Aviation Investigation Final Report

Location:	Susanville, California	**Accident Number:**	WPR12LA013
Date & Time:	October 15, 2011, 11:30 Local	**Registration:**	N4077B
Aircraft:	Miller AVID FLYER	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he purchased the airplane a few months before the accident and had been performing repairs and modifications to the engine's fuel delivery system. He performed several ground runs and taxi tests prior to the accident; the pilot's first flight in the airplane took place on the day of the accident and lasted about 1 hour. About 30 minutes later, during the initial climb-out on the second flight, the engine began to vibrate and lose power. The propeller then stopped rotating and the pilot performed a forced landing into a wooded area.

During the postaccident examination, the engine was successfully started and operated. The pilot's installation of paper-element fuel filters was contrary to the engine manufacturer's recommendations; however, according to the engine manufacturer, it is unlikely that this installation would have resulted in the loss of power. The fuel pump was located on the engine mount, just above the engine, and, while this location could potentially make it prone to excessive heat and vibration, it had been so positioned for many flight hours prior to the accident. Examination of the airplane did not reveal any mechanical failures or malfunctions that would have precluded normal operation.

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 the takeoff climb for undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On October 15, 2011, about 1130 Pacific daylight time, an experimental amateur-built Miller Avid Flyer, N4077B, lost engine power during takeoff from Spaulding Airport, Susanville, California. The pilot was operating the airplane under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. The private pilot sustained minor injuries. The airplane sustained substantial damage to the wings and fuselage during the accident sequence. The local flight departed Susanville about 1130. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot purchased the airplane about two months prior to the accident, after which he disassembled and relocated it to his residence. For the next few weeks, he inspected the airplane and performed engine ground runs. During that period, he replaced the fuel lines, and added two plastic cased paper-element fuel filters, mounting them within the engine compartment, just above the carburetor intake manifold. Having completed his inspection of the airplane, he relocated it back to the airport for reassembly. The pilot did not hold an FAA Airframe and Powerplant (A&P) Mechanics certificate.

Over the remaining few weeks, he performed ground runs and taxi tests. On the morning of the accident, he completed four high-speed taxi runs, and on the fifth attempt, he took off, and flew the airplane around the local area for about 1 hour.

He then performed a full-stop landing, and shutdown the engine. About 30-minutes later, he returned with the intention of performing another flight in the airport traffic pattern. During the initial climb-out, at an altitude of about 150 feet above ground level, the engine began to vibrate and lose power. The propeller then stopped rotating, and the pilot began a left turn, and landed in a wooded area.

The owner reported that during recovery of the airplane from the accident site he removed about 8 gallons of fuel from the fuel tank. His statement was corroborated by an employee of the National Forest Service, who was present during the recovery operation.

AIRCRAFT INFORMATION

The high-wing airplane was equipped with a Rotax 582, two-stroke, two-cylinder, liquid-cooled, reciprocating engine. The pilot did not provide maintenance records, stating that he had no knowledge of when the airplane was last subject to a conditional inspection. He estimated the engine had a total time of 300 flight hours since manufacture. He reported that when he purchased the airplane he was informed that it was of the light sport type, and required a conditional inspection rather than an annual or 100-hour inspection. As such, he thought that the examination he performed after purchase met the regulatory requirements for inspection.

According to FAA aircraft registration records, the airplane was manufactured in 1990, and received its airworthiness certificate in December 1991.

TESTS AND RESEARCH

Engine Exam

The airframe and engine were subsequently examined by an A&P mechanic under the auspices of the NTSB investigator-in-charge. He performed a cursory examination of the airplane and engine, and noted no indications of engine seizure, or obvious discrepancies, with the exception of two spark plugs, which appeared to have broken off during the accident sequence. He replaced the spark plugs and attempted to start the engine. The engine started after four rotations of the propeller blades, and ran smoothly for about 1 minute until the fuel supply was exhausted. He subsequently disassembled the engine driven pneumatic fuel pump, which was located on the engine mount, just above the engine, and noted no internal damage or failure to the pulse diaphragm.

Rotax Engine Installation Instructions

The Rotax 582 Series engine installation manual recommended that 0.15 mm mesh-type fuel filters be installed between the fuel pump and the carburetor. The manual specifies that paper-element filters are not to be used, and that the fuel pump is to be positioned in a cool area, and not mounted on the engine. Representatives from Rotax stated that the fuel pump could potentially be prone to vibration-induced air cavitation if it is mounted directly to the engine.

Carburetor Icing

The temperature and dew point at the time of the accident was 73 degrees Fahrenheit (F) and 32 degrees F respectively. These values did not fall within the carburetor icing range when referenced against the FAA Special Airworthiness Information Bulletin CE-09-35, Carburetor Icing Prevention.

Pilot Information

Certificate:	Private	**Age:**	66,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
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:**	June 9, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 200 hours (Total, all aircraft), 1 hours (Total, this make and model), 150 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Miller	**Registration:**	N4077B
Model/Series:	AVID FLYER	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	719
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	950 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Rotax
ELT:	Not installed	**Engine Model/Series:**	582
Registered Owner:	On file	**Rated Power:**	65 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:	RTS,5050 ft msl	**Distance from Accident Site:**	72 Nautical Miles
Observation Time:	11:35 Local	**Direction from Accident Site:**	145°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	23°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Susanville, CA (1Q2)	**Type of Flight Plan Filed:**	None
Destination:	Susanville, CA (1Q2)	**Type of Clearance:**	None
Departure Time:	11:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Susanville 1Q2	**Runway Surface Type:**	Asphalt
Airport Elevation:	5116 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	4600 ft / 50 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	40.650276,-120.768608(est)

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott
Additional Participating Persons:	Donald F Morgan; Federal Aviation Adminstration FSDO; Reno, NV
Original Publish Date:	August 29, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82084