National Transportation Safety Board
Aviation Accident Data Summary

Location:	Greene, NY	**Accident Number:**	ERA12LA428
Date & Time:	07/01/2012, 1530 EDT	**Registration:**	N758JQ
Aircraft:	CESSNA R172K	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that about 25 minutes into the flight while the airplane was at an altitude of about 2,300 feet mean sea level, the engine began to run rough, followed by partial loss of power. He turned and proceeded toward an airport then he started hearing metallic grinding sounds as the engine power continued to decrease. Unable to maintain altitude, he elected to land downwind on a runway; he noted that his airspeed was about 100 knots at the threshold. The main landing gear contacted the surface about midpoint of the runway, and the pilot pushed the control yoke to force the nose landing gear onto the runway in an intentional effort to stop the airplane before running off a steep embankment. The airplane came to rest upright about three-quarters of the way down the length of the runway, with structural damage to the engine firewall.

Postaccident examination of the engine revealed the head of the No. 3 cylinder had separated from the barrel due to an undetected fatigue crack that emanated from corrosion pits on the outer surface of the barrel. Paint covering crater-shaped corrosion blisters on the barrel indicates that the paint was applied to a surface that had already corroded and suggests that the corrosion developed over an extended period of time. Although the engine had only accrued about 9 hours since the last 100-hour inspection, the location of the piston at top dead center during the compression test would have been above the location of the fracture and the loss of compression likely would not have been detected. The engine manufacturer recommended that the engine be overhauled every 1500 hours or every 12 years. Although components of the cylinders were replaced in 1986, there was no record that the No. 3 cylinder had been replaced since the airplane was manufactured in 1979. Notably, the engine had accumulated about 1356 hours since installation and had not reached the manufacturer's recommended hour limit for overhaul. However, the 12-year time limit had been significantly exceeded and an overhaul would have involved either installing new or overhauled cylinders. Operating under 14 Code of Federal Regulations Part 91, the owner was not required to adhere to the manufacturer's overhaul recommendations. However, following both the manufacturer's recommended time and hour limitations would have likely addressed the fatigue cracking prior to the accident.

Flight Events

Enroute-cruise - Loss of engine power (partial)
Emergency descent - Miscellaneous/other
Emergency descent - Off-field or emergency landing
Landing-flare/touchdown - Hard landing

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
An undetected fatigue crack on the outer surface of the No. 3 cylinder barrel that could only have been detected visually and not by a differential compression test , resulting in separation of the head from

the barrel and a subsequent partial loss of engine power. Contributing to the accident was the pilot's decision to land downwind on a runway that subsequently necessitated an intentional hard landing to avoid a runway overrun and his failure to follow the engine manufacturer's time between overhaul recommendation .

Findings

Aircraft-Aircraft power plant-Engine (reciprocating)-Recip eng cyl section-Fatigue/wear/corrosion - C
Personnel issues-Action/decision-Action-Incorrect action performance-Pilot - C
Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - F
Personnel issues-Task performance-Maintenance-Scheduled/routine maintenance-Owner/builder - F

Pilot Information

Certificate:	Private	**Age:**	55
Airplane Rating(s):	Single-engine Land	**Instrument Rating(s):**	None
Other Aircraft Rating(s):	None	**Instructor Rating(s):**	None
Flight Time:	710 hours (Total, all aircraft), 250 hours (Total, this make and model), 651 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CESSNA	**Registration:**	N758JQ
Model/Series:	R172K	**Engines:**	1 Reciprocating
Operator:	PECHA JAMES C	**Engine Manufacturer:**	CONT MOTOR
Air Carrier Operating Certificate:	None	**Engine Model/Series:**	IO-360-KB
Flight Conducted Under:	Part 91: General Aviation - Personal		

Meteorological Information and Flight Plan

Observation Facility, Elevation:	BGM, 1636 ft msl	**Weather Information Source:**	Weather Observation Facility
Conditions at Accident Site:	Visual Conditions	**Lowest Ceiling:**	None
Condition of Light:	Day	**Wind Speed/Gusts, Direction:**	15 knots/ 20 knots, 300°
Temperature:	29°C / 8°C	**Visibility**	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rome, NY (K16)	**Destination:**	Binghampton, NY

Airport Information

Airport:	Greene Airport (4N7)	**Runway Surface Type:**	Grass/turf
Runway Used:	07	**Runway Surface Condition:**	Dry
Runway Length/Width:	2665 ft / 200 ft		

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None

Administrative Information

Investigator In Charge (IIC):	Timothy W Monville	**Adopted Date:**	02/03/2014
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=84177		