



Aviation Investigation Final Report

Location:	Grady, Arkansas	Accident Number:	CEN17LA313
Date & Time:	July 20, 2017, 16:45 Local	Registration:	N577M
Aircraft:	CANION MICHAEL W ZODIAC 601XL	Aircraft Damage:	Substantial
Defining Event:	Electrical system malf/failure	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The sport pilot was conducting a cross-country flight when the experimental amateur-built airplane experienced a loss of engine power; the pilot then conducted a forced landing to a field, and the airplane sustained substantial damage. Postaccident examination of the airplane revealed a broken wire to the airplane's alternator; this specific wire supplied electrical power to the alternator field coil. Because the wire was broken, the alternator was rendered inoperative. The pilot would not have been able to detect the broken alternator wire without removing the engine cowl, which is not normally part of a pilot's preflight examination.

The airplane's engine had been modified to use an ignition system that operated from the airplane's electrical system, which included a battery and the alternator to maintain the battery's charge. Once the alternator field wire had broken, the ignition system relied completely on the airplane battery's reserve power as the source of ignition power. Once the battery power was depleted, the ignition system could not operate, and the engine lost power due to the lack of ignition.

Probable Cause and Findings

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

The loss of engine power due to a lack of ignition resulting from a broken alternator wire.

Findings

Aircraft	DC generator-alternator - Inoperative
Aircraft	DC power distribution system - Failure

Factual Information

History of Flight

Enroute-cruise	Electrical system malf/failure (Defining event)
Enroute-cruise	Loss of engine power (total)
Landing	Collision with terr/obj (non-CFIT)

On July 20, 2017, about 1645 central daylight time, an amateur-built Canion, Zodiac 601XL airplane, N577M, received substantial damage to the engine firewall during a forced landing to a field following a loss of engine power near Grady, Arkansas. The pilot was not injured. The aircraft was registered to and operated by the pilot under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not on a flight plan. The flight originated from the Center Texas Municipal Airport (F17) about 1330 and the intended destination was the Kirk Field Airport (PGR), near Paragould, Arkansas.

The pilot reported that about 90 minutes into the flight he lost power to his on-board avionics equipment. Shortly thereafter, the airplane's engine lost all power and the propeller began windmilling. Attempts to restart the engine were unsuccessful and the pilot attempted an off-airfield landing to a corn field. During the landing the nose wheel "dug in".

Examination of the airplane after the accident revealed a broken wire to the airplane's alternator. Specifically, the broken wire supplied electrical power to the alternator field coil, rendering the alternator inoperative. Additionally, the airplane's engine had been modified to use an electronic ignition system that operated from the airplane's electrical system. The electrical system included a battery and the alternator to maintain the battery's charge. The airplane received damage to the firewall and forward fuselage supporting structure.

Pilot Information

Certificate:	Sport Pilot	Age:	64, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	BasicMed Without waivers/limitations	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	June 20, 2017
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	CANION MICHAEL W	Registration:	N577M
Model/Series:	ZODIAC 601XL XL	Aircraft Category:	Airplane
Year of Manufacture:	2005	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	6-4210
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	1320 lbs
Time Since Last Inspection:		Engines:	Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:		Engine Model/Series:	O-235-C2C
Registered Owner:	On file	Rated Power:	115 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:	PBF,205 ft msl	Distance from Accident Site:	13 Nautical Miles
Observation Time:	16:53 Local	Direction from Accident Site:	300°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.03 inches Hg	Temperature/Dew Point:	35°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	CENTER, TX (F17)	Type of Flight Plan Filed:	None
Destination:	PARAGOULD, AR (PGR)	Type of Clearance:	None
Departure Time:	13:30 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	34.080001,-91.700836(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	Brian K Love; FAA - Little Rock FSDO; Little Rock, AR
Original Publish Date:	December 19, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95797

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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](#).