Aviation Investigation Final Report

Location:	Crossville, Tennessee	**Accident Number:**	ERA09CA162
Date & Time:	February 6, 2009, 15:00 Local	**Registration:**	N555SX
Aircraft:	Davis Sonex	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The pilot of the amateur-built airplane was initiating a test flight to check a new propeller. After advancing the throttle, the airplane accelerated with normal power. However, at an altitude of 300 feet, the engine lost total power. The pilot turned back to the departure runway and landed on soft ground to the south of the runway. The landing gear collapsed, substantially damaging the firewall. Examination of the airplane revealed that continuity existed throughout the engine drivetrain, and the engine had no visible damage. The fuel was sampled and no contamination was observed. Examination of the fuel filter revealed no obstructions, the fuel pump operated normally, and the air filter was clean. The spark plugs were determined to be functional; however, no electrical energy was being delivered to the spark plugs. Further examination revealed that the electronic control unit (ECU) was not transmitting voltage to the dual coils. The ECU was manufactured to automotive specifications, and was supposed to be installed in an area of the airplane where temperatures do not exceed 65 degrees Celsius (preferably on the cabin side of the firewall). The ECU on the accident airplane was installed on the engine side of the firewall.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power during initial climb due to the failure of the ignition power supply as a result of the improper installation of the electronic control unit.

Findings

Aircraft	Ignition power supply - Failure
Personnel issues	Installation - Owner/builder

Factual Information

History of Flight

Initial climb	Powerplant sys/comp malf/fail (Defining event)
Initial climb	Loss of engine power (total)

Pilot Information

Certificate:	Commercial; Flight instructor; Military	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Center
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Sport pilot	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 8, 2008
Flight Time:	5500 hours (Total, all aircraft), 250 hours (Total, this make and model), 5500 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Davis	**Registration:**	N555SX
Model/Series:	Sonex	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	523
Landing Gear Type:	Tricycle	**Seats:**	
Date/Type of Last Inspection:	October 1, 2008 Condition	**Certified Max Gross Wt.:**	1200 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	259 Hrs as of last inspection	**Engine Manufacturer:**	UL Power
ELT:	Not installed	**Engine Model/Series:**	260i
Registered Owner:	On file	**Rated Power:**	100 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CSV,1881 ft msl	**Distance from Accident Site:**	
Observation Time:	15:00 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.31 inches Hg	**Temperature/Dew Point:**	14°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Crossville, TN (CSV)	**Type of Flight Plan Filed:**	None
Destination:	Crossville, TN (CSV)	**Type of Clearance:**	None
Departure Time:	15:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Crossville Memorial Airport CSV	**Runway Surface Type:**	Asphalt
Airport Elevation:		**Runway Surface Condition:**	Dry
Runway Used:	26	**IFR Approach:**	None
Runway Length/Width:	5100 ft / 100 ft	**VFR Approach/Landing:**	Forced landing;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	35.95111,-85.084999(est)

Administrative Information

Investigator In Charge (IIC):	Andrews, Jill
Additional Participating Persons:	Michael Chasteen; FAA/FSDO; Nashville, TN
Original Publish Date:	May 6, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73339