



National Transportation Safety Board Aviation Accident Final Report

Location:	Melbourne, FL	Accident Number:	ERA14LA268
Date & Time:	04/04/2014, 1014 EDT	Registration:	N642FT
Aircraft:	PIPER AIRCRAFT INC PA-28-161	Aircraft Damage:	Substantial
Defining Event:	Fire/smoke (non-impact)	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The flight instructor reported that, while taxiing off the runway after landing and when the airplane was just before the hold short lines, the engine quit. The flight instructor contacted the tower air traffic controller and asked for permission to push the airplane completely off the runway, but the tower controller declined and instructed him to advise whether he could get the engine started. The flight instructor attempted to start the engine using procedures for a hot and cold engine and then noticed smoke coming from the engine cowling. The flight instructor secured the airplane, and, after evacuating it, noticed flames coming from the engine cowling, which he was unable to extinguish using the on-board fire extinguisher. Airport rescue and firefighting personnel responded and extinguished the fire.

Postaccident examination of the carburetor revealed that the loosening torque values of the screws that secure the throttle body to the carburetor bowl were lower than the tightening torque value specified for overhaul. However, repair station personnel reported that it was not uncommon for in-service units to exhibit no loosening torque value. The engine fire was likely caused by the flight instructor's overpriming of the engine during multiple unsuccessful engine start attempts, which likely resulted from his feeling rushed to get the engine started while the airplane was still on an active runway. The reason for the loss of engine power could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flight instructor's overpriming of the engine during multiple unsuccessful engine start attempts on an active runway, which resulted in an engine compartment fire.

Findings

Aircraft	Fuel distribution - Incorrect use/operation (Cause)
Personnel issues	Incorrect action performance - Instructor/check pilot (Cause)

Factual Information

On April 4, 2014, about 1014 eastern daylight time, a Piper PA-28-161, N642FT, experienced an engine compartment fire after landing at Melbourne International Airport (MLB), Melbourne, Florida. The certified flight instructor (CFI) and pilot-rate student were not injured. The airplane was substantially damaged. The airplane was registered to and operated by FIT Aviation, LLC, under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as an instructional flight. Visual meteorological conditions prevailed at the time and no flight plan was filed for the local flight, which originated about 1 hour 4 minutes earlier.

The CFI stated that after landing on runway 27R, while taxiing off the runway onto taxiway "Q" just prior to the hold short lines, the engine quit. He contacted the tower and asked for permission to push the airplane completely off the runway to give himself, "...time to think", but the tower controller declined and instructed them to advise whether they could start the engine. They used the procedures for a hot and cold engine, but was unable to start the engine. They began to notice smoke coming from the engine cowling, and secured the airplane. After evacuating it, they noticed flames from the engine cowling. The CFI attempted to extinguish the fire using the on-board hand held fire extinguisher, but was unable. Airport fire rescue responded and extinguished the fire.

During repairs of the airplane to return it to service, the engine mount was inspected and overhauled; however, the firewall required replacement.

The carburetor, a MA4-SPA, part number 10-5217, serial number CK47312 was removed, and taken to a FAA certified repair station for inspection and testing with FAA oversight. According to the report, the examination of the carburetor revealed the unit exhibited charring on the exterior and also inside the carburetor throat or venture. Bench testing revealed no issues related to the float shut off and accelerator pump discharge. The removal torque forces of the throttle body to bowl screws were checked and all were reported to be greater than 10 inch pounds, although the technician recalled the values were between 25 and 35 inch pounds (tightening torque specification is 35 to 45 inch pounds). Personnel of the repair station indicate it is not unusual for units in service returned to them for overhaul to exhibit no loosening torque values of the screws that secure the throttle body to the carburetor bowl.

Review of the maintenance records revealed the carburetor was overhauled last on December 13, 2013, and installed on the accident airplane on March 21, 2014, where it remained installed until removed postaccident. The carburetor had accrued approximately 37 hours since overhaul at the time of the engine fire.

Review of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual revealed that it specifies that engine fires during start are usually the result of overpriming.

History of Flight

Standing-engine(s) start-up	Fire/smoke (non-impact) (Defining event)
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Flight Instructor Information

Certificate:	Flight Instructor; Commercial	Age:	20
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Without Waivers/Limitations	Last Medical Exam:	05/06/2013
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	570 hours (Total, all aircraft), 524 hours (Pilot In Command, all aircraft), 141 hours (Last 90 days, all aircraft), 64 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Student Pilot Information

Certificate:	Private	Age:	29
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 With Waivers/Limitations	Last Medical Exam:	02/06/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	11/23/2013
Flight Time:	126 hours (Total, all aircraft), 117 hours (Total, this make and model), 66 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	PIPER AIRCRAFT INC	Registration:	N642FT
Model/Series:	PA-28-161	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal; Utility	Serial Number:	2842319
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	03/20/2014, 100 Hour	Certified Max Gross Wt.:	2325 lbs
Time Since Last Inspection:	37 Hours	Engines:	1 Reciprocating
Airframe Total Time:	4498 Hours	Engine Manufacturer:	LYCOMING
ELT:	C126 installed, not activated	Engine Model/Series:	O-320-D3G
Registered Owner:	FIT AVIATION, LLC	Rated Power:	160 hp
Operator:	FIT AVIATION, LLC	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	MLB, 33 ft msl	Observation Time:	0953 EDT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	24° C / 17° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	9 knots, 200°	Visibility (RVR):	
Altimeter Setting:	30.07 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Melbourne, FL (MLB)	Type of Flight Plan Filed:	None
Destination:	Melbourne, FL (MLB)	Type of Clearance:	VFR
Departure Time:	0910 EDT	Type of Airspace:	Class D

Airport Information

Airport:	Melbourne International Arpt (MLB)	Runway Surface Type:	Asphalt
Airport Elevation:	33 ft	Runway Surface Condition:	Unknown
Runway Used:	27R	IFR Approach:	None
Runway Length/Width:	6000 ft / 150 ft	VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None		

Administrative Information

Investigator In Charge (IIC):	Timothy W Monville	Adopted Date:	12/15/2014
Additional Participating Persons:	Cheryl King; FAA/FSDO; Orlando, FL Scott Strickland; FAA/FSDO; Orlando, FL		
Publish Date:	12/15/2014		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89311		

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