Aviation Investigation Final Report

Location:	McAllen, Texas	**Accident Number:**	DFW07LA103
Date & Time:	May 2, 2007, 18:58 Local	**Registration:**	N119TC
Aircraft:	LIVPT INC Lancair IV-P	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Prior to departure, the commercial pilot experienced a hot start while attempting to start the 750-horsepower turbo-prop engine. The pilot received assistance from an airframe and powerplant mechanic. The mechanic reviewed the handwritten checklist the pilot used to start the engine and informed him that the procedures were out of sequence, which was most likely the cause of the hot start. The pilot then motored the engine and allowed the starter to cool for approximately two minutes before he attempted to start the engine. The engine started, sounded "normal" and ran "stable" for approximately 30-45 seconds. The pilot then shut down the engine, and no smoke or engine surging was observed. The pilot dismounted the airplane and walked inside the terminal building with the female passenger. The mechanic then informed the pilot that he should let the starter cool down for at least 30 minutes to 1-hour. About an hour later, the pilot started the engine, and departed. About a minute after takeoff, the pilot announced that he had an "engine out" and he attempted to perform a forced landing on a road south of the airport. Witnesses said the airplane was "wobbling in the air from side to side and having trouble flying straight." It then made a sudden "right down wind turn" and descended "suddenly as if it had to land." The airplane landed on the southbound lanes of the road and collided with the pavement, the center concrete guardrail, and a metal guardrail before catching on fire. Examination of the airplane revealed that a major portion of the airplane's structure was consumed by fire and the position of the fuel selector valve could not be determined. Examination of the experimental engine revealed it had sustained extensive thermal damage; however, no mechanical deficiencies were noted with the engine that could have prevented normal flight operations.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of power for undetermined reasons. A contributing factor was the lack of suitable terrain for the forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - EMERGENCY

Findings
2. OBJECT - WALL/BARRICADE

Factual Information

On May 2, 2007, approximately 1858 central daylight time, a single-engine experimental LIVPT Incorporated Lancair IV-P airplane, N119TC, was destroyed during a forced landing following a reported loss of engine power while on initial takeoff climb from the McAllen Miller International Airport (MFE), near McAllen, Texas. The commercial pilot and his passenger were fatally injured. The airplane was registered to Cite Aviation, LLC, Wilmington, Delaware, and was being operated by the pilot. An instrument flight rules flight plan was filed for the international cross-country flight destined for Tampico, Mexico. Visual meteorological conditions prevailed for the personal flight conducted under 14 Code of Federal Regulations Part 91.

According the a fixed base operator at the airport, the pilot purchased 54-gallons of Jet A fuel about 2 hours prior to the accident. According to the line service technician who fueled the airplane, about 10-15 minutes after the airplane was fueled, the pilot attempted to start the engine. The technician observed "flames shooting out of the exhaust and the side of the engine cowling was on fire for about a second." As the technician went to grab a fire extinguisher, the flames went out and he saw a mechanic walking up to the airplane. The mechanic instructed the pilot to "keep spooling the engine." The pilot attempted to start the engine twice without success. The pilot made a third attempt, and the engine started, but the pilot shut-down the engine about 3-seconds after the engine started. The technician reported that he resumed his duties and did not see the airplane for about another hour. Next time he saw the airplane, he observed the pilot and a female passenger boarding the airplane. This time, when the pilot started the engine, he observed that flames "shot out of the exhaust and the engine started and ran without any problems." The airplane sat on the ramp with the engine running for about 10-minutes, before the pilot taxied the airplane to the active runway for takeoff.

According to a certificated airframe and power plant (A&P) mechanic who worked for the fixed base operator at McAllen Airport, he heard what sounded like an "aborted [engine] start cycle" coming from the ramp area. A few moments later, he heard the sound of a second engine abort cycle. The mechanic looked out at the ramp and observed the accident airplane was experiencing a "wet [hot] start" and flames were coming out of the exhaust pipe. He then observed the pilot and a female passenger exiting the airplane, so he elected to run over to the airplane and instructed the pilot to motor the engine to verify there was no burning fuel. The pilot got back in the airplane and motored the engine for approximately one minute, and then shut the engine down to let the starter motor cool down. During that time, the mechanic and pilot had a discussion about what happened. The mechanic added that the pilot acted "nervous" and was not "very knowledgeable" of the airplane. The pilot then showed the mechanic the checklist he used to start the engine. The mechanic reviewed the checklist and observed that there were some handwritten notes, which were instructions on starting the

engine. The mechanic noted that the items on the checklist were out of sequence, and informed the pilot that is what most likely the cause of the hot start. The pilot then motored the engine a second time for approximately 30 seconds, and allowed the starter to cool for approximately two minutes before he attempted to start the engine. The engine started, and sounded "normal" and ran "stable" for approximately 30-45 seconds. The pilot then shut down the engine, and no smoke or engine surging was observed. The pilot dismounted the airplane and walked inside the terminal building with the female passenger. The mechanic also walked inside, and informed the pilot that he should let the starter cool down for at least 30 minutes to 1-hour. The mechanic, whose work day had ended, gave the pilot his cell phone number and instructed him to call if he had any more problems with the airplane. At 1906, the mechanic received a call from his employer letting him know that the airplane had crashed.

A review of the air traffic control communications revealed that the pilot departed the McAllen Airport at 1857. Less than a minute after takeoff, the pilot announced that "one one nine tango charlie is actually declaring an emergency, we have an engine out." A controller responded, "November nine nine one nine tango charlie roger enter right downwind runway one three. The pilot responded, "negative sir were going down right here." This was the last communication received from the pilot.

An officer with the Hidalgo County Sheriff's Office interviewed three eyewitnesses. Each of these witnesses were traveling in their vehicles on a road south of the airport and gave similar accounts of the accident sequence. According to the Sheriff's report, the witnesses observed the airplane flying in an easterly direction and was "wobbling in the air from side to side and having trouble flying straight." The airplane made a sudden "right down wind turn" and descended "suddenly as if it had to land." The witnesses moved their vehicles out of the way so the airplane could land on the road, which was aligned north and south. The airplane landed on the southbound lanes and the right wing struck the pavement. The airplane was "violently tossed" back to the left and struck the center cement guardrail. The witnesses said the airplane then began to tumble south before it struck a metal guardrail on the west side of the road and exploded into flames. The airplane nearly missed colliding with several vehicles and there were no ground injuries. None of the witnesses reported observing any signs of fire on the airplane prior to the forced landing.

A Federal Aviation Administration (FAA) safety inspector performed an on-scene examination of the airplane. According to the inspector, the airplane touched-down on the busy highway two miles south of the airport and subsequently collided with concrete barriers. The airplane came to rest at an intersection and was consumed by post-impact fire. The wreckage, including the experimental turbine engine, was recovered to a secured hangar at the airport for further examination.

The experimental airplane was powered by a 750-horsepower Walter M601-E turbo-prop engine. Examination of the airframe and the engine by representatives of the engine manufacturer revealed that the condition lever on the fuel control unit was found between the run and closed position. The condition lever in the cockpit was in the normal run position.

Fuel was pumped into the mechanical fuel pump and the bleed valves were opened. The fuel from the bleed valves was transferred through a clear pipe for the detection of air. A small amount of air was detected; however, the amount was not sufficient enough to cause the engine to flame-out. The main fuel filter was removed, disassembled, and found absent of debris. Fuel was present in the fuel lines, the fuel control unit, and the fuel filter. The fuel had an odor and color similar to Jet fuel and was absent of debris. The fuel control unit was removed from the engine and examined. The drive shaft was intact and rotated freely when manipulated.

A detailed examination of the power turbine by representatives from the engine manufacturer revealed that the power turbine was bent in the direction opposite of rotation. Additionally, the nose case was bent, which caused the power turbine blades to make contact with the power turbine nozzle. All power turbine blades were found to be intact. The compressor was also examined with the aid of a boroscope. All of the compressor turbine blades were intact with no visual damage or signs of over-temping were observed. Inspection of the inner and outer combustion chamber appeared to be normal with no indication of over-temping. Visual examination of the first stage compressor revealed the compressor was in place and some soot particulates were noted.

The starter-generator was removed from the engine and examined. The turbine was turned manually from the starter splines, and the compressor shear-shaft to the auxiliary rear gearbox rotated freely.

All three propeller blades remained attached to the propeller hub. All of the propeller blades had been distorted due to impact forces.

The airplane was equipped with a 30-gallon header (belly) tank. The tank sustained fire damage, and it was not possible to determine the position of the fuel valve. The fuel selector valve in the cockpit was also fire damaged and a position could not be determined. No mechanical deficiencies were noted with the engine that would have attributed to a loss of engine power.

Only one of the two Chelton EFIS systems installed on the airplane was found in the airplane wreckage. The badly burned unit was sent to the Safety Board's Research and Engineering Laboratory in Washington DC for examination; however, data could not be retrieved from the unit due to excessive heat damage.

The airplane's maintenance logbooks were found in the airplane and sustained some thermal and water damage. A review of the logbooks revealed that the airplane was manufactured in 2002. The last condition inspection was completed on April 25, 2007, at a total time of 521.1 hours.

The 34-year old pilot held a commercial pilot certificate for airplane single and multi-engine land, and instrument airplane. He also held several type ratings. His last FAA second class

medical was issued on April 18, 2006. A that time of his last medical examination, the pilot reported having accumulated a total of 3,600 flight hours. The pilot's personal logbook was not located.

Weather at McAllen Miller International Airport at 1853 was reported as wind from 130 degrees at 15 knots, visibility 10 statute miles, clear skies, temperature 84 degrees Fahrenheit, dewpoint 68 degrees Fahrenheit, and a barometric pressure setting of 29.68 inches of Mercury.

Pilot Information

Certificate:	Commercial	**Age:**	34,Male
Airplane Rating(s):	Single-engine land; Multi-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:**	No
Medical Certification:	Class 2 None	**Last FAA Medical Exam:**	April 1, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	3600 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	LIVPT INC	**Registration:**	N119TC
Model/Series:	Lancair IV-P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	LIV-503
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	April 1, 2007 Condition	**Certified Max Gross Wt.:**	2690 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo prop
Airframe Total Time:	521.1 Hrs as of last inspection	**Engine Manufacturer:**	Walter
ELT:	Not installed	**Engine Model/Series:**	M601-E
Registered Owner:	Cite Aviation LLC	**Rated Power:**	750 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:	MFE,107 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	18:53 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.68 inches Hg	**Temperature/Dew Point:**	29°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	McAllen, TN (MFE)	**Type of Flight Plan Filed:**	IFR
Destination:	(MTMP)	**Type of Clearance:**	IFR
Departure Time:	19:05 Local	**Type of Airspace:**	

Airport Information

Airport:	McAllen Miller International MFE	**Runway Surface Type:**	
Airport Elevation:	107 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	2 Fatal	**Latitude, Longitude:**	26.172222,-98.236389

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	Carlos Guajardo; San Antonio, Texas
Original Publish Date:	January 31, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65688