Aviation Investigation Final Report

Location:	Mesa, Arizona	**Accident Number:**	LAX08FA122
Date & Time:	April 23, 2008, 07:09 Local	**Registration:**	N25CL
Aircraft:	Carlton M. Cadwell Lancair IV-P	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Executive/Corporate		

Analysis

Air traffic controllers reported that shortly after takeoff, about the time the landing gear was being retracted, they observed smoke trailing from the airplane. The controller advised the pilot of the smoke, but did not receive a response. Additional witnesses reported that the airplane made an abrupt climbing left turn with the wings rocking back and forth before it nosed down and descended in a near-vertical attitude to ground impact. All flight control surfaces were accounted for at the accident site and all airplane components were found in the immediate area of the impact location. Due to fire and thermal damage to the majority of the composite airframe structure, establishment of control continuity was not possible. Teardown inspection of the engine did not disclose any evidence of a mechanical failure or malfunction. Investigators were unable to determine the cause or origin of the reported smoke during departure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain an adequate airspeed during climb out resulting in an aerodynamic stall/spin.

Findings

Aircraft	Airspeed - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Initial climb	Aerodynamic stall/spin (Defining event)
Initial climb	Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On April 23, 2008, at 0709 mountain standard time (MST), an experimental amateur-built Carlton Cadwell Lancair IV-P airplane, N25CL, experienced a loss of control during takeoff and subsequently impacted into an orange grove near Falcon Field Airport (FFZ), Mesa, Arizona. Boehle Aviation LLC, was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The commercial pilot, the private pilot/owner, and one passenger were killed; the airplane was destroyed by impact forces and post-crash fire. The cross-country personal flight departed Mesa with a planned destination of Santa Ana, California. Visual meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan had been filed.

Air traffic controllers observed the airplane during takeoff. They reported that after the airplane became airborne, about the time the gear was being retracted, they observed smoke trailing from the airplane. The controller advised the pilot of the smoke, but did not receive a response from the pilot.

Witnesses observed the airplane make an abrupt climbing left turn, and then the wings rocked back and forth, followed by the airplane descending straight down into an orange grove. The airplane exploded on impact, and witnesses observed a large fireball.

PERSONNEL INFORMATION

COMMERCIAL PILOT

A review of Federal Aviation Administration (FAA) airman records revealed that the 27-year-old pilot held a commercial pilot certificate with ratings for airplane single-engine land, multiengine land, and instrument airplane. The pilot also held a certified flight instructor (CFI) certificate with ratings for airplane single-engine land and instrument airplane.

The pilot held a second-class medical certificate issued on November 19, 2007. It had no limitations or waivers.

No personal flight log records were located for the pilot. The National Transportation Safety

Board investigator-in-charge (IIC) obtained the aeronautical experience listed in this report from a review of the FAA airmen medical records on file in the Airman and Medical Records Center located in Oklahoma City, Oklahoma. The pilot reported on his medical application that he had a total time of 600 hours, with 200 hours logged in the last 6 months.

The pilot had been employed by the pilot-rated passenger/owner since July 2007, as a company pilot.

Insurance records dated February 25, 2008, reported that the pilot had 580 hours pilot-in-command time. The pilot completed initial training in the accident airplane during March 3-5, 2008. During the training he logged 9.4 flight hours, and received a High Altitude Endorsement.

Examination of the airplane logbooks revealed that the pilot had flown the airplane a total of 20.5 hours between March 3, 2008, and the last recorded maintenance on April 18, 2008.

PILOT RATED PASSENGER/OWNER

A review of FAA airman records revealed that the 27-year-old passenger held a private pilot certificate with ratings for airplane single-engine land and multiengine land.

The rated passenger held a third-class medical certificate issued on November 30, 2005. It had no limitations or waivers.

No personal flight records were located for the rated passenger. The Safety Board IIC obtained the aeronautical experience listed in this report from a review of the FAA airmen medical records on file in the Airman and Medical Records Center, Oklahoma City. The rated passenger reported on his medical application that he had a total time of 60 hours, with 30 hours logged in the last 6 months.

AIRCRAFT INFORMATION

The airplane was an experimental amateur-built airplane, serial number LIV-424-SFB-P. A review of the airplane's logbooks revealed that the airplane had a total airframe time of 978.2 hours at the last 100-hour annual inspection on March 3, 2008. The last logbook entry was on April 18, 2008, following tests of the static/altimeter system. At that time, the tachometer read 998.7 hours.

The engine was a Teledyne Continental Motors TSIO-550-E, serial number 803125. Total time recorded on the engine at the last 100-hour inspection was 978.2 hours.

Examination of the maintenance records revealed no unresolved maintenance discrepancies against the airplane prior to departure.

WRECKAGE AND IMPACT INFORMATION

Investigators examined the wreckage at the accident scene. The orientation of the fuselage, situated nearly perpendicular to a row of trees in the orange grove, faced in a northerly direction. A single large tree trunk was located in the midsection of the wreckage. There was an odor of aviation fuel in the immediate area of the wreckage.

All flight control surfaces were accounted for at the accident site. Due to the post crash fire and the thermal consumption of a majority of the composite airframe, control continuity could not be established.

The airplane and engine were recovered for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION

The commercial pilot remains were removed by the coroner from the right front seat. The rated passenger remains were removed from the left front seat.

The Maricopa County Coroner completed an autopsy of the commercial pilot. The FAA Bioaeronautical Sciences Research Laboratory Forensic Toxicology Research Team, Oklahoma City, performed toxicological testing of specimens of the pilot.

Analysis of the specimens contained no findings for carbon monoxide, cyanide, volatiles, and other tested drugs. The report contained the following findings for tested drugs: Ibuprofen detected in blood.

The Maricopa County Coroner completed an autopsy of the rated passenger. The FAA Bioaeronautical Sciences Research Laboratory Forensic Toxicology Research Team, Oklahoma City, performed toxicological testing of specimens of the rated passenger.

Analysis of the specimens contained no findings for carbon monoxide, cyanide, and volatiles. The report contained the following findings for tested drugs: Benzoylecgonine in blood and 0.05 (ug/ml, ug/g) in urine; ecgonnine methyl ester in blood and urine; and mefloquine in blood and urine.

TESTS AND RESEARCH

Investigators examined the wreckage at Air Transport, Phoenix, Arizona, on April 24, 2008. No abnormalities were noted on the engine or airframe that would have precluded normal operations.

Investigators were unable to determine the cause or origin of the reported "smoke" during departure.

Pilot Information

Certificate:	Commercial	**Age:**	27,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	November 19, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 1, 2006
Flight Time:	700 hours (Total, all aircraft), 20 hours (Total, this make and model), 580 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft)		

Co-pilot Information

Certificate:	Private	**Age:**	27,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 30, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	50 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Carlton M. Cadwell	**Registration:**	N25CL
Model/Series:	Lancair IV-P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	LIV-242-SFB-P
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 3, 2008 Annual	**Certified Max Gross Wt.:**	3550 lbs
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	978.2 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-550-E
Registered Owner:	Boehle Aviation LLC	**Rated Power:**	350 Horsepower
Operator:	Boehle Aviation LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FFZ,1394 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	06:51 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Scattered	**Visibility**	30 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	16°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MESA, AZ (FFZ)	**Type of Flight Plan Filed:**	IFR
Destination:	SANTA ANA, CA (SNA)	**Type of Clearance:**	IFR
Departure Time:	07:09 Local	**Type of Airspace:**	

Airport Information

Airport:	Falcon Field Airport FFZ	**Runway Surface Type:**	Asphalt
Airport Elevation:	1394 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22L	**IFR Approach:**	None
Runway Length/Width:	5101 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	3 Fatal	**Latitude, Longitude:**	33.448055,-111.73722

Administrative Information

Investigator In Charge (IIC):	Jones, Patrick
Additional Participating Persons:	Pete Kelley; Federal Aviation Administration; Scottsdale, AZ Andrew Swick; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	May 6, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67872