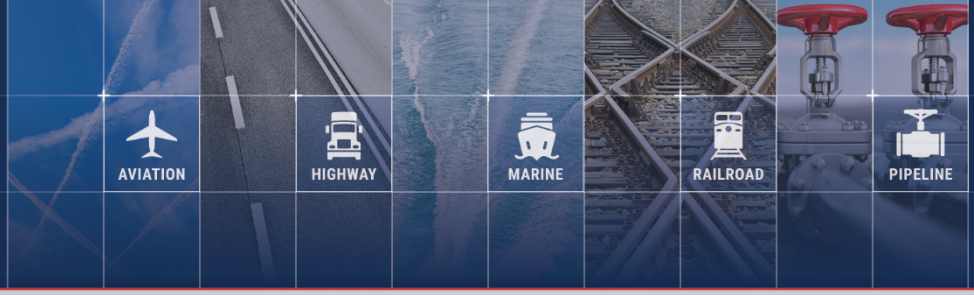

Aviation Investigation Final Report

Location:	Boca Raton, Florida	**Accident Number:**	ERA09LA500
Date & Time:	September 6, 2009, 17:18 Local	**Registration:**	N6301M
Aircraft:	BLUM MATTHEW AVENTURA II	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot had not flown the airplane for the 2 ½ months prior to the accident. The pilot departed to practice full-stop landings, and as he turned onto the crosswind leg a witness reported hearing the engine sputtering. Postaccident examination of the airplane revealed an improper assembly of both carburetors which could have caused an excessively rich fuel to air ratio. While maneuvering, the airplane stalled and impacted a road. No airframe preimpact failure or malfunction was noted, and no determination could be made as to who improperly assembled the carburetors.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper assembly of both carburetors, resulting in an excessively rich fuel to air ratio and subsequent partial loss of engine power.

Findings

Aircraft	Fuel control/carburetor - Malfunction
Aircraft	Fuel control/carburetor - Incorrect service/maintenance

Factual Information

History of Flight

Approach-VFR pattern crosswind	Loss of engine power (partial)
Approach-VFR pattern crosswind	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On September 6, 2009, about 1718 eastern daylight time, an experimental amateur-built Blum Aventura II, N6301M, experienced an in-flight loss of control and crashed about 1 mile north-northwest of the departure end of runway 05 at the Boca Raton Airport (BCT), Boca Raton, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 Code of Federal Regulations (CFR) Part 91 personal, local personal flight from BCT. The airplane was substantially damaged and the certificated private pilot, the sole occupant, was killed. The flight originated from BCT about 1711.

According to the transcription of communications with local control of the Boca Raton Airport Air Traffic Control Tower, at 1659:39, the pilot contacted the tower and advised the controller that he was ready to taxi and had automated terminal information service (ATIS) tango. The controller cleared the pilot to taxi to runway 5, which the pilot acknowledged. At 1709:51, the pilot contacted the local controller and advised that he was ready to depart and would like to remain in the traffic pattern at 500 feet and wanted to perform full stop takeoff's and landings. At 1711:38, the controller advised the pilot that the wind was from 130 degrees at 8 knots and cleared the pilot to takeoff. After takeoff the flight remained in the traffic pattern and at approximately 1715, the controller cleared the pilot for a touch-and-go landing and also informed him the wind was from 130 degrees at 8 knots. The pilot acknowledged he was cleared for a touch-and-go landing; there was no further communication from him.

The controller who was in contact with the pilot of the accident airplane reported watching the pilot turn onto the crosswind leg, then observed the airplane descend below the tree line. The controller made 2 transmissions but the pilot did not reply. The controller then called emergency services and reported that either an airplane had crashed or performed a forced landing on a road 1 mile north of the airport.

According to the Federal Aviation Administration inspector-in-charge (FAA-IIC), witnesses reported seeing the wings of the airplane rocking, a steep turn, followed by the nose pitching down. The airplane impacted the ground near the intersection of South Congress Avenue and Yamato Road.

The airplane crashed during daylight hours. According to the FAA-IIC, there was no ground based radar that recorded the accident flight.

PERSONNEL INFORMATION

The pilot, age 78, held a private pilot certificate with airplane single engine land rating issued September 29, 2005, and was issued a special issuance third class medical certificate on February 7, 2005, with an expiration of September 30, 2005. A review of FAA records associated with the application for that certificate revealed he listed a total time of 155 hours.

Copies of the pilot's pilot logbook provided to NTSB reflect that the pilot flew 4 flights totaling 4.3 hours between April 19 and May 10, 2009. The pilot’s daughter reported her father was unavailable to fly the airplane for June, July, and the beginning part of August 2009.

AIRCRAFT INFORMATION

The amphibious amateur built Aventura 2 airplane was manufactured by the pilot in October 1999, and was designated serial number AP2A0037. It was powered by a 64 horsepower Rotax 582 dual carburetor engine and equipped with a composite propeller.

Review of the maintenance records revealed the last condition inspection was performed on November 25, 2008; the recording tachometer time at that time was 107.5 hours. The recording tachometer time at the time of the accident was 110.1 hours.

METEOROLOGICAL INFORMATION

A special surface observation weather report taken at BCT at 1720, or approximately 2 minutes after the accident indicates the wind was from 130 degrees at 10 knots, the visibility was 10 statute miles, clear skies existed. The temperature and dew point were 29 and 24 degrees Celsius respectively, and the altimeter setting was 30.01 inches of Mercury.

COMMUNICATIONS

The pilot was in contact with Boca Raton Airport non-federal air traffic control tower at the time of the accident.

AIRPORT INFORMATION

The BCT Airport is equipped with one runway designated 05/23, which is 6,276 feet long and 150 feet wide.

WRECKAGE AND IMPACT INFORMATION

The airplane crashed at the intersection of roads off airport; the crash site was located approximately .6 nautical mile and 351 degrees from the departure end of runway 05.

Examination of the accident site by an FAA airworthiness inspector revealed the airplane was found inverted. The on-board ballistic recovery system (BRS) parachute was not deployed and was disabled by the FAA inspector. The inspector noted the structure around the cockpit area was twisted and collapsed on itself, and he was unable to move the control yoke or rudder pedals, but cables to the controls were attached at the their respective attach points. Fuel was noted in the lines and also in the carburetor. The airplane was recovered for further examination.

Examination of the airplane following recovery by Safety Board personnel revealed both wings exhibited extensive impact damage. Flight control continuity was confirmed for pitch and yaw. The left aileron control was fractured near the control stick, and the right aileron control was fractured near the control surface. The flap actuator was found extended 4.375 inches but no determination was made as to what flap extension that equated to.

Examination of the cockpit revealed the BRS handle was pinned but the cable was cut (postaccident). The magneto switch which was separated from the instrument panel was in the “both” position and tested satisfactorily postaccident, The auxiliary fuel pump switch was in the off position, and the water temperature and exhaust temperature gauges both indicated 0.

Examination of the engine by a representative of the engine manufacturer was performed with Safety Board oversight following recovery of the airplane. The examination of the engine revealed the propeller remained attached to the engine but all three blades were fractured in two locations along their length. There was no evidence of modification to the engine. By engine serial number the engine was imported in June 1997, which has a 300 hour or 5 year time between overhaul (TBO) limit. All but one spark plug was broken. Visual inspection of the spark plugs revealed all exhibited color consistent with an excessively rich fuel to air ratio. The gaps of all spark plugs were .020 inch (specification is .020 inch). Functional testing of the ignition system was performed by rotating the engine using an exemplar starter. The damaged plugs and connectors were replaced for the functional testing, which revealed spark noted at all exemplar spark plugs. No evidence of overheating was noted; therefore, there was no evidence of cooling system malfunction. The engine oil injection system was disabled.

Further examination of the engine and specifically of both carburetors revealed the float bowls of both had residual fuel that was blue in color consistent with the color of the 2 cycle oil bottles found in the wreckage. No significant deposits were noted in the float bowls. The floats of both carburetors were correctly set and the float of each carburetor ran smooth on the float retaining pins. The jetting of both carburetors were normal. Examination of the throttle control cables revealed each cable of each carburetor was free and each slide of each carburetor moved with throttle control cable movement. The needle clip part number (P/N) 963500 of both carburetors was noted to be installed on top of the spring cup P/N 827347 rather than

below it as depicted in the carburetor illustrated parts catalog.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was performed by the District Fifteen Medical Examiner's Office, West Palm Beach, Florida. The cause of death was listed as "Multiple Blunt Force Injuries."

Forensic toxicology was performed on specimens of the pilot by the FAA Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma, and also by Wuesthoff Reference Laboratory (Wuesthoff), Melbourne, Florida. The toxicology report by CAMI stated the results were negative for carbon Monoxide, cyanide, volatiles, and tested drugs. The toxicology report by Wuesthoff stated the results were negative for the comprehensive drug panel, immunoassay screen for blood and urine, and volatiles.

SURVIVAL ASPECTS

The airplane was equipped with a BRS parachute which was not deployed. A review of the data plate attached to the canister revealed it was built in December 1997, and was not valid for use after December 2001.

TESTS AND RESEARCH

As previously reported, a component of each carburetor was improperly positioned. The engine manufacturer representative reported that in that instance excessive fuel burn in mid-range (between off idle and near full power) will occur which was consistent with the black color of the spark plugs.

Pilot Information

Certificate:	Private	**Age:**	78,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3	**Last FAA Medical Exam:**	September 19, 2003
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	155 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BLUM MATTHEW	**Registration:**	N6301M
Model/Series:	AVENTURA II	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	AP2A0037
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	November 25, 2008 Condition	**Certified Max Gross Wt.:**	1150 lbs
Time Since Last Inspection:	3 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	108 Hrs as of last inspection	**Engine Manufacturer:**	Rotax
ELT:		**Engine Model/Series:**	582
Registered Owner:	REGISTRATION PENDING	**Rated Power:**	64 Horsepower
Operator:	Matthew Blum	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BCT,13 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	17:20 Local	**Direction from Accident Site:**	196°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	29°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Boca Raton, FL	**Type of Flight Plan Filed:**	None
Destination:	Boca Raton, FL	**Type of Clearance:**	None
Departure Time:	17:11 Local	**Type of Airspace:**	

Airport Information

Airport:	Boca Raton Airport BCT	**Runway Surface Type:**	
Airport Elevation:	13 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Touch and go

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	26.393888,-80.103614(est)

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Donald H Casto; FAA/FSDO; Miami, FL Eric Tucker; Roatx Flying and Safety Club; Nassau
Original Publish Date:	July 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74662