



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Somerset, Wisconsin	Accident Number:	CEN18LA200
Date & Time:	May 28, 2018, 19:45 Local	Registration:	N214FF
Aircraft:	IRLBECK THOMAS H RV 8	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, while in cruise flight in the experimental, amateur-built airplane, the radio and GPS lights flickered, followed by a total loss of engine power. He attempted to troubleshoot the loss of power and then conducted a forced landing to a field, during which the airplane impacted a fence; the wings were substantially damaged.

Examination revealed that the wire connection from the main battery to the engine's electronic ignition had melted just above the terminal attachment. Although the airplane was equipped with a backup battery, the connection from the backup battery to the ignition was disconnected, which pre and the wire connection from the electronic ignition to the backup battery was not connected to the battery terminal. While the melted wire that connected the main battery to the electronic ignition would still have allowed power to the electronic ignition from the backup battery, the lack of connection to the backup battery provided no power to the electronic ignition and resulted in the total loss of engine power.

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 due to damaged and disconnected electronic ignition wires from both the main and backup batteries, which resulted in a forced landing.

Findings

Aircraft	Electrical pwr sys wiring - Damaged/degraded
Aircraft	(general) - Failure

Factual Information

History of Flight

Enroute	Loss of engine power (total) (Defining event)
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On May 28, 2018, about 2015 central standard time, an experimental, amateur-built RV-8, N214FF, was substantially damaged when it was involved in an accident near Somerset, Wisconsin. The private pilot and passenger received minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot stated that, about 10 miles from the destination airport, the sky was dark, with lightning and increasing wind conditions, and he decided to divert to his private grass runway. Shortly thereafter, the airplane's radio and GPS unit started to flicker and then went completely dark, followed by a total loss of engine power. The pilot attempted to troubleshoot the loss of engine power and stated that the mixture was at full rich and the electric boost pump was on. He noticed that the switch light on the electric boost pump was very dim and there was no response when he flipped the switch. He tried to “pump” the throttle and changed the fuel selector from the left to right tank, but engine power was not restored.

The pilot stated that he was losing airspeed and altitude, and he selected a field to conduct a forced landing, during which the airplane's right main landing gear impacted a fence, resulting in substantial damage to the wings.

A Federal Aviation Administration (FAA) inspector examined the airplane after the accident and reported that the main battery was a homemade, gel-cell battery with a bundle of small, melted wires attached to the positive battery post. One of the wires in this melted bundle was connected to the engine's electronic ignition system. A backup battery was mounted to the engine firewall with a spade connector wire lead, which was disconnected. This wire connected the electronic ignition to the backup battery. The back-up battery was tested with a voltmeter and was fully charged.

Pilot Information

Certificate:	Private	Age:	67,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	Glider	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	April 17, 2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 12, 2017
Flight Time:	(Estimated) 935 hours (Total, all aircraft), 80 hours (Total, this make and model), 935 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	IRLBECK THOMAS H	Registration:	N214FF
Model/Series:	RV 8 UNDESIGNAT	Aircraft Category:	Airplane
Year of Manufacture:	1988	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special); Experimental light sport (Special)	Serial Number:	80687
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	September 20, 2017 Condition	Certified Max Gross Wt.:	1800 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2069 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-360-B1A
Registered Owner:		Rated Power:	180 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	KOEO,906 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	20:15 Local	Direction from Accident Site:	3°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	120°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	23°C / 20°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Lake Elmo, MN (21D)	Type of Flight Plan Filed:	None
Destination:	Osceola, WI (OEO)	Type of Clearance:	VFR
Departure Time:	19:45 Local	Type of Airspace:	Class A

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	45.141666,-92.702499(est)

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney		
Additional Participating Persons:	Ray Peterson; FAA; Minneapolis, MN		
Original Publish Date:	May 25, 2021	Investigation Class:	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=97344		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).