Aviation Investigation Final Report

Location:	GETTYSBURG, Pennsylvania	**Accident Number:**	IAD00LA042
Date & Time:	May 15, 2000, 15:30 Local	**Registration:**	N91480
Aircraft:	Maule M-4-220C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was performing an engine run-up when the engine backfired. Shortly after the engine backfired white smoke was visible coming from the underside of the engine cowling. The pilot turned off the fuel selector switch and exited the airplane, where he noted the underside of the engine engulfed in flames. Examination of the airplane revealed that the fuel drain located under the engine was found in the open position.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper pre-flight which resulted in the fuel strainer valve being left in the open position.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: STANDING - PRE-FLIGHT

Findings
1. (C) AIRCRAFT PREFLIGHT - IMPROPER - PILOT IN COMMAND
2. (C) FUEL SYSTEM,DRAIN - OPEN

Occurrence #2: FIRE
Phase of Operation: STANDING - ENGINE(S) OPERATING

Factual Information

On May 15, 2000, at 1530 Eastern Daylight Time, a Maule M-4-220C, N91480, was substantially damaged by fire that started in the engine compartment during engine run-up at a private airstrip in Gettysburg, Pennsylvania. The certificated commercial pilot/owner was not injured. Visual meteorological conditions prevailed for the personal flight conducted under 14 CFR Part 91. No flight plan was filed.

According to the pilot/owner's written statement, he said:

"At 1530 hours on Sunday...I pre-flighted the aircraft, draining the sumps for water, removing the gust locks, and checking the cowl openings for bird nests. The plane had been there for two weeks with wings level and the fuel selector on "off". There were a few drops of gook in the right tank. I started the engine with the fuel select on the left tank and taxied to the top of the incline to face a westerly breeze for the run-up. With the right wing uphill, I switched to the right tank and checked the [magnetos] at 2000 rpm, noting the normal drop off (250-260), then cycled the prop governor with a sluggish drop since everything was not warmed up. When I applied carburetor heat, the rpms dropped rapidly in the 300 range, so I pushed the control forward thinking the anomaly might clear if I had sufficient water in the system to have already formed an ice blockage in the venturi. I gradually applied [carburetor] heat and the control seemed to come back further than usual and more easily than normal at the extremity of range, but a similar larger and more rapid drop accompanied by backfiring had caused me to push the control forward to keep the prop turning. I raised the rpm to about 2000 to solve the problem with a third try on the carburetor heat and this time the engine stopped followed by white smoke on both sides of the cowling, so I opened my door and turned the fuel selector off, and looked outside to see the entire underside of the engine in flames. I turned off the ignition and stepped outside."

The pilot also stated that when he saw the flames coming from underneath the airplane, he reached back in the airplane and turned off the ignition. He did not reach for the fire extinguisher that was in front of him. The pilot made four trips over three hundred yards in his truck to get water before the fire company arrived and prevented destruction of the wheels, tail, and outer wing sections.

A Federal Aviation Administration (FAA) inspector performed an on-site examination on May 15, 2000. According to the inspector's written statement, he said:

"The aircraft sustained substantial damage when it caught on fire on its pre-take-off run-up...the fuel strainer bowl drain mounted on the forward left hand side of the firewall was found in the open position. I spoke with the local fire chief who responded to the fire and he stated without question that neither he or the firemen had opened the valve.

"The exhaust system on the left side of the engine is located forward of the suspect drain valve. The visual appearance of the engine compartment would indicate that the area of most heat damage was on the left hand side. If there were other maintenance items that caused the back fire, that evidence was destroyed by fire."

In the pilot's written statement, he responded to the inspector's finding:

"I distinctly recall pressing down on the drain valve to make sure it was seated [during] the preflight [inspection], because I have seen it dripping without this special attention. I do not remember opening it following the incident, but I did open both the underside drains at the low point of the system."

The pilot held a commercial certificate for single and multi-engine land airplanes, with an instrument rating. He reported a total of 4,398 flight hours with 104 flight hours in make in model.

Pilot Information

Certificate:	Commercial	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	October 12, 1998
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	4398 hours (Total, all aircraft), 104 hours (Total, this make and model), 3899 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Maule	**Registration:**	N91480
Model/Series:	M-4-220C M-4-220C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2097C
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	2300 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Franklin
ELT:		**Engine Model/Series:**	6A-350-C1
Registered Owner:	EUGENE F. FARRELL	**Rated Power:**	220 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:	HGR ,704 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	15:53 Local	**Direction from Accident Site:**	260°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	13°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(NONE)	**Type of Flight Plan Filed:**	None
Destination:	KNOXLYN , PA (N/A)	**Type of Clearance:**	None
Departure Time:	00:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	NONE NONE	**Runway Surface Type:**	
Airport Elevation:	590 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	39.830532,-77.230438(est)

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	ROBERT STOCKSLAGER; HARRISBURG , PA
Original Publish Date:	December 18, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=49199