Aviation Investigation Final Report

Location:	Los Banos, California	**Accident Number:**	WPR22LA005
Date & Time:	October 8, 2021, 19:04 Local	**Registration:**	N7220B
Aircraft:	Beech B36TC	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Business		

Analysis

The pilot reported that he was on the return leg of a cross country flight, about 10,000 ft mean sea level, when the engine lost oil pressure and the manifold pressure dropped. He immediately diverted to the nearest airport. While in the descent to his divert location, the engine was initially producing partial power, but then exhibited serious vibrations and subsequently lost all power. During this time, the cockpit filled with smoke, and fire and sparks were observed exiting from the engine cowling.

Due to the fire, the pilot elected to make a forced landing on a road near the approach end of runway. The airplane struck an object during the landing roll which resulted in substantial damage to the wings.

A postaccident examination of the engine revealed that the No. 4 connecting rod bolt nut was missing. Prominent thermal distress was observed in the area where the No. 4 connecting rod connected to the crankshaft and was consistent with oil starvation.

In June of 2020, the engine was disassembled for a propeller strike inspection. The inspection was about 27.3 hours before the accident. As part of the inspection, the connecting rods were overhauled and then reinstalled on the crankshaft using new bearings, rod bolts, and nuts. Given the recency of the work, it is likely that insufficient torque was applied during installation of the No. 4 connecting rod bolt nut, which subsequently became loose and separated.

Probable Cause and Findings

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

The total loss of engine power due to the improper installation of the No. 4 connecting rod bolt nut during a recent overhaul.

Findings

Aircraft	(general) - Incorrect service/maintenance
Aircraft	Unscheduled maint checks - Incorrect service/maintenance
Personnel issues	Installation - Maintenance personnel

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Enroute-cruise	Emergency descent initiated
Approach	Off-field or emergency landing

On October 8, 2021, about 1904 Pacific daylight time, a Beech B36TC airplane, N7220B, was substantially damaged when it was involved in an accident near Los Banos, California. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he flew the airplane to Paso Robles Municipal Airport (PRB), Paso Robles, California, where he refueled and was on his return flight to Gnoss Field Airport (DVO), Novato, California, when the accident occurred. The airplane was at about 10,000 ft mean sea level when the engine lost oil pressure and the manifold pressure dropped. He immediately diverted to Los Banos Municipal Airport (LSN), Los Banos, California. While in the descent into LSN, the engine was initially producing partial power, but then exhibited severe vibrations and subsequently lost all power. During this time, the cockpit filled with smoke, and fire and sparks were observed coming from the engine cowling.

Due to the fire, the pilot elected to make a forced landing on a road near the approach end of the runway. The airplane struck an object during the landing roll, which caused the airplane to spin around before coming to rest.

A review of engine data from a Garmin G500TXi device revealed that the airplane leveled off and the engine was set to about 2,500 rpm. About 9 minutes later, the engine's oil pressure started to decrease, while the engine rpm was unchanged. In the next 12 minutes, the oil pressure continued to decrease and culminated with the engine rpm decreasing from about 2,371 to zero rpm in about 5 seconds while the airplane was in a descent.

Postaccident examination of the engine revealed external damage with an exit hole on the crankcase near the top of the No. 2 cylinder. The hole was about 2 inches wide by 3 inches long. A second hole in the crankcase was noted on the left back side that had a diameter of about 1 inch. Additionally, several large cracks in the crankcase were observed on both crankcase halves.

All engine accessories on the back side of the engine remained attached except for the left magneto. The rocker covers were removed and there was evidence of heat distress on all cylinders. Rotational continuity could not be established due to the crankshaft damage.

Disassembly of the engine revealed that the No. 4 connecting rod bolt nut was missing. Thermal distress was observed in the area where the No. 4 connecting rod connected to the crankshaft, consistent with oil starvation. The thermal distress in this area was the most prominent in the engine. Considerable metal debris was noted in the oil sump and oil filter.

The engine was installed in July of 2012, and logged about 671 hours of time before the accident. In June of 2020, the engine was disassembled for a propeller strike inspection. The inspection was about 27.3 hours before the accident. As part of the inspection, the connecting rods were overhauled by a third-party vendor, and then the vendor reinstalled the connecting rods on the crankshaft using new bearings, rod bolts, and nuts. The most recent annual inspection was accomplished in September of 2021, about 2.3 hours before the accident.

Pilot Information

Certificate:	Private	**Age:**	43,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 6, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 15, 2021
Flight Time:	(Estimated) 1353.3 hours (Total, all aircraft), 927.6 hours (Total, this make and model), 1469.6 hours (Pilot In Command, all aircraft), 17.3 hours (Last 90 days, all aircraft), 3.8 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N7220B
Model/Series:	B36TC	**Aircraft Category:**	Airplane
Year of Manufacture:	1984	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	EA-425
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	September 8, 2021 Annual	**Certified Max Gross Wt.:**	3850 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5356.9 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO550B-AP
Registered Owner:	6L6 LLC	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	KCVH,237 ft msl	**Distance from Accident Site:**	28 Nautical Miles
Observation Time:	19:15 Local	**Direction from Accident Site:**	252°
Lowest Cloud Condition:	Few / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	14°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Paso Robles, CA (PRB)	**Type of Flight Plan Filed:**	IFR
Destination:	Novato, CA (DVO)	**Type of Clearance:**	IFR
Departure Time:	18:29 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	LOS BANOS MUNI LSN	**Runway Surface Type:**	
Airport Elevation:	121 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	37.042261,-120.86175(est)

Administrative Information

Investigator In Charge (IIC):	Nixon, Albert
Additional Participating Persons:	Ryan Smith; Federal Aviation Administration; Fresno, CA Jason Alves; Federal Aviation Administration; Fresno, CA
Original Publish Date:	October 19, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=104084