	**Rated Power:**	250 Horsepower
Operator:	Chris E Waggener	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KVCV	**Distance from Accident Site:**	
Observation Time:	19:55 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	27°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hesperia, CA (L26)	**Type of Flight Plan Filed:**	None
Destination:	Adelanto, CA (52CL)	**Type of Clearance:**	None
Departure Time:	18:55 Local	**Type of Airspace:**	

Airport Information

Airport:	Hesperia L26	**Runway Surface Type:**	Asphalt
Airport Elevation:	3400 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21	**IFR Approach:**	None
Runway Length/Width:	3900 ft / 50 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	34.666667,-117.300003(est)

Tests and Research

Investigators examined the wreckage at Aircraft Recovery Service, Littlerock, California, on July 14, 2011. A detailed report is part of the public docket for this accident.

Examination of the airframe and engine revealed no anomalies that would have precluded normal operation.

Investigators disassembled the muffler, and noted that one cone-shaped baffle had separated from the end plate, and was blocking the end opening of the muffler. Upon shaking the muffler, the cone was free to move around within the muffler assembly. The other cone had a hole eroded in its center.

Additional Information

The FAA Publication Aviation Maintenance Technician Handbook – Powerplant, Volume 1, Chapter 3, describes induction and exhaust systems. One section of that chapter discusses internal muffler failures. It states that internal failures (baffles, diffusers, etc.) can cause partial

or complete engine power loss by restricting the flow of the exhaust gases. If pieces of the internal baffling break loose and partially or totally block the flow of exhaust gases, engine failure can occur.

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	Michael Baudoux; FAA FSDO; Riverside, CA
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Last Revision Date:	
Investigation Class:	Class
Note:	
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