



# Aviation Investigation Final Report

<b>Location:</b>	Humboldt Bay, California	<b>Accident Number:</b>	WPR24LA210
<b>Date &amp; Time:</b>	June 20, 2024, 10:31 Local	<b>Registration:</b>	N141PB
<b>Aircraft:</b>	LANCAIR COMPANY LC42-550FG	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Powerplant sys/comp malf/fail	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

Shortly after takeoff, the engine lost most of its oil, resulting in a partial engine seizure and a total loss of engine power. During a forced landing to a soft field, the airplane nosed over, sustaining substantial damage to the vertical stabilizer, rudder, and fuselage.

Postaccident examination of the engine revealed that a rocker cover gasket was misaligned before the accident. The gasket was unable to maintain an adequate seal and opened during the accident flight. Oil was then ejected out of the gap between the rocker cover and cylinder head, which resulted in oil exhaustion.

Maintenance that was performed about 20 flight hours before the accident flight would have included installing the gasket. Maintenance instructions required a series of specific steps to install the gasket; based on the condition of the gasket after the accident, the instructions were likely not followed properly.

## Probable Cause and Findings

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

Maintenance personnel's incorrect installation of an engine rocker cover gasket, which resulted in oil exhaustion and subsequent loss of engine power during the initial climb.

## Findings

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<b>Aircraft</b>	Recip eng cyl section - Incorrect service/maintenance
<b>Personnel issues</b>	Scheduled/routine maintenance - Maintenance personnel
<b>Aircraft</b>	Oil - Fluid level

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft maintenance event
<b>Enroute-climb to cruise</b>	Powerplant sys/comp malf/fail (Defining event)
<b>Enroute-climb to cruise</b>	Loss of engine power (total)
<b>Landing-flare/touchdown</b>	Nose over/nose down

On June 20, 2024, about 1031 Pacific daylight time, a Lancair LC42-550FG (Columbia 350), N141PB, was substantially damaged when it was involved in an accident near Humboldt Bay, California. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The airplane had just departed Murray Field Airport (EKA), Eureka, California, after receiving an instrument flight rules clearance to Napa County Airport (APC), Napa, California. During the initial climb, the airplane passed through a cloud layer, after which it broke out into visual meteorological conditions at an altitude of about 1,500 ft mean sea level (msl). As the airplane climbed through 2,300 ft msl, the pilot established communications with the Seattle Air Route Traffic Control Center. About one minute later, he noticed a change in engine noise, with an accompanying vibration. The engine monitor indicated the cylinder head temperature for cylinder No. 6 was rising, and a short time later the engine lost all power and appeared to seize.

The pilot declared an emergency and was provided vectors back to EKA. While the airplane was turning toward the airport, it descended into the cloud layer. The airplane broke out into visual conditions about 700 ft msl over coastal marshland. The pilot maneuvered the airplane toward the flattest looking area, and on touchdown the airplane nosed over. The airplane sustained substantial damage to the vertical stabilizer and rudder, along with the forward cabin roof.

Postaccident examination of the engine revealed that the engine had lost most of its oil in flight, with only 1 quart of oil remained in the sump (its capacity was 8 quarts). The entire belly of the airplane was coated in oil and, within the engine compartment, the lower inner surface of the lower cowling, along with the left side of the engine, was coated in a sheen of oil.

Examination of the rocker covers revealed that the gasket for the exhaust rocker for cylinder No. 2 (on the left aft side of the engine) was misaligned in its lower right corner, such that a gap between the rocker cover and cylinder head was present (figure 1).

The cover was removed, and a dark stain was present on the face of the gasket mating surface, which mirrored the misalignment of the gasket (figure 2).

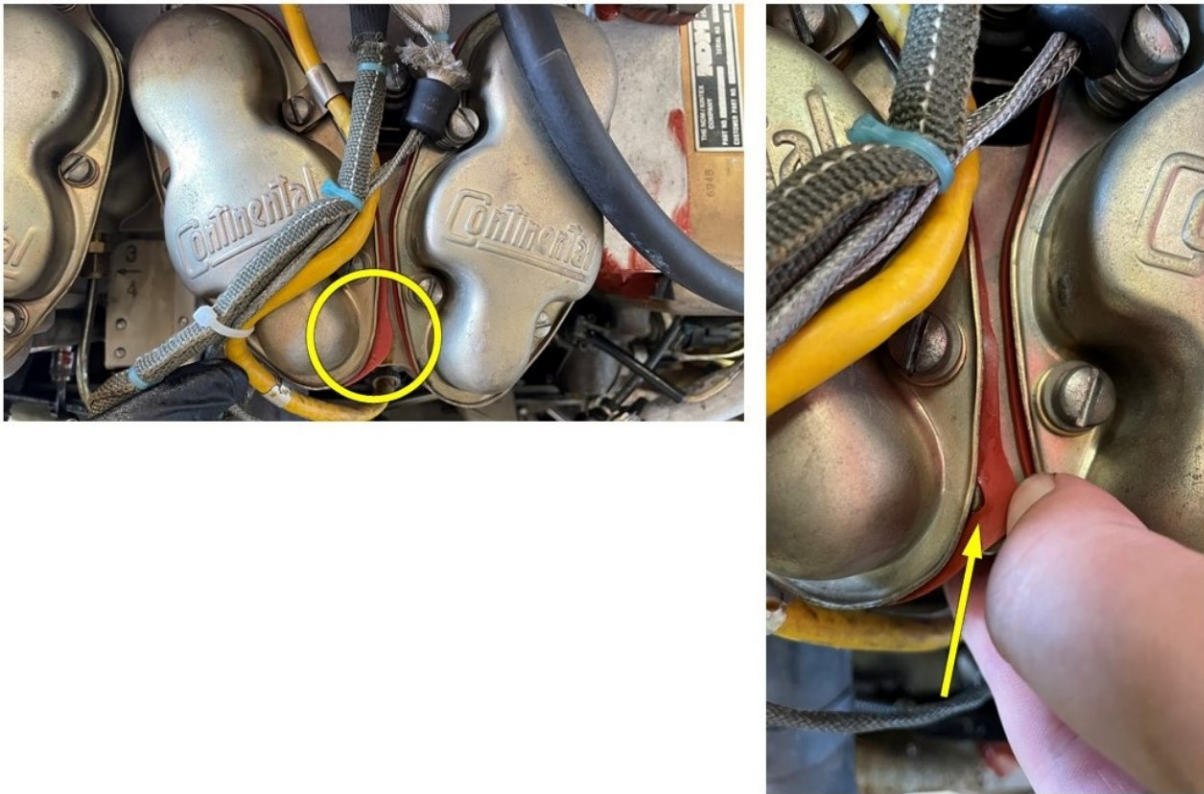


Figure 1. Misaligned gasket (left); gap in the gasket seal (right).

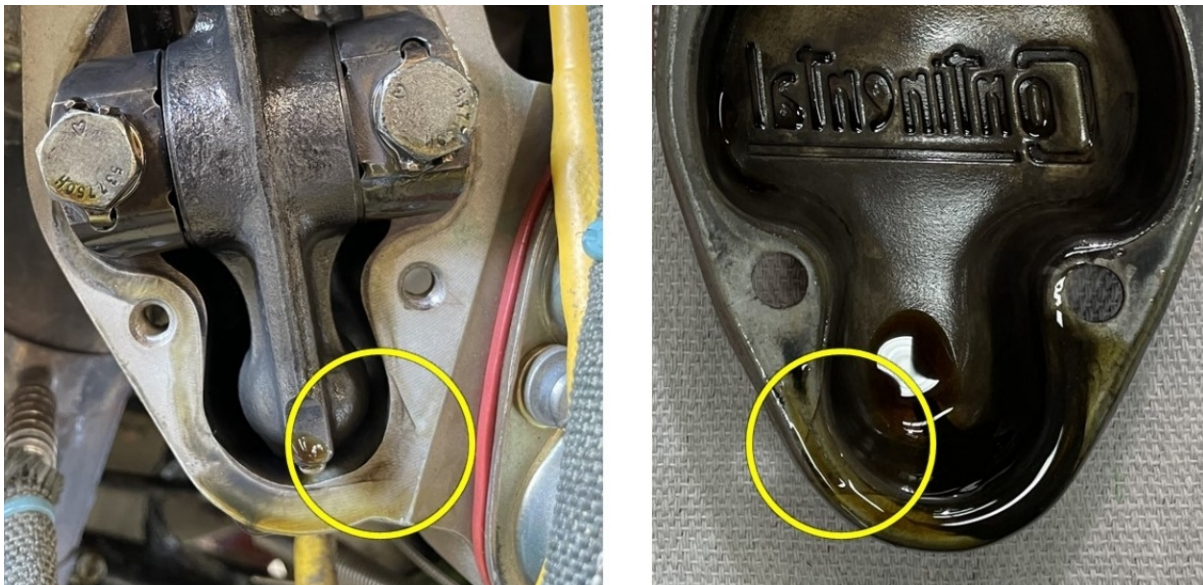


Figure 2. Witness marks showing pre-existing misaligned gasket on rocker (left) and cover (right).

The oil cooler and all oil lines were intact and showed no evidence of leaks. Both the oil sump drain plug and the quick drain plug were intact and locked. The outer surface of the oil filter, which was mounted behind the aft engine baffle and forward of the firewall, was clean, dry, and firmly attached to its adapter. The oil filter element was covered in fine metallic particles. Although the engine crankshaft could be rotated by hand at the propeller hub, its motion felt stiff, with more resistance than typical.

Other than the rocker cover gasket misalignment, the engine examination revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

The most recent airplane maintenance was completed about 20 flight hours before the accident, on September 17, 2023. At that time, an annual inspection was performed, along with replacement of all six engine cylinder and valve assemblies. The logbook entry stated that ground operation checks were performed following the maintenance, and no leaks were noted.

Continental Aerospace Technologies issued Service Information Letter SIL21-04B in August 2021, which was applicable to the accident engine. The letter provided instructions for installing an updated 100% silicone rocker cover gasket (part number 668893) in place of previous fiber and combination fiber/silicone bead gaskets. The letter stated that the new gasket "provides a more flexible seal than the previous gasket, when properly installed."

The letter included a caution that failure to adequately clean the rocker and rocker cover flanges will cause an oil leak. It also specified reduced torque values for attaching the cover fasteners than those used for the fiber-based gaskets and stated that if the lower values were not used, the gasket and cover would be damaged.

The newer silicone gasket had been installed in the engine, and both it and the rocker cover were undamaged. Review of the Federal Aviation Administration's service difficulty reporting system database did not find any reports of failures of the newer silicone gasket.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	67, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	August 10, 2023
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	October 8, 2023
<b>Flight Time:</b>	2600 hours (Total, all aircraft), 600 hours (Total, this make and model), 2600 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	LANCAIR COMPANY	<b>Registration:</b>	N141PB
<b>Model/Series:</b>	LC42-550FG	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2005	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	42066
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	September 17, 2023 Annual	<b>Certified Max Gross Wt.:</b>	3400 lbs
<b>Time Since Last Inspection:</b>	20 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	1176 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Continental Motors
<b>ELT:</b>	C91A installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	IO 550N
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	310 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None



## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KFOT,393 ft msl	<b>Distance from Accident Site:</b>	9 Nautical Miles
<b>Observation Time:</b>	10:35 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	4 miles
<b>Lowest Ceiling:</b>	Overcast / 300 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	5 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	340°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.95 inches Hg	<b>Temperature/Dew Point:</b>	10°C / 10°C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	Eureka, CA (EKA)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Napa, CA (APA)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	10:24 Local	<b>Type of Airspace:</b>	Class E

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	40.69524,-124.21173

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Simpson, Elliott
<b>Additional Participating Persons:</b>	Mike Palmer; FAA FSDO; Oakland, CA
<b>Original Publish Date:</b>	April 23, 2025
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=194542">https://data.ntsb.gov/Docket?ProjectID=194542</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).