Aviation Investigation Final Report

Location:	Alhambra, Illinois	**Accident Number:**	CHI08LA158
Date & Time:	June 6, 2008, 15:14 Local	**Registration:**	N241DM
Aircraft:	Maggs Lancair 4P	**Aircraft Damage:**	Substantial
Defining Event:	Aircraft structural failure	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Prior to the instrument flight rules flight, the pilot received an updated weather briefing and was informed of the existence of severe thunderstorm and tornado watches and extensive convective activity along his proposed route of flight. While en route, the pilot was informed by air traffic control of areas of heavy precipitation along his flight path. The pilot continued the flight and encountered an area of extreme precipitation. Communication and radar position information were lost. The airplane's fuselage was found separate from the wings and tail surfaces. The wreckage trail was about 4 miles long, indicating that the airplane experienced an in-flight structural failure before impacting the ground.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to continue the flight into an area of known thunderstorm activity and the in-flight structural failure of the airplane.

Findings

Environmental issues	Thunderstorm - Decision related to condition
Aircraft	(general) - Failure
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Thunderstorm - Effect on operation

Factual Information

History of Flight

Enroute-cruise	Windshear or thunderstorm
Enroute-cruise	Aircraft structural failure (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT
On June 6, 2008, about 1514 central daylight time, an amateur-built Maggs, Lancair 4P, N241DM, piloted by a private pilot, was substantially damaged during an in-flight encounter with weather and subsequent impact with terrain near Alhambra, Illinois. The 14 Code of Federal Regulations Part 91 flight was operating in instrument meteorological conditions and was on an instrument flight rules (IFR) flight plan. The pilot, who was the sole occupant, was fatally injured. The flight originated from the Denison Municipal Airport, Denison, Iowa at an unconfirmed time, and was en route to the Bowman Field Airport, Louisville, Kentucky.

PERSONNEL INFORMATION
The pilot, age 57, held a private pilot certificate with airplane single engine land and instrument airplane ratings. His most recent third class medical certificate, issued October 18, 2006, specified that the pilot must wear corrective lenses and possess glasses for near and intermediate vision. The pilot reported 1,705 hours of total flight experience as of the date of his most recent medical examination. No further flight records were available for examination.

AIRCRAFT INFORMATION
The airplane was an amateur-built, low wing, single engine airplane with retractable tri-cycle landing gear. The four seat cabin of the airplane was pressurized for high altitude operation. The airplane's construction was predominately composite. The airplane was powered by a Teledyne Continental Motors model TSIO-550-E1B engine rated at 350 horsepower. Mated to the engine was a Hartzell PHC-H3YF-1RF constant speed propeller. According to the kit manufacturer's advertised specifications, the airplane had a gross weight of 3,550 pounds, and a cruising speed of 330 miles per hour at an altitude of 24,000 feet.

According to forms filed with the Federal Aviation Administration, the airplane was equipped with a Garmin GNS 530 global positioning system (GPS) navigation system, a Garmin GPS-150XL GPS system, and a B.F. Goodrich WX-500 Stormscope, all of which were installed in September 2000.

METEOROLOGICAL INFORMATION
The pilot contacted the Fort Worth Automated Flight Service Station (AFSS) at 1252 and obtained an updated weather briefing. The AFSS briefer informed the pilot of thunderstorm activity including severe thunderstorm watch and tornado watch areas along the route of

flight. The tornado watch area was in effect until 1900 and included the southern portion of Illinois, including the accident location. The briefer informed the pilot that thunderstorm activity was already present at the time of the briefing including level 3, level 4, and occasional level 5 embedded thunderstorm cells along the proposed route of flight. The cloud tops were reported to the pilot as 25,000 to 30,000 feet and intensifying. During the briefing, the pilot inquired as to how far south he would have to go to get around the thunderstorm activity. The briefer responded that the thunderstorm activity extended all the way into Arkansas and into Oklahoma. The briefer added that the adverse weather extended north to Lake Michigan.

Plotted data was obtained which depicted the weather and aircraft location that would have been available to Air Traffic Control (ATC) specialists during the ATC handling of the aircraft in flight. The plotted data showed areas of moderate, heavy, and extreme precipitation ahead of the accident airplane's route of flight. The data depiction showed the airplane on a southeasterly heading from the start of the data at 1453 until about 1509 when the airplane's heading turned toward the south. The data showed that the airplane had passed through an area of moderate precipitation and was entering an area of heavy precipitation with extreme precipitation ahead of the route of flight. The areas of heavy and extreme precipitation extended from northeast to southwest of the airplane's position at that time. The data showed that the right turn of the airplane placed it in the region of extreme precipitation until the end of the recorded data. The last recorded aircraft position was at 2014:45 and the airplane was in a region of extreme precipitation at that time.

COMMUNICATIONS

Transcripts for the communications between the airplane and ATC showed that at 2000:16, the pilot requested a course deviation to the right to 170 degrees to avoid weather that was displayed on his stormscope. The controller approved the request and informed the pilot of moderate to extreme precipitation from the pilot's twelve o'clock position to his three o'clock position at a distance of 25 miles. The controller further informed the pilot that the deviation to the right would place the airplane "pretty close" to the precipitation. At 2003:51 the pilot contacted controllers and requested an altitude block from flight level 200 to 220 due to encountering up and down drafts. At 2006:03 the pilot reported that the severity of the up and down drafts was up to 1,000 feet in either direction and that he was beginning to accumulate airframe icing. The controller informed the pilot that he was currently in an area of moderate precipitation and that moderate and extreme precipitation was about 10 miles ahead of the airplane from its eleven to three o'clock position. The pilot then asked the controller for heading suggestion around the adverse weather. The controller advised the pilot that a left turn to a heading of 030 degrees should keep the pilot out of the extreme precipitation, but that by the time the airplane made its turn it may be in the extreme precipitation. The controller then approved the airplane to deviate right or left of course as needed. At 2010 the controller informed the pilot that the area of heavy and extreme precipitation was 4 miles ahead of the airplane from its nine to three o'clock position and that the heavy and extreme precipitation extended about 10 miles. At 2011:02 the controller informed the pilot that he was entering an area of extreme precipitation from the airplane's nine to three o'clock positions and extended for about 20 miles. At 2011:12, the pilot responded "I'll turn around". No further

communications were received from the pilot and the airplane subsequently disappeared from radar.

WRECKAGE AND IMPACT INFORMATION
The airplane's engine and fuselage came to rest in the yard of a rural residence about 5 miles northeast of Alhambra, Illinois. The fuselage components at that location comprised the fuselage structure from the nose to a point just forward of the tail surfaces. The fuselage was crushed and fractured along its entire length. The debris trail extended from the fuselage location about 4 miles to the northeast. Neither wing of the airplane nor the tail surfaces were located with the fuselage. The right wing and rudder were found about 4,100 feet northeast of the fuselage. No identifiable remnants of the left wing were found except that about 2/3 of the left wing spar remained attached to the fuselage. Due to the extent of the damage, a positive determination of control system continuity could not be made; however, no identified pre-impact deficiencies were found.

MEDICAL AND PATHOLOGICAL INFORMATION
An autopsy was performed on the pilot by the Madison Couty Coroner's Office on June 7, 2008. The cause of death was listed as "Massive injuries to head, chest, abdomen and extremities with extensive visceral damage due to generalized blunt force trauma"

A Final Forensic Toxicology Fatal Accident Report was negative for all substances tested.

Pilot Information

Certificate:	Private	**Age:**	57,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	October 18, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 1705 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Maggs	**Registration:**	N241DM
Model/Series:	Lancair 4P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	0001
Landing Gear Type:	Retractable -	**Seats:**	4
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3550 lbs
Time Since Last Inspection:		**Engines:**	1
Airframe Total Time:		**Engine Manufacturer:**	
ELT:	Installed	**Engine Model/Series:**	
Registered Owner:	On file	**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ALN,544 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	14:55 Local	**Direction from Accident Site:**	265°
Lowest Cloud Condition:	Scattered / 3000 ft AGL	**Visibility**	7 miles
Lowest Ceiling:	Overcast / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	16 knots / 22 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	26°C / 24°C
Precipitation and Obscuration:			
Departure Point:	DENISON, IA (DNS)	**Type of Flight Plan Filed:**	IFR
Destination:	LOUISVILLE, KY (LOU)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	38.918056,-89.655555(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	Steven Long; FAA-St. Louis FSDO; St. Louis, MO
Original Publish Date:	July 28, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=68323