Aviation Investigation Final Report

Location:	Harnett, North Carolina	**Accident Number:**	ERA18LA239
Date & Time:	August 30, 2018, 16:00 Local	**Registration:**	N628X
Aircraft:	Avid MK-4	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot departed on a 35-nautical-mile flight with 9 gallons of fuel onboard. While en route, he noticed that the fuel quantity was decreasing faster than normal, and he elected to stop for fuel. During the descent toward the airport, the engine lost total power and the pilot subsequently performed a forced landing in a field. After touchdown, the airplane nosed over and came to rest inverted, resulting in substantial damage to the wings and fuselage.

Examination of the airplane and engine revealed no evidence of preimpact mechanical anomalies that would have prevented normal engine operation. About 1/2 gallon of fuel was drained from the fuel tank after the accident; however, an unquantified amount spilled onto the ground during recovery, and the amount of fuel onboard at the time of the accident could not be determined.

The right wing fuel tank was vented by a modified fuel cap. Holes were drilled in the top of the cap to allow air in the tank as fuel is consumed. The pilot recommended that a forward-facing tube vent be installed per a service letter issue by the kit manufacturer of a similar experimental, amateur-built airplane; however, the reason for loss of engine power and whether the modified fuel cap contributed to the accident could not be determined based on the available information.

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 for reasons that could not be determined based on the available information.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute	Loss of engine power (total) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On August 30, 2018, about 1530 eastern daylight time, an experimental, amateur-built Avid MK-4, N628X, was substantially damaged when it was involved in an accident near Harnett, North Carolina. The private pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The airplane was equipped with a 10-gallon fuel tank in each wing; however, the left wing tank had been previously capped due to a fuel contamination issue and was not in use during the accident flight. The pilot noted during his preflight inspection that there were about 9 gallons of automotive gas in the right tank, which he said, "should have been sufficient" for the 35-nautical-mile flight.

The pilot stated that, less than 30 minutes into the flight, he noted that the fuel level had decreased below about half, which he described as abnormal, and he diverted to Harnett Regional Jetport Airport (HRJ), Harnett, North Carolina to refuel; however, during the descent, the engine lost total power. He turned on the auxiliary fuel pump but was unable to restart the engine, and subsequently performed a forced landing in a field. After touchdown, the airplane nosed over and came to rest inverted, resulting in substantial damage to the wings and fuselage. The pilot turned the fuel selector to the OFF position after the accident.

According to the Federal Aviation Administration (FAA) inspector who performed an examination of the airplane, fuel was present on the ground under the right wing tank. When the airplane was recovered, fuel poured out of the wings, and about 1/2 gallon of fuel was captured from the right tank. The electric fuel pump was turned on and operated normally. All fuel lines were intact and a small amount of debris was noted. The engine's crankshaft was rotated by hand, and internal and valvetrain continuity was established. Examination of the airplane and engine revealed no evidence of preimpact mechanical anomalies that would have prevented normal engine operation.

On the Pilot/Operator Aircraft Accident/Incident Report (NTSB form 6120.1/2), the pilot reported no preimpact mechanical malfunctions or failures with the airplane that would have precluded normal operation. Furthermore, in the "Operator/Owner Safety Recommendation" section of the report, he stated, "ensure that Avid and Kitfox aircraft wing tank fuel caps are vented with a forward facing 1 1/2 tube as per Kitfox Service Letter #7," which was issued on May 6, 1997. The accident airplane's right wing fuel tank was vented by a modified fuel cap; holes were drilled in the top of the cap to allow air in the tank as fuel was consumed.

Pilot Information

Certificate:	Commercial; Private	**Age:**	74,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**Restraint Used:**	Unknown
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:**	February 16, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 28, 2018
Flight Time:	1926 hours (Total, all aircraft), 1.2 hours (Total, this make and model), 1834 hours (Pilot In Command, all aircraft), 8.3 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Avid	**Registration:**	N628X
Model/Series:	MK-4 No Series	**Aircraft Category:**	Airplane
Year of Manufacture:	2016	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	001
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	August 1, 2018 Condition	**Certified Max Gross Wt.:**	1151 lbs
Time Since Last Inspection:	1.3 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1.3 Hrs at time of accident	**Engine Manufacturer:**	Rotax
ELT:	Not installed	**Engine Model/Series:**	912
Registered Owner:		**Rated Power:**	80 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:	KHRJ,198 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	16:00 Local	**Direction from Accident Site:**	292°
Lowest Cloud Condition:	Clear	**Visibility**	
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	34°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Grantham, NC (6NC0)	**Type of Flight Plan Filed:**	None
Destination:	Fuquay/Varina, NC (78NC)	**Type of Clearance:**	None
Departure Time:	15:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	HARNETT RGNL JETPORT HRJ	**Runway Surface Type:**	Grass/turf
Airport Elevation:	201 ft msl	**Runway Surface Condition:**	Vegetation
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

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:**	35.365554,-78.692779

Administrative Information

Investigator In Charge (IIC):	Hill, Millicent		
Additional Participating Persons:	David Laycock; FAA/FSDO; Greensboro, NC		
Original Publish Date:	September 16, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98201		