



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

Date: Feb. 22, 2017

SUMMARY OF AIRPLANE EXAMINATION

(WPR16FA103)

This document contains 8 embedded photos.

A. ACCIDENT

Location:	Pomona, California
Date:	May 8, 2016
Aircraft:	Piper PA28
NTSB Investigator-in-Charge	Thomas M. Little

B. EXAMINATION PARTICIPANTS

Thomas M. Little
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C. SUMMARY

On May 8, 2016, about 1630 Pacific daylight time, a Piper PA-28, N5046W, sustained substantial damage after making a forced landing following a reported loss of engine power on top of an office/industrial building complex, about 2 nautical miles southwest of Brackett Field (POC), La Verne, California. The private pilot, who was the registered owner and sole occupant of the airplane, sustained serious injuries. Visual meteorological conditions prevailed for the local flight, which was being operated in accordance with 14 Code of Federal Regulations Part 91, and a flight plan was not filed. The flight departed from the Fullerton Municipal Airport (FUL), Fullerton, California, about 1630.

In a telephone interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on June 20, 2016, which had been delayed due to the pilot's injuries incurred as a result of the accident, the pilot reported that he departed on the flight from the Fullerton Airport (FUL), Fullerton, California, to Brackett Field (POC), which is located in La Verne, California, about 16 nautical miles northeast, and about a 10-minute flight. The pilot stated that prior to taking off he estimated that one fuel tank was about one-half full, while the other tank was about one-quarter full; he did not recall which tank had which amount, nor did he not recall which tank the fuel selector was on during departure and en route portion of the flight. The pilot reported that the pre-takeoff run up was ok, and that the carburetor heat worked good. He further reported that he took off and climbed to 2,200 feet mean sea level (msl), was cleared for a left downwind for runway 26L at POC, and called the POC tower over Diamond Bar, a small town just west of POC; at this time, he descended down to 2,000 feet msl. The pilot opined that during the descent he observed the engine rpm decrease to between 500 to 600 rpm, at which time he radioed "MAYDAY, MAYDAY". He then switched fuel tanks, but was not

sure which one he selected during the process. The pilot stated that he was not sure if the engine had completely quit, as he was too busy trying to locate a place to land, and probably just above stall while maneuvering in a left turn while still trying to locate a landing site. The pilot added that while looking for a field to land in, which he could not locate, he spotted a rooftop, which he aimed for, and subsequently belly flopped the airplane onto the roof.

D. DETAILS OF THE EXAMINATION

1.0 Initial Onsite Examination

An initial examination of the accident site on the evening of the accident, conducted by National Transportation Safety Board (NTSB) and Federal Aviation Administration investigators, revealed that the airplane was located on the top of a building. The building was about 100 x 200 feet, and the roof was about 30 feet above the ground. A 20-foot wide abutment ran about 2/3 the length of the building, so that from the edge of the building to the abutment was about 50 feet in the direction of flight. The nose of the airplane came to rest less than 10 feet from the abutment with the building roof collapsed to the top of the propeller spinner; one propeller blade was visible, and observed oriented perpendicular to the roof. The left main landing gear had collapsed aft, and the wheel separated. The nose wheel separated, and was inside the ceiling in the building. There was some blue staining on the roof.



Figure 1 - right side view of airplane on roof



Figure 2 - left side view of airplane on roof



Figure 3 - nose of airplane imbedded in roof



Figure 4 - right rear view of airplane on roof



Figure 5 - separated nose wheel in ceiling of building

Due to concerns for the stability of the roof, a more detailed examination of the airframe and engine was postponed until the following day, May 9th, subsequent to the wreckage being lowered from the roof of the building. As a result, no evidence of preimpact mechanical malfunction was noted during the examination of the recovered airframe and engine.

The airplane was a Piper PA-28, serial number 28-48. It was a single-engine, low wing airplane with fixed tricycle landing gear. The tachometer read 1,268.18.

Investigators drained about 7.5 gallons of fluid from the left wing tank fuel drain; it was a light blue fluid that smelled like aviation gasoline. There was no visible contamination.



Figure 6 - container of fluid drained from left fuel tank

Investigators drained about 1 quart of fluid from the right wing fuel drain; it was a light blue fluid that smelled like aviation gasoline. There was no visible contamination.



Figure 7 - container with all fluid drained from right fuel tank

2.0 Follow-up examination notes

On June 14, 2016, a detailed examination of the engine and airframe was conducted at the salvage facilities of Air Transport, located in Phoenix, Arizona. The examinations were under the oversight of the NTSB IIC, with assistance from senior air safety investigators from Lycoming Engines and Piper Aircraft, Inc. Details of each examination, which was provided to the NTSB IIC by both the Lycoming and Piper representatives, is provided in the following notes.

2.0.1 Airframe examination notes

The aircraft sustained substantial damage but remained mostly intact.

The left wing sustained minor impact damage and was mostly intact. The left main landing gear sustained minor impact damage but remained attached to the wing. The aileron and flap control surfaces remained attached to the wing and were undamaged. Both the aileron primary and balance control cables remained attached to the bellcrank and were continuous to the forward cockpit control systems.

The right wing sustained minor impact damage and was mostly intact. The right main landing gear sustained impact damage and had separated from the wing. The aileron and flap control surfaces remained attached to the wing and were undamaged. Both the aileron primary and balance control cables remained attached to the bellcrank and were continuous to the forward cockpit control systems.

The rear empennage and tail section remained intact and undamaged. The stabilizer and rudder surfaces remained attached and were undamaged. Both stabilizer control cables remained attached to the stabilizer tube assembly and were continuous to the forward cockpit control systems. Both rudder control cables remained attached to the rudder bellcrank and were continuous to the forward cockpit control systems.

The trim drum exhibited 12 threads that correlates to a position consistent with a partial nose up trim. Reference: full nose up is 16 threads, neutral is 5 threads and full nose down is zero threads.

The fuselage section sustained moderate impact damage but was otherwise mostly intact. Impact damage was noted to the forward cockpit floor, firewall, forward side panels, and instrument panel.

Both forward seats had been removed from the aircraft during the recovery process. The left front seat assembly sustained some impact damage to the seat frame which exhibited downward crushing to the left side. The seat was occupied at the time of the accident. The right front seat was undamaged and was not occupied at the time of the accident. The rear bench seat remained attached to the floor and was undamaged. The rear bench seat lap belts remained attached to structure. The seat was unoccupied at the time of the accident.

he aircraft was equipped with lap belts and shoulder harnesses for both the left and right front seats. The lap belt remained attached to the fuselage structure except for the right outboard belt that had been unbolted during the recovery process. All the lab belt webbing was intact.

Two shoulder harness assemblies were attached to the upper post which separate the fuselage side windows and to the inboard attach points where the inboard lap belts are attached. The shoulder harness belts had a latch assembly that allow the shoulder harness to be unlatched. The shoulder harness and lap belts do not attach to each other.

The upper attach fittings appeared to be of an aftermarket style. The right side shoulder harness remained attached to structure and was undamaged. The left side shoulder harness webbing separated from the upper attach fitting. The webbing was cut and exhibited stitching damage.

The nose landing gear assembly separated from the engine mount assembly due to roof impact. The nose gear assembly had gone through the roof and was found lodged in the building structure above the acoustical ceiling tiles. Impact damage was also present aft of the firewall on the belly skins.

The Emergency Locator Transmitter (ELT) was found secured to the center post of the rear seat by a bungee type strap. The ELT was mounted directly to the seat post with the bungee in a vertical position instead of the normal horizontal position which would point the ELT in the direction of flight. The ELT's switch was found in the "off" position. An empty mounting tray was present in the rear fuselage aft of the baggage compartment. The ELT was tested using a 121.5 MHZ receiver and was found to be functional.

The fuel selector was observed in the right tank position. The selector was free to rotate. No detent was felt or heard when the valve was rotated. Shop air was applied to both the left and right fuel tank lines located at the root of the fuselage and exited at the fuel gascolator assembly. The valve was found to function normally when switched from the left tank, right tank and both off positions.

There was no evidence of pre-impact mechanical malfunctions observed during the examination of the airframe.

2.0.2 Engine examination notes

The powerplant is a four cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (carburetor), internal combustion engine rated at 160hp @ 2700rpm. There was no dataplate affixed to the engine at the manufactures designated location.

The engine remained attached to the airframe by the engine mount. The engine mount had sustained impact energy damage which distorted some of the lower structure. The engine

sustained superficial cosmetic damage. Visual examination of the engine revealed no evidence of pre-impact catastrophic mechanical malfunction or fire.

The CHT probe on the right bank had been disconnected and coiled back onto the engine mount. The EGT probe on the #4 cylinder exhaust pipe was disconnected. There was no functioning CHT or EGT system. The exhaust tail pipe on the right side had a hole eroded through the pipe wall. The general condition and appearance of the subject engine and engine compartment indicated neglect and lack of maintenance.

The top spark plugs were removed, examined and photographed. The crankshaft was rotated by hand through utilizing the propeller. The crankshaft was free and easy to rotate in both directions. "Thumb" compression was observed in proper order on all four cylinders. The complete valve train was observed to operate in proper order, and appeared to be free of any pre-mishap mechanical malfunction. Normal "lift action" was observed at each rocker assembly. Clean, uncontaminated oil was observed at all four rockerbox areas. Mechanical continuity was established throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft. The bottom spark plugs were removed, examined and photographed. The combustion chamber of each cylinder was examined through the spark plug holes utilizing a lighted borescope. The combustion chambers remained mechanically undamaged, and there was no evidence of foreign object ingestion or detonation. The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. The gas path and combustion signatures observed at the spark plugs, combustion chambers and exhaust system components displayed coloration consistent with normal operation. There was no oil residue observed in the exhaust system gas path.

The exhaust system and muffler was found free of obstructions.

The left and right magnetos remained securely clamped at their respective mounting pads. The ignition harness was secure at each magneto.

During the initial magneto to engine timing check it was noted that the subject magnetos were firing at approximately 40° BTDC cylinder #1. The manufacturing specification for magneto to engine timing is 25° BTDC #1 cylinder for this engine model. Further examination of the engine flywheel and timing marks revealed that the subject flywheel had been improperly indexed on the crankshaft flange. Once the subject flywheel was removed and properly indexed, the timing check found both magnetos to be properly timed to the engine.

The right magneto to engine timing was observed at 25° BTDC of the cylinder #1. The magneto was removed and the drive was found intact and properly safetied. The magneto was observed to produce spark at all four plug leads during hand rotation of the drive.

The Left magneto to engine timing was observed at 25° BTDC of the cylinder #1. The magneto was observed to produce spark at all four plug leads during hand rotation of the drive. The impulse coupler drive was observed to be intact, functioning and properly safetied.

There was no evidence of pre-impact mechanical malfunctions observed during the examination of the engine.

2.0.3 Propeller examination notes

The two-bladed, fixed pitch propeller remained attached at the crankshaft flange. The spinner was attached to the propeller. The propeller blades remained attached to the propeller hub. One blade had been bent aft resulting from the collision.

There was no conclusive evidence observed on the propeller blades consistent with the absorption of rotational energy sustained at the time of impact.



Figure 1- photo of propeller post recovery