



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

March 10, 2021

ENGINE EXAMINATION SUMMARY

WPR20LA133

This document contains 0 embedded photos.

A. ACCIDENT

Location:	Lodi, California
Date:	April 28, 2020
Aircraft:	Cessna 177
NTSB Investigator-in-Charge:	Joshua Cawthra

B. PARTICIPANTS

IIC:	Joshua Cawthra
	National Transportation Safety Board
	Federal Way, Washington

C. DETAILS OF THE INVESTIGATION

1.0 Engine Examination

Examination of the airplane revealed that the engine remained partially attached to the engine mounts. Oil/dirt was observed on a majority of the engine, mostly focusing on the right side. A hole in the crankcase was observed above cylinder no. 4 and 3. Additional crankcase damage was observed to the internal areas of the oil sump, and before the no. 3 cylinder, in line with the no. 4 cylinder connecting rod. No loose oil lines were found with the exception of the oil pressure line, which appeared to have been pulled out of the crankcase (impact).

All engine accessories were removed from the accessory case.

All four cylinders were removed from the crankcase.

Cylinders No. 1 and 2, including pistons, wrist pins, and connecting rods were unremarkable.

Cylinder No. 3:

The cylinder exhibited extensive damage to the piston skirt area, and cylinder wall. The piston appeared lodged within the cylinder assembly, with extensive damage to the piston skirt, and wrist pin bosses. The piston pin remained attached to the connecting rod, which was twisted, and remained attached to the crankshaft. No visible evidence of heat distress or lack of lubrication was observed.

Cylinder No. 4:

The cylinder exhibited extensive damage to the piston skirt area and cylinder wall. The piston appeared lodged within the cylinder assembly, with minor damage to the piston skirt. The connecting rod remained attached to the crankshaft, however, the web was separated just outboard of the crankshaft, and about 1 inch inboard from the piston pin. The area of separation near the piston pin was flat, with no apparent mechanical damage. The separation near the

crankshaft exhibited severe mechanical damage. The middle portion of the connecting rod web was found within the oil sump and exhibited similar mechanical damage.

The crankshaft was intact and appeared undamaged.

The camshaft was mechanically damaged in an area directly in line with the number 4 connecting rod.

Engine accessories were not examined further.

All accessory gears were intact, oil coated, and undamaged.

The oil pump housing cover was removed. All internal gears were intact and oil coated. No evidence of hard particle passage was observed.

Oil filter had some metallic debris within the filter element.

Cylinder No. 3 and 4, connecting rods, and pistons, and piston pins were retained for further examination.

Submitted by: Joshua Cawthra