



National Transportation Safety Board Aviation Accident Final Report

Location:	Bronx, NY	Accident Number:	ERA14LA085
Date & Time:	01/04/2014, 1519 EST	Registration:	N9409J
Aircraft:	PIPER PA-28-180	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	3 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that both fuel tanks were full when the flight departed. About 30 minutes into the flight, a GPS alarm alerted the pilot to switch fuel tanks, so he switched the fuel tank selector. He then proceeded north to return to the departure airport. About 51 minutes into the flight, while about 2,200 ft above the ground, the engine rpm began to decrease. The pilot attempted to restore power by repositioning the fuel selector, turning on the auxiliary fuel pump, pushing the throttle, and verifying that the mixture control was full rich; however, none of these actions restored engine power. The pilot declared an emergency to the tower air traffic controller, who then provided a vector to a nearby airport. The pilot was unable to visually locate the airport and recognized that he would be unable to land there, so he maneuvered for a forced landing on an expressway. The onboard camera showed the propeller stop while the airplane was on approach and the pilot turn off the fuel selector. The pilot subsequently landed the airplane hard on the expressway, which caused substantial damage to the airplane.

Following recovery of the airplane, 45 gallons of uncontaminated fuel was drained from both fuel tanks; however, fuel system components in the engine compartment contained minimal fuel, consistent with fuel starvation. Although the airplane was equipped with an engine monitor that records and retains engine parameters, it did not record fuel flow. However, the engine monitor did record a sudden and equal decrease in the exhaust gas temperature and cylinder head temperature for all of the cylinders, consistent with the loss of engine power described by the pilot. Although the reason for the loss of engine power was likely due to fuel starvation, the reason for the fuel starvation could not be determined by either an examination of the fuel supply system or a postaccident test run of the engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The total loss of engine power due to fuel starvation for reasons that could not be determined during postaccident engine examination or testing.

Findings

Aircraft	Fuel - Not specified (Cause)
Not determined	Not determined - Unknown/Not determined (Cause)

Factual Information

On January 4, 2014, about 1519 eastern standard time, a Piper PA-28-180, N9409J, was substantially damaged during a forced landing on an expressway in Bronx, New York. The private pilot and two passengers were not injured. The airplane was registered to and operated by a private individual, under the provisions of 14 Code of Federal Regulations (CFR) Part 91, as a personal flight. Visual meteorological conditions prevailed at the time and no flight plan was filed; VFR flight following was obtained. The flight originated from Danbury Municipal Airport, Danbury, CT, about 1426.

Earlier that day the pilot taxied to the run-up area for an intended sightseeing flight but during engine run-up he noticed a vibration and secured the engine. The airplane was towed to the ramp where a mechanic noted ice coming out of the propeller spinner during hand rotation of the propeller. No maintenance was done to the engine, and after it was started, the vibration level was later reported to be normal.

The pilot contacted local control of Danbury ATCT and obtained taxi clearance, taxied to the approach end of runway 26, and was then cleared for takeoff.

The flight departed with full fuel tanks but the pilot could not recall what fuel tank was selected for takeoff. After takeoff while in contact with several Federal Aviation Administration (FAA) air traffic control (ATC) facilities, the flight proceeded to the Statue of Liberty National Monument, where GPS and radar data indicates he orbited 1.5 times. The pilot later stated that about 30 minutes into the flight, or after orbiting the Statue of Liberty, an alarm of his GPS went off alerting him to switch tanks, which he did. At 1510, while in contact with Newark air traffic control tower, the pilot informed the controller that he was departing the Statue of Liberty and ATC communications were transferred to LaGuardia ATCT. The pilot established contact with that facility at 1513:37, and was instructed to maintain 2,000 feet.

The flight proceeded north above the Hudson River, and the pilot stated he first noticed a loss of engine power when the flight was near mid-town Manhattan. Radar data indicates the airplane was flying about 2,200 feet at that time. As a result he turned on the auxiliary fuel pump, and switched to the previous tank, but those actions did not restore engine power. He also verified that the mixture control was full rich, and pushed the throttle in but those actions also did not restore engine power. He reported he did not apply carburetor heat. He began descending at best glide airspeed and at 1517:46, while at approximately 1,700 feet mean sea level (msl), he informed the controller, "tower tower zero nine Juliet we are losing engine power." The controller asked the pilot if he was declaring an emergency and he replied affirmative. The controller asked the pilot if he wanted LaGuardia Airport and the pilot questioned whether he could make it. The controller provided a vector, but the pilot later stated that he was unable to visually locate the runway and knew that he was too far away. He asked the controller for other options and was provided information regarding a park. The pilot stated that while at 1,000 feet, he noted that 2 of the 3 lanes of the Major Deegan Expressway were closed so he opted to land on it. He maintained best glide speed, and cracked the cabin entry door in anticipation of the forced landing. He actually extended the glide due to cars on the expressway, and while descending banked to avoid street light poles. He touched down between 40 and 45 miles-per-hour with no flaps extended, in what he said was, "hard but not really hard." After touchdown he felt the landing gear slowly collapse reporting that it felt like it was skidding on metal. After coming to rest, he turned off the magneto switch, fuel selector,

and master switch and all occupants exited the airplane. He also stated that the propeller stopped in-flight, and reported it took about 6 minutes for nearby road workers to respond to the accident site.

Several FAA inspectors responded to the accident site and it was reported that approximately 45 gallons of fuel were drained from the airplane's fuel tanks; no contaminants were noted. The airplane was trailered to a nearby facility where the wings were removed, and the on-board JPI EDM-700 and Garmin GPSmap 696 receiver with ADS-B antenna were removed and sent to the NTSB Vehicle Recorder Division located in Washington, DC. The airplane was then transported to another facility for long-term storage.

Following recovery of the airplane to the long-term storage facility, inspection of the fuel strainer revealed only a small amount of fuel. The fuel line between the engine-driven fuel pump and the carburetor was disconnected at the carburetor end; no fuel was found. The carburetor bowl was drained and found to contain about 3.5 ounces of fuel. Inspection of the fuel supply system revealed no obstructions from either wing root to the fuel strainer when the fuel selector was positioned to each respective side; the fuel selector was found to operate normally. Inspection of the engine revealed no evidence of leakage from any of the fuel or oil lines; the oil dipstick indicated the presence of oil. The propeller was pulled through several times with cylinder compressions noted with a "snapping" of the impulse coupling of the magnetos. The fuselage with attached engine and propeller was positioned on a trailer for an attempted engine run and an alternate fuel supply was plumbed to the left wing root area. The master switch and auxiliary fuel pump were turned on and the fuel pump made cyclical thumping noises until it became primed. The starter was energized and the engine turned over but did not start. The engine was primed, and started briefly and then quit. The engine was primed again and the engine started without hesitation. The engine throttle was then opened to almost full and the engine responded; however, the tachometer reading was not confirmed. The engine was subsequently cycled through high and low power settings several times over several minutes with the engine operating smoothly. Safety concerns from a damaged engine mount precluded continued engine operation at a high power setting; the engine run was terminated. After engine shut down, there were no leaks or any other anomalies noted. There were no discrepancies with the engine that would preclude normal operation.

Read-out of the JPI EDM 700 which recorded data every 6 seconds associated with the accident flight revealed it contained 897 records over a span of about 1 hour 4 minutes and 41 seconds. The JPI recorded exhaust gas temperature (EGT) and cylinder heat temperature (CHT) for each of the cylinders, as well as battery voltage. Approximate correlation of the JPI records with GPS data was performed, and review of the data from the JPI EDM 700 revealed normal engine parameters of all cylinders for EGT and CHT from the first record at approximately 1415:06, until 1516:47. At 1516:47, the values for all cylinders for EGT and CHT begin to decrease equally.

The pilot provided the NTSB a flash drive containing a 23 minute 56 second video with audio of a portion of the accident flight. The video was recorded from a camera mounted inside the cockpit, and the field of view was predominantly outside the windshield; however, portions of the instrument panel were recorded including the center communication radios and a portion of the tachometer from 0 to 1000 RPM. Audio from the powerplant system was recorded throughout most of the video. Conversation in the cockpit became audible following a decrease in engine power. The video began with the aircraft heading southbound on the Hudson River

corridor near the southern end of Manhattan Island. The airplane orbited 1.5 times around the Statue of Liberty, and about this time, or at 1507:01, and adjustment of engine power was audible. The airplane then began returning northbound and was uneventful until approximately 1516:42, where a small drop off in engine power was audible. During this time the RPM needle began to waver corresponding with fluctuating engine noise until about 1517:14, when the RPM needle settle at about 500 RPM. Concurrently, shaking and vibration of the aircraft were observed. At 1517:33, a mayday call was heard from the cockpit followed by successive transmissions to air traffic control. At about 1518:05, the aircraft began to turn right over the Bronx. At about 1519:23, movement of the propeller ceased and the tachometer dropped to zero. At 1519:29, a passenger began to brace and the aircraft touched down approximately 5 seconds later. At 1519:40, the airplane came to rest. A copy of the Image Recorder Factual Report and Transcript is contained in the NTSB public docket.

A review of Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin (SAIB) CE-09-35, which pertains to carburetor icing, revealed that based on the ambient temperature and dew point, 25 and 3 degrees Fahrenheit respectively, the conditions were outside icing at glide and cruise power.

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-flare/touchdown	Hard landing

Pilot Information

Certificate:	Private	Age:	53
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 Without Waivers/Limitations	Last Medical Exam:	04/11/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	11/30/2013
Flight Time:	124.7 hours (Total, all aircraft), 110.1 hours (Total, this make and model), 25.4 hours (Pilot In Command, all aircraft), 25.6 hours (Last 90 days, all aircraft), 8.6 hours (Last 30 days, all aircraft), 0.7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	PIPER	Registration:	N9409J
Model/Series:	PA-28-180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal; Utility	Serial Number:	28-3516
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	04/15/2013, Annual	Certified Max Gross Wt.:	2400 lbs
Time Since Last Inspection:	97 Hours	Engines:	1 Reciprocating
Airframe Total Time:	2516 Hours	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	O-360-A3A
Registered Owner:	SCHWARTZ MICHAEL	Rated Power:	180 hp
Operator:	SCHWARTZ MICHAEL	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	LGA, 21 ft msl	Observation Time:	1451 EST
Distance from Accident Site:	6 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	169°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Few / 25000 ft agl	Temperature/Dew Point:	-4° C / -16° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	9 knots/ 15 knots, 210°	Visibility (RVR):	
Altimeter Setting:	30.39 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Danbury, CT (DXR)	Type of Flight Plan Filed:	None
Destination:	Danbury, CT (DXR)	Type of Clearance:	VFR Flight Following
Departure Time:	1426 EST	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None		

Administrative Information

Investigator In Charge (IIC):	Timothy W Monville	Adopted Date:	02/04/2015
Additional Participating Persons:	Peter F Acquaro; FAA/FSDO; Garden City, NY		
Publish Date:	02/04/2015		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=88627		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.