



# Aviation Investigation Final Report

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<b>Location:</b>	McDermott, Ohio	<b>Accident Number:</b>	CEN21FA238
<b>Date &amp; Time:</b>	May 28, 2021, 10:48 Local	<b>Registration:</b>	N515DL
<b>Aircraft:</b>	Lancair Evolution	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The pilot departed on a cross-country flight and climbed the airplane to a cruise altitude of 25,000 ft mean sea level (msl). The airplane encountered an area of moderate icing and decelerated to near its stall speed. It then entered a rapid left turning descent. Sections of the right wing and tail separated in flight, and the airplane impacted terrain in a near-vertical attitude. A postimpact fire ensued, and the airplane was destroyed.

Examination revealed that the in-flight separations of the wing and tail sections were consistent with overstress, and no pre-accident mechanical anomalies were observed that would have precluded normal operation. Although toxicological testing detected ethanol in the pilot's muscle and liver, the ethanol was likely not from alcohol consumption based on tissue concentrations and the absence of ethanol in urine.

Review of forecasted weather information indicated that the pilot was likely operating in instrument meteorological and icing conditions for about 20 minutes before the accident, with the potential for supercooled large droplets along the flightpath and structural icing at the airplane's cruise altitude. There was no indication that the pilot obtained a weather briefing from an access-controlled source before the accident, and his awareness of the icing conditions was not determined. The airplane was not equipped for flight in icing conditions.

Based on the available information, the pilot failed to recognize and avoid icing conditions during cruise flight, which resulted in a loss of airplane performance, an aerodynamic stall, and a subsequent loss of airplane control followed by an in-flight break-up.

## Probable Cause and Findings

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

The pilot's failure to recognize and avoid airframe icing conditions, which resulted in a loss of airplane performance and a subsequent loss of control and in-flight break-up.

## Findings

<b>Personnel issues</b>	Understanding/comprehension - Pilot
<b>Environmental issues</b>	(general) - Awareness of condition
<b>Aircraft</b>	Airspeed - Attain/maintain not possible
<b>Aircraft</b>	Lateral/bank control - Attain/maintain not possible

## Factual Information

### History of Flight

<b>Enroute-cruise</b>	Loss of control in flight (Defining event)
<b>Enroute</b>	Structural icing

On May 28, 2021, about 1048 eastern daylight time, a Lancair Evolution airplane, N515DL, was destroyed when it was involved in an accident near McDermott, Ohio. The private pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

A review of air traffic control (ATC) information revealed that the airplane departed about 1014 from Bellefontaine Regional Airport (EDJ), Bellefontaine, Ohio, on an instrument flight rules (IFR) flight plan, with a destination of Charleston International Airport (CHS), Charleston, South Carolina.

After departure from EDJ, the airplane climbed to 25,000 ft mean sea level (msl) and accelerated to 215 knots groundspeed. During the next 1 minute and 43 seconds, the airplane gradually decelerated to a groundspeed of 146 knots while in level flight on a southeast heading. Based on winds aloft of 265° at 47 knots, the airplane had decelerated to a calibrated airspeed of about 76 knots.

The airplane subsequently entered a left turn and descended rapidly. A distressed conversation between the pilot and passenger was transmitted, during which the pilot stated, "I don't know what happened....it won't perform." The controller attempted unsuccessfully to contact the pilot and radar contact was lost. A witness on the ground saw the airplane in a spiral descent. The airplane impacted wooded terrain and a postimpact fire ensued.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	64, 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>	Unknown
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	June 18, 2020
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	May 9, 2019
<b>Flight Time:</b>	1733 hours (Total, all aircraft), 469 hours (Total, this make and model), 27 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

According to a Lancair Owner and Builders Organization (LOBO) representative, the pilot received Lancair Evolution transition training from Elite Pilot Services in 2015 and recurrent training from Evolution Flight Services in 2017, 2018, and 2019. The pilot did not complete recurrent training in 2020 or 2021.

The pilot attended five LOBO events from 2016 to 2021, each of which included weather flying and aeronautical decision-making topics. During the 2019 event, the pilot attended a seminar on icing considerations.

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Lancair	<b>Registration:</b>	N515DL
<b>Model/Series:</b>	Evolution	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2015	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	EVO0060
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	October 1, 2020 Condition	<b>Certified Max Gross Wt.:</b>	4400 lbs
<b>Time Since Last Inspection:</b>	48 Hrs	<b>Engines:</b>	1 Turbo prop
<b>Airframe Total Time:</b>	469 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>		<b>Engine Model/Series:</b>	PT6A-135A
<b>Registered Owner:</b>	DAVLOR AIRCRAFT LEASING LLC	<b>Rated Power:</b>	750 Horsepower
<b>Operator:</b>	DAVLOR AIRCRAFT LEASING LLC	<b>Operating Certificate(s) Held:</b>	None

The airplane was not equipped for flight in icing conditions. The onboard Garmin 900X did not incorporate a stall warning and the airplane was not equipped with an angle of attack system. The flight manual stall speed at maximum gross weight with the flaps retracted was 76 knots.

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KDWU, 546 ft msl	<b>Distance from Accident Site:</b>	21 Nautical Miles
<b>Observation Time:</b>	10:56 Local	<b>Direction from Accident Site:</b>	139°
<b>Lowest Cloud Condition:</b>	Few / 1100 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Overcast / 2300 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	Unknown /
<b>Wind Direction:</b>	210°	<b>Turbulence Severity Forecast/Actual:</b>	Moderate / Unknown
<b>Altimeter Setting:</b>	29.83 inches Hg	<b>Temperature/Dew Point:</b>	21°C / 20°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Bellefontaine, OH (EDJ)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Charleston, SC (CHS)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	10:14 Local	<b>Type of Airspace:</b>	Class A

An AIRMET for moderate icing was valid between the freezing level and 22,000 ft msl. An AIRMET for moderate turbulence was valid from 25,000 ft to 42,000 ft msl. Both AIRMETs covered EDJ and the accident location.

Supplemental National Weather Service forecast products indicated a 10% to 60% probability of icing at 20,000 to 25,000 ft msl near the accident site and that the icing intensity near the accident site would range from “light” to “heavy” categories. Current Icing Potential (CIP) products indicated that the probability of supercooled large droplets (SLD) near the accident site was 10% to 40% between 20,000 and 22,000 ft msl, with an unknown probability of SLD above 22,000 ft msl.

Weather radar and upper air sounding data indicated that the airplane passed through areas of precipitation and icing during the flight and areas of SLD likely existed at the airplane’s altitude near the accident location.

The accident pilot did not request or receive weather information from Leidos Flight Service. A search of archived ForeFlight information indicated that the accident pilot did not request or receive weather information from ForeFlight before the accident flight.

The air traffic controller did not read the AIRMET information to the pilot or solicit and disseminate pilot weather reports (PIREPs). Dissemination of PIREPs alerts pilots to weather conditions and provides information useful to forecasters in the development of aviation forecasts. PIREPs also provide information required by ATC in the provision of safe and efficient use of airspace.

### Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	1 Fatal	<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	On-ground
<b>Total Injuries:</b>	2 Fatal	<b>Latitude, Longitude:</b>	38.81828,-83.02776

The airplane descended at a nearly vertical angle and impacted a wooded area. The wreckage was significantly fire damaged (reference Photo 1).



Photo 1 - Accident Site

The airplane was equipped with a ballistic recovery system; the ballistic charge for the system expended during the fire.

The right wing (outboard 11 ft) separated in flight and was located about 1/2 mile northeast of the main wreckage. Most of the horizontal stabilizer and a 3-ft section of the left elevator were recovered about 3/4 mile northeast of the main wreckage. Examined fracture surfaces of the separated right wing, horizontal stabilizer, and left elevator were consistent with overstress.

Engine and propeller rotational signatures were consistent with the propeller not being feathered and the engine producing power during ground impact. No preaccident mechanical malfunctions were observed that would have precluded normal operation.

## Medical and Pathological Information

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Toxicology testing detected ethanol in the pilot's liver at 0.047 gm/hg and muscle tissue at 0.023 gm/hg. No ethanol was found in the pilot's urine.

## Additional Information

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FAA Advisory Circular AC91-74B, Pilot Guide: Flight in Icing Conditions, included the following information:

*Aircraft icing remains a key aviation safety issue. Accident data has shown that pilots are (intentionally or inadvertently) flying aircraft not certificated for flight in icing conditions into such conditions, often with fatal results. Such accidents are often the result of pilot complacency, lack of situational awareness (e.g., lack of awareness of loss of airspeed), poor technique, poor understanding of the airplane's limitations and performance in icing conditions, misconceptions about certification of the airplane and systems for flight in icing, or a misunderstanding of icing terminology.*

*If an aircraft is not certificated for flight in icing conditions, each flight should be planned carefully so that icing conditions are avoided. During a flight, the pilots should monitor*

*available weather information and be aware of conditions that might require a change of flight plan to avoid icing conditions. In the event of an inadvertent icing encounter, the pilot should take appropriate action to exit the conditions immediately, coordinating with air traffic control as necessary, and declaring an emergency.*

## Administrative Information

**Investigator In Charge (IIC):** Folkerts, Michael

**Additional Participating Persons:** Timothy Pence; Flight Standards District Office; Cincinnati, OH  
Beverly Harvey; Transportation Safety Board of Canada; Gatineau  
Robert Wolstenholme; Evolution Aircraft Company; Redmond, OR  
William J. Edwards; Lancair Owners and Builders Organization; St Louis, MO  
Les Doud; Hartzell Propeller Inc.; Piqua, OH

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**Last Revision Date:**

**Investigation Class:** [Class 3](#)

**Note:**

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=103162>

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](#).