



National Transportation Safety Board Aviation Accident Final Report

Location:	Neenah, WI	Accident Number:	CEN16LA309
Date & Time:	08/02/2016, 1830 CDT	Registration:	N46459
Aircraft:	CESSNA 172K	Aircraft Damage:	Substantial
Defining Event:	Powerplant sys/comp malf/fail	Injuries:	3 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The private pilot was conducting the first flight in the airplane after having removed a failed vacuum pump from the engine; the pilot was not a certified airframe and powerplant mechanic. During the flight, the engine lost power, and the pilot subsequently landed the airplane on a highway, and the left wing contacted a road sign, which resulted in substantial damage.

The pilot reported that he had recently had a mechanic remove a failed vacuum pump on a different airplane that he owned and that he was able to fly that airplane without the pump. As a result, he thought he could also fly the accident airplane without a vacuum pump. However, the vacuum pumps were mounted on each airplane differently, and the pilot's removal of the vacuum pump on the accident airplane allowed oil to exit the engine through the drive gear opening on the accessory case, which resulted in oil starvation.

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 oil starvation, which resulted from the pilot, who was not a certified airframe and powerplant mechanic, removing the vacuum pump from the engine, and his misconception that he could operate the airplane without the pump.

Findings

Aircraft	Oil - Fluid level (Cause)
Personnel issues	Qualification/certification - Pilot (Cause) Unauthorized maint/repair - Pilot (Cause) Incorrect action performance - Pilot (Cause) Perception - Pilot (Cause)
Environmental issues	Sign/marker - Contributed to outcome

Factual Information

On August 2, 2016, at 1830 central daylight time, a Cessna 172K, N46459, collided with a road sign during an off airport forced landing on Highway 10 in Neenah, Wisconsin, following a loss of engine power. The private pilot and two passengers were not injured. The airplane received substantial damage to the left wing. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The local flight originated from the Brennand Airport (79C), Neenah, Wisconsin, at 1815.

The pilot reported that he owned another airplane, an RV7 that was equipped with a Jabiru 5100 engine. The vacuum pump on that engine recently failed so a mechanic removed it until a new one was received. The vacuum pump on the Jabiru 5100 is fitted to the alternator mounting flange and the drive pad is dry. The pilot was told that he could fly the airplane without the vacuum pump installed which he did uneventfully for about 6 hours.

While flying the accident airplane, a Cessna 172, three days prior to the accident, the pilot noted the directional gyro and attitude indicator were not working. Because of the past experience with a vacuum pump failure on the RV7, he identified the problem as being a vacuum pump failure. The pilot held a Repairman Experimental Aircraft Builder certificate for the RV7, and stated that because he was comfortable working on that airplane, he decided to remove the vacuum pump from the accident airplane himself. He did not install a cover plate over the vacuum pump mounting pad. In addition, since he was able to fly the RV7 without a vacuum pump, he believed he could also fly the accident airplane without a vacuum pump installed.

During the first flight after removing the vacuum pump, the airplane sustained a loss of engine power. The pilot landed the airplane on a highway, and while traveling up an exit ramp, the left wing contacted a road sign. The airplane spun around and came to rest in a ditch.

A postaccident examination of the engine revealed the engine suffered oil exhaustion when the oil exited the engine through the vacuum pump mount in the accessory case.

History of Flight

Enroute-cruise	Powerplant sys/comp malf/fail (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	Age:	64, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap Only
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	08/10/2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	08/11/2015
Flight Time:	1610 hours (Total, all aircraft), 1262 hours (Total, this make and model), 1610 hours (Pilot In Command, all aircraft), 9 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CESSNA	Registration:	N46459
Model/Series:	172K	Aircraft Category:	Airplane
Year of Manufacture:	1969	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	17257282
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	06/20/2016, Annual	Certified Max Gross Wt.:	2299 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	4640.6 Hours	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-320 SERIES
Registered Owner:	On file	Rated Power:	0 hp
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	ATW, 918 ft msl	Observation Time:	2245 UTC
Distance from Accident Site:	3 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	26°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Scattered / 3800 ft agl	Temperature/Dew Point:	28° C / 17° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	7 knots, 220°	Visibility (RVR):	
Altimeter Setting:	30.03 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Neenah, WI (79C)	Type of Flight Plan Filed:	None
Destination:	Neenah, WI (79C)	Type of Clearance:	None
Departure Time:	1815 CDT	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None		

Administrative Information

Investigator In Charge (IIC):	Pamela S Sullivan	Adopted Date:	12/12/2016
Additional Participating Persons:	Todd Davis; FAA; Milwaukee, WI Joe Saunders; FAA; Milwaukee, WI		
Publish Date:	12/12/2016		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=93785		

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