Aviation Investigation Final Report

Location:	Aumsville, Oregon	**Accident Number:**	WPR19LA189
Date & Time:	July 16, 2019, 13:21 Local	**Registration:**	N365EM
Aircraft:	Vans RV14	**Aircraft Damage:**	Destroyed
Defining Event:	Fire/smoke (non-impact)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was in cruise flight when all electrical instrumentation was suddenly lost, and the pilot started to smell burning wires. A few seconds later, the smoke began to fill the cockpit and fire started to enter the lower part of the cockpit by the left side rudder pedals. The pilot initiated an emergency descent and subsequently landed in a field. The pilot egressed the airplane and the fire continued to burn until first responders arrived.

Postaccident examination of the airplane revealed extensive thermal damage to the engine and its surrounding area, which precluded identifying the exact origin of the fire. However, there was significantly more charring and fire damage to the left side of the engine compartment and engine mount powder coating. Based on the pilot's statement and the charring of the engine mount powder coating, it is likely that the fire started on the left side of the engine compartment.

A service bulletin issued by the airplane manufacturer identified a potential leaking of Kavlico pressure sensors that were installed in the aluminum manifold located on the upper left side of the airplane's firewall. However, the accident airplane's manifold and both sensors were destroyed by the postaccident fire. Although a sensor failure is a possible cause, there are many potential failure points in fuel and oil supply and pressure indication lines that could have resulted in the fire. Due to the extensive thermal damage, the origin of the fire could not be determined based on available evidence.

Probable Cause and Findings

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

An inflight fire that originated in the engine compartment for reasons that could not be determined based on available evidence.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Fire/smoke (non-impact) (Defining event)

On July 16, 2019, about 1321 Pacific daylight time, an experimental, amateur built Vans RV 14A airplane, N365EM, was destroyed in an accident near Aumsville, Oregon. The pilot sustained minor injuries. The airplane was operated under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight.

The pilot departed Aurora State Airport (UAO), Aurora, Oregon at 1235, with the intended destination to Corvallis Municipal Airport (CVO), Corvallis, Oregon. The pilot reported that about 1 hour into the flight, at a cruise altitude of 1,500 ft above ground level, he lost all electrical instrumentation and smelled burning wiring. He initiated an emergency descent a few seconds later when the smoke began to fill the cockpit and the fire started to enter the lower part of the cockpit by the left side rudder pedals. He conducted a forced landing to a field and evacuated the airplane that continued to burn until the first responders extinguished the fire.

The pilot informed investigators that the day before the accident, he changed the oil and replaced the oil filter. When he removed the engine cowling, there was no indication of an oil leak. After the oil change, the pilot started the engine and ran it up to average temps (oil pressure was 75 pounds per square inch) and then shut it down. When he inspected for leaks, he did not locate any. The new oil filter was safety-wired.

Postaccident examination of the airplane revealed extensive thermal damage, especially in the engine and cockpit area; charring of the engine mount powder coating indicated that the fire was more significant on the left side of the airplane. About 13 gallons of aviation fuel was present in the left tank and about 6 gallons was in the right tank. Due to extensive thermal damage to the engine and its surrounding area, it was not possible to determine the exact origin of the fire.

On May 6, 2020, Van's Aircraft released a service bulletin that warned about the potential leaking of Kavilco pressure sensors, whihc are commonly used in fuel, oil, and manifold pressure applications on all RV models. The exact cause (manufacturing, installation, fatigue etc.) of the Kavilco pressure sensors failures has not been determined. The accident airplane was equipped with an aluminum manifold located on the upper left side of the aircraft's firewall, which was where both the oil and fuel pressure sensors were mounted. The manifold and both sensors were destroyed by the fire.

Pilot Information

Certificate:	Commercial	**Age:**	73,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 15, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 11, 2017
Flight Time:	(Estimated) 2203 hours (Total, all aircraft), 229 hours (Total, this make and model), 1923 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Vans	**Registration:**	N365EM
Model/Series:	RV14 A	**Aircraft Category:**	Airplane
Year of Manufacture:	2018	**Amateur Built:**	Yes
Airworthiness Certificate:	Aerobatic	**Serial Number:**	140249
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	February 10, 2019 Annual	**Certified Max Gross Wt.:**	2050 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	220 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-390-EXP10
Registered Owner:		**Rated Power:**	210 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SLE	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	13:00 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Scattered / 2200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 2500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Aurora, OR (AUO)	**Type of Flight Plan Filed:**	None
Destination:	Corvallis, OR (CVO)	**Type of Clearance:**	None
Departure Time:	12:35 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	Both in-flight and on-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	44.8875,-122.871948

Administrative Information

Investigator In Charge (IIC):	Smith, Maja		
Additional Participating Persons:	James Holden; FAA-FSSDO; Portland, OR Rian Johnson; Van's Aircraft		
Original Publish Date:	March 3, 2022	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99859		