Aviation Investigation Final Report

Location:	PERRY, Georgia	**Accident Number:**	MIA99LA065
Date & Time:	January 6, 1999, 11:30 Local	**Registration:**	N4542Z
Aircraft:	Piper PA-22-108	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot stated that shortly after takeoff while climbing through 200 feet, the engine rpm decreased to 1,500 rpm. He changed the throttle settings which had no effect and unable to maintain altitude, he maneuvered the airplane for a forced landing at a nearby sod farm. The airplane stalled, and landed hard just short of the intended touchdown location then nosed over. Examination of the airplane and engine by an FAA Airworthiness Inspector revealed that the fuel selector valve was improperly assembled; no detents could be felt. Also, cold differential compression readings for cylinder Nos. 1, 2, 3, and 4 were recorded to be 20, 19, 54, and 5 psi respectively. The No. 2 cylinder valves were adjusted and the cold compression reading increased to 50 plus psi. Fire damage was noted to the back side of the induction air filter assembly. The carburetor was found to contain a two-piece venturi when by an airworthiness directive, a one-piece venturi is required. The maintenance records indicated that a one-piece venturi was installed. The records also indicated that the rocker arms were adjusted on April 21, 1997. The airplane had accumulated approximately 85 hours since then at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The maintenance personnel incorrect adjustment of the intake and exhaust valves resulting in the induction system fire and subsequent loss of engine power.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) ENGINE ASSEMBLY,VALVE,INTAKE - INCORRECT
2. (C) ENGINE ASSEMBLY,VALVE,EXHAUST - INCORRECT
3. (C) MAINTENANCE,ADJUSTMENT - IMPROPER - OTHER MAINTENANCE PERSONNEL

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
4. TERRAIN CONDITION - OPEN FIELD

Factual Information

On January 6, 1999, about 1130 eastern standard time, a Piper PA-22-108, N4542Z, registered to a private individual, landed hard then nosed over during a forced landing shortly after takeoff from Middle Georgia Airport, Perry, Georgia. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 CFR Part 91 personal flight. The airplane was substantially damaged and the private-rated pilot, the sole occupant, was not injured. The flight was originating at the time of the accident.

The pilot stated that before departure, a total of 10 gallons of automotive fuel were added to the fuel tanks; 5 gallons into the left and right fuel tanks. He then performed a preflight with no discrepancies noted. After takeoff while climbing through 200 feet, the engine rpm decreased to 1,500 rpm. He pumped the throttle, which had no effect. While descending for a forced landing on a nearby sod farm, the airplane stalled, landed hard in a field short of the intended touchdown location (sod farm) and nosed over.

Examination of the airplane at the accident site by an FAA airworthiness inspector while the airplane was inverted revealed fuel leakage from the right wing fuel tank cap. The airplane owner/pilot reported that during recovery of the airplane, he noted that the carburetor bowl was damaged and the carburetor control was connected at the carburetor. Further examination of the engine following recovery revealed that the differential compression readings (cold) from cylinder Nos. 1, 2, 3, and 4 were 20, 19, 54, and 5 psi respectively. The valve adjustment for the No. 2 cylinder was then loosened and the cold differential compression reading increased to 50 plus psi. The fuel selector was determined to be improperly assembled; no detent for each position could be felt. Marks were noted adjacent to the fuel selector which coincided with fuel selector position. Fire damage was noted to the inside portion of the bracket type air filter element, and the sending unit for the right wing fuel tank was improperly installed. With respect to the carburetor, a two-piece venturi was installed, which according to the FAA inspector, was required by Airworthiness Directive to be changed to a one-piece venturi.

Review of the maintenance records revealed an entry dated April 21, 1997, which indicates that all valve rocker arms were adjusted and a one-piece venturi was installed. The airplane had accumulated approximately 85 hours since the valve adjustment at the time of the accident.

Pilot Information

Certificate:	Private	**Age:**	56,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 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	August 11, 1997
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	350 hours (Total, all aircraft), 100 hours (Total, this make and model), 40 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4542Z
Model/Series:	PA-22-108 PA-22-108	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-8047
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	July 1, 1998 Annual	**Certified Max Gross Wt.:**	1650 lbs
Time Since Last Inspection:	32 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2809 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-235-C1B
Registered Owner:	DAVID G. MORRIS	**Rated Power:**	108 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MCN ,354 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	11:53 Local	**Direction from Accident Site:**	26°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	4°C / -11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(68GA)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	11:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	MIDDLE GEORGIA AIRPORT 68GA	**Runway Surface Type:**	Grass/turf
Airport Elevation:	400 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	36	**IFR Approach:**	
Runway Length/Width:	2500 ft / 50 ft	**VFR Approach/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:**	32.460147,-83.729927(est)

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	MARTHA J FARMER; COLLEGE PARK , GA
Original Publish Date:	September 7, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45585