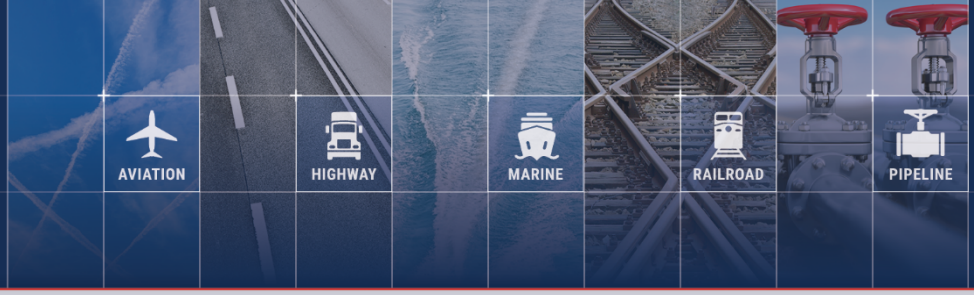

Aviation Investigation Factual Report

Location:	Creswell, Oregon	**Accident Number:**	WPR09LA446
Date & Time:	September 12, 2009, 12:30 Local	**Registration:**	N9682L
Aircraft:	GRUMMAN AMERICAN AVN. CORP. AA-1B	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

On September 12, 2009, about 1230 Pacific daylight time, a Grumman AA-1B, N9682L, nosed over during an attempted emergency landing soon after takeoff from Hobby Field, Creswell, Oregon. The private pilot and his passenger received minor injuries, and the airplane, which was owned and operated by the pilot, sustained substantial damage. The local Title 14 Code of Federal Regulations Part 91 personal flight was operating in visual meteorological conditions. No flight plan had been filed.

According to the pilot, soon after taking off from runway 33, the airplane's engine experienced a partial loss of power. The pilot was able to climb to about 300 feet above ground level (AGL), but the airplane would not climb any higher. The pilot then switched fuel tanks, tried the carburetor heat, and turned on the electric fuel pump, but none of those actions helped, and the airplane began to lose altitude. The pilot then tried switching to the right magneto alone, and then to the left magneto alone. While on the right magneto only, the engine appeared to "stumble badly" and appeared to be trying to kick back. The pilot then switched to the left magneto only, and the engine smoothed out, but there was insufficient power for him to maintain altitude, and the airplane continued to descend. At that point, because he was approaching some trees that he did not feel he would clear, the pilot made a forced landing in a rough open field. Although the touchdown was uneventful, during the landing roll the pilot realized that he was heading toward a manufactured home, and he did not think he would be able to stop before impacting it. He therefore pushed full forward on the control wheel and applied hard braking. As a result of those actions, the airplane's nose wheel dug into the rough terrain, and the airplane nosed over onto its back.

During a post-accident interview, the pilot stated that the airplane's engine had a longstanding history of occasional momentary power interruptions, especially at lower power settings upon entering the traffic pattern after a flight. He further stated that he felt it was probably a problem with one of the magnetos, and that he had occasionally experienced rough running of the right magneto during the pre-takeoff run-up check. In addition, he said that about a month prior to the accident, after returning from a long flight, he told his mechanic that the problem seemed to have gotten progressively worse. According to the pilot, the accident flight was the first flight after the mechanic checked the airplane, and when the mechanic inspected the engine he could not duplicate the problem on the ground, nor was he able to find any issue or anomaly that would have caused the problem.

On the day of the accident, the pilot started the engine, taxied to the run-up area, and then performed a magneto check. Although the engine ran smoothly on the left magneto, when the pilot selected the right magneto the engine ran rough. He therefore pushed the throttle to the full power position and leaned the engine. After doing this for a short period of time the engine started running smoothly, and it was able to achieve full static power. Then, according to the

pilot, he pulled onto the runway and took off, with the engine running smoothly until just after liftoff.

After the accident, a Federal Aviation Administration (FAA) Airworthiness Inspector supervised an inspection of the airplane's engine and fuel delivery system. As part of that inspection process, both magnetos and their respective wiring harnesses were removed for further testing and teardown inspection. In addition, the carburetor was removed, disassembled, and inspected.

The disassembly and inspection of the carburetor did not reveal any anomalies or issues with the float, float valve, or accelerator pump, and there were no signs of contamination in either the carburetor bowl or the intake finger screen.

During the inspection of the magneto/spark plug system, the spark plugs were found to exhibit normal wear patterns, with no sign of shorting or contamination (the spark plugs in the number one cylinder were oil soaked because of the position of the engine while the airplane remained inverted). The magnetos were correctly set at 25 degrees before top dead center, and were securely fastened to their respective pads. The correct operation of the ignition switch was verified, and the "P" leads were in good conditions and securely fastened.

The magnetos, with their respective wiring harnesses, were taken to FligthCraft Portland, where, after replacement of the wire leads that were damaged during the accident sequence, each magneto was run on the test bench. During the test bench run, each magneto fired on all four cylinder positions.

After the test bench run, each magneto was disassembled, inspected, and tested. The disassembling technician rated the left magneto internal condition as "good," with no defects found, and all its internal components tested within serviceable limits. After disassembly, the right magneto was rated in "fair" condition, and during the testing sequence, the secondary coil windings failed the serviceable limits tests. According to the Slick Magneto Manual, the serviceable resistance limit of the secondary coil windings is 13,000 to 20,500 ohms. The right magneto secondary coil windings on the accident aircraft tested at 81,000 ohms. This result was achieved in an air-conditioned facility, and according to the technician, under high temperature conditions the resistance could be expected to become further out of serviceable limits. According to the pilot, the ambient temperature at the time of his takeoff was 82 degrees Fahrenheit.

No other anomalies or evidence of malfunctions that would have contributed to a loss of power were found.

Pilot Information

Certificate:	Private	**Age:**	55,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:**	February 1, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 25, 2009
Flight Time:	800 hours (Total, all aircraft), 600 hours (Total, this make and model), 15 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	GRUMMAN AMERICAN AVN. CORP.	**Registration:**	N9682L
Model/Series:	AA-1B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	AA1B-0182
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	June 5, 2009 Annual	**Certified Max Gross Wt.:**	1560 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2963 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-235 SERIES
Registered Owner:	THOMAS JEFFREY N	**Rated Power:**	115 Horsepower
Operator:	THOMAS JEFFREY N	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/ None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.78 inches Hg	**Temperature/Dew Point:**	28°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Creswell, OR (77S)	**Type of Flight Plan Filed:**	None
Destination:	Creswell, OR (77S)	**Type of Clearance:**	None
Departure Time:	12:29 Local	**Type of Airspace:**	

Airport Information

Airport:	Hobby Field 77S	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	45.938888,-123.01361(est)

Administrative Information

Investigator In Charge (IIC):	Anderson, Orrin
Additional Participating Persons:	Tom Beech; Portland FSDO; Hillsboro, OR
Report Date:	November 24, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74735