PA-46 Accident Review June 13, 2014

White Plains, N.Y. • **BY DICK ROCHFORT**

NTSB Identification: ERA14FA288
14 CFR Part 91: General Aviation
Accident occurred Friday, June 13, 2014 in White Plains, N.Y.
Aircraft: PIPER PA46 500TP, registration: N5335R
Injuries: 1 Fatal

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed. NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report.

On June 13, 2014, at 0808 EDT, a Piper PA-46-500TP, N5335R, operated by a private individual, was destroyed when it collided with trees and terrain shortly after takeoff from Westchester County Airport (HPN), White Plains, N.Y. The private pilot was fatally injured. Instrument meteorological conditions prevailed and an instrument flight rules flight plan was filed for the personal flight, which was destined for Portland International Jetport (PWM), Portland, Maine. The flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The pilot had flown from PWM to HPN the previous day. The fixed base operator at HPN serviced the airplane with 60 gallons of Jet-A fuel, which filled the tanks, and FBO personnel were advised to expect the pilot at 0900 on the following day. The pilot subsequently arrived at the FBO at 0745 and requested his airplane be brought outside and prepared for an immediate departure.

Preliminary information from the Federal Aviation Administration revealed that the flight departed HPN at 0806 and that the Air Traffic Control tower was contacted shortly thereafter by the New York Terminal Radar Approach Control facility inquiring if the flight had departed. The local controller responded that the flight should have departed but that "visibility was so low he couldn't tell."

Review of recorded radar data indicates five radar targets identified as the accident airplane were captured, and all were over HPN airport property. The first three radar targets began about mid-point of the 6,500-foot runway, and each were at 500 feet mean sea level (msl). The airport elevation was 439 feet msl. The final two targets depicted a shallow right turn and were at 600 and 700 feet msl respectively, before radar contact was lost. The final radar target was observed about half a mile from the accident site, and the final track roughly aligned with the wreckage path.

Examination of the accident site indicated that the airplane collided with trees and terrain behind a house and in front of horse stables on residential property. Two witnesses at the stables were interviewed, and their statements were consistent throughout. They each stated that the weather was "dark, rainy and foggy," and their attention was drawn to the airplane when it appeared out of the clouds immediately above the trees. One stated that he heard the airplane engine before he saw

the airplane. The airplane was wings-level when the outboard section of the left wing struck the first tree, the inboard section of the left wing struck the second tree, and then the airplane broke apart in a large cloud of blue "smoke" that smelled like "diesel" fuel.

The pilot held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. His most recent FAA third-class medical certificate was issued on Nov. 25, 2013, and was not valid for any class after July 31, 2014. There were restrictions that required the pilot to wear corrective lenses for distant vision and possess glasses for near vision. The pilot reported 5,100 hours of flight experience on his last medical application.

According to FAA and maintenance records, the airplane was manufactured in 2001. According to a trip log recovered at the accident site, the airplane had accrued 1,931 total hours of flight time. The most recent annual inspection was completed June 3, 2014, at 1,927 total aircraft hours.

At 0815, the weather reported at HPN, located one nautical mile north of the accident site, included an overcast ceiling at 200 feet and quarter-mile visibility in fog. The wind was from 090 degrees at 6 knots. The temperature was 17 degrees C; the dew point was 17 degrees C; and the altimeter setting was 29.85 inches of mercury.

Examination of the accident site revealed a strong odor of fuel and that all major components of the airplane were accounted for. No evidence of an in-flight or post-impact fire was observed on any of the airframe components. The wreckage path was oriented about a magnetic heading of 270 degrees and was approximately 360 feet in length. The initial impact point was in a tree approximately 60 feet above the ground. Other trees were struck before the initial ground scar, which was about 205 feet beyond the first tree strike. One tree, about 24 inches in diameter, had a 10-foot length of trunk sectioned and carried 50 feet down the wreckage path. Several pieces of angularly cut wood were found along the length of the debris field.

The airplane was fragmented and scattered along the length of the wreckage path. Control continuity was traced through multiple breaks in the control cables and bellcranks to the relevant flight controls, and each separation of the cables exhibited signatures consistent with tensile overload. Control continuity was confirmed from the cockpit to the rudder and elevator. The fuselage came to rest on its left side against a tree, 280 feet down the wreckage path. The instrument panel and cockpit were destroyed by impact. The cabin and empennage were largely intact. The engine and propeller were both about 290 feet down the wreckage path and separated by approximately 20 feet. All four propeller blades exhibited similar twisting, bending, leading and trailing edge gouging and chord-wise scratching. One propeller blade was fractured near its root and on its outboard tip, but the associated pieces were located at the accident site.

The engine was separated from the airplane and found upright. The accessory gearbox and inlet case were fractured at numerous locations. The accessory gearbox spur gears and fractured sections of the accessory gearbox were recovered at the site. The first-stage compressor blade tips were all bent opposite the direction of rotation. The exhaust duct and gas generator were compressed from impact. The gas generator case was sectioned between the "C" flange and the fuel nozzle bosses to access the hot section components. The upstream side of the first-stage power-turbine blades and disc exhibited rotational scoring from contact with the downstream side of the first-stage power turbine vane and baffle. The power turbine retention nut exhibited rotational scoring consistent with contact with the downstream side of the first-stage power turbine baffle. The downstream side of the compressor turbine disc and blades exhibited rotational scoring from contact with the upstream side of the first-stage power turbine vane and baffle.

An engine data acquisition unit and a tablet computer were recovered from the accident site and sent to the NTSB recorders laboratory for subsequent examination.

TALKING POINTS:

The NTSB will likely label this accident as "pilot error" – loss of control. It is not possible to know, at this point exactly what happened on the morning of June 13, 2014, and I do not wish to speculate or criticize the pilot no matter how egregious his errors, if any, may have been. I want to focus on common causal factors for this type of accident and give you a few "take-away" ideas regarding disciplined procedure and training in general that you might readily implement to make yourself a better, safer, more confident pilot.

There are two aspects to every single-pilot procedure no matter how simple or complicated it may seem, and IFR departures are no exception. First, the pilot must be aware of the aircraft status (airspeed, pitch/power/configuration) and position at all times. This task should be simpler in the glass panel cockpit but there is evidence, which suggests otherwise[1]. Second, the pilot must know the one best way to make the aircraft go where it is supposed to go with or without the autopilot. It could be said that this second aspect is the bandwidth hog, but the truth is, both can use up significant bandwidth creating a ripe environment for errors of omission.

Staying on the thick black line of the procedure — that is, keeping the aircraft in compliance with a well-understood ATC clearance — is arguably the most important critical task. One common error, which can cause confusion and lead to this type of accident, is a failure of the pilot to correctly program the flight director/autopilot (FD/AP). Often more than one error of omission is involved, and frequently errors of omission are precipitated by noble distractions. The usual suspects include radio communications or an unexpected result from an FD/AP input caused by turbulent air, "fat finger syndrome" (bumping the buttons without knowledge that you did so) and unfamiliarity with the automation, which leads to the "What's it doing now?" line of questioning. Proper procedure dictates that the single-pilot's focus must remain with the primary instruments until the FD/AP is properly engaged and verified to be complying with the ATC clearance. Failure to accomplish this can lead to a subtle but entirely predictable series of events that, in turn, can lead to a major loss of situational awareness and worse.

Bandwidth management is the ability to prevent noble distractions from interfering with timely critical task completion. This is not a problem to be solved; it is a condition to be managed. I encourage each pilot to seek the one best way to accomplish each task by operating the same way each and every time, using a well-vetted set of checklists, flows, memory items and SOP (standard operating procedures).

While it is well understood that too much information can be a bad thing, it is also true that

1 Retrieved from the NTSB Website (https://www.ntsb.gov/safety/safetystudies/SS1001.html) 29 June 2014: "The results of this study suggest that the introduction of glass cockpits has not resulted in a measurable improvement in safety when compared to similar aircraft with conventional instruments."

not enough time to sort through the information can be just as bad or worse.

The best way to consistently get it right is to use a well-vetted series of checklists, flows and memory items. By definition, a flow is a series of actions, which must be considered by the pilot, not a checklist of tasks to be completed. The flow must be well vetted so it is appropriate in every departure scenario. I recommend this six-step flow for every departure followed by three simple questions:

1. Airspeed alive (on the backup analog instrument)
2. Gauges green (engine instruments)
3. Annunciators clear
4. 60 Knots (on the analog backup Airspeed indicator) — crosscheck (with the primary airspeed indicator)
5. 85 Knots — Set the friction lock and rotate 8 degrees up with both hands on the yoke
6. Positive rate of climb, gear up, flaps up, trim for the director bars, verify, autopilot on and verify the autopilot is properly coupled and doing as commanded.

Then immediately ask yourself three questions:

1. Which way? Which way should I be going and is the flight director/autopilot making the aircraft go where I want it to go.
2. How high? What altitude should I be at and is the autopilot correctly configured to make that happen.
3. What's next? What is the next step-up, turn or decision point?

Resist the temptation to simply recite what you expect to happen. The answer to the three questions lies on the panel in the FD/AP setup. Look at the relevant information on the panel to confirm everything is set correctly. Have an experienced and knowledgeable flight instructor show you where to look. This CPT session should be video-recorded so you can review it whenever you want. Study these procedures until you have a setup that will instantly answer these questions in every scenario with the least amount of button-pushing.

It is important to guard against doing things that are not particularly important at these critical times, like reaching for fuel pumps and lights, and making radio calls. I call these "noble distractions." The old theory is that "a busy pilot is a safe pilot." Nothing could be further from the truth. Ensure that the aircraft is configured for the second segment climb and verify it is properly coupled to the autopilot. When performed promptly (without rushing), this sequence can be accomplished within 500 feet agl.

The expected outcome can only consistently occur if you insist on the procedural discipline to operate the same way each and every time. You can view a two-minute YouTube demonstration video on this topic at: YouTube.com/watch?v=WsfWtT2yJJE&feature=player_embedded

More information on this subject is available on my website at RWRPilotTraining.com in the Pilot Reference Library under IFR Operations.

Since pilots are all human, we can only do one thing at a time. Excellent pilots do exactly the right thing at the right time and in the correct sequence, utilizing the least amount of bandwidth. Experience makes this easier, and this is particularly true when you have had excellent experience. Excellent experience is derived from training in your own aircraft with a qualified type-specific instructor on the ground in cockpit procedures training (CPT) and on the routes you normally fly. This compelling concept is most important to the pilots who fly the least; so if you are flying less than 200 hours a year, please take note. CPT is the preferred industry method for achieving long-lasting positive results.

In general, I believe the PA-46 community does a good job of risk management. We train regularly; we are aware of our preflight and flight planning duties; and we have more experience than the average owner/pilot. It is also true that proper training is a moving target, one for which you are primarily responsible.

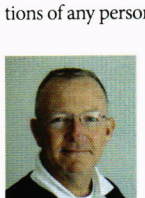
Consider training twice a year and ask your instructor to help you construct a set of checklists, flows and memory items, which will guide you through each phase of flight, including the approach. Use these items the same way each and every time. Have and use well-vetted Standard Operating Procedures. It is within the SOP that you will find a fast and accurate way to improve upon your aeronautical decision-making.

"Do the same thing the same way, to a high professional standard, every time. Set your standard, stick with it, don't violate it and let no outside pressure change it. Discipline is going to keep you alive," said Fred Kaiser, FAASTeam program manager.

Good pilots are not thrill-seeking risk-takers. Good pilots are well-trained risk managers who endeavor to possess ATP level skills and knowledge. Always strive to improve your risk-management capabilities by insisting on excellent training. Excellent training does not cost any more or take any longer, and excellent training can help prevent accidents. Change is difficult, but when you commit to this process you will become a safer, more confident pilot. You owe it to yourself, your family, and the entire General Aviation community.

If you are flying any PA-46, you should consider yourself lucky. In my opinion it represents the very best aircraft available to the General Aviation community today. The PA-46 is an excellent value, and it gets better every year.

Author's note: This article is based solely on the official NTSB report of the accident and is intended to bring readers' attention to the issues raised in that report. It is not intended to judge or draw any conclusion about the aircraft or the skills, training, actions or inactions of any person, living or dead.



Dick Rochfort is an Airline Transport Pilot and Master Certified Flight Instructor and has been a full-time flight instructor for more than 20 years. He provides excellent training and related services exclusively to Piper PA-46 Matrix, Malibu, Mirage and Meridian instructors, owners and pilots worldwide through his company, RWR Pilot Training and the Professional Association of Pilot Instructors (PAPI) of which he is a founding member. He is a director emeritus of MMOPA and a member of the Wings Industry Advisory Committee, the Baltimore FAA FSDO FASTeam, NAFI, NBAA, AOPA, and he is a National Industry Member of the FAA Safety Team (FAASTeam). He is the author of hundreds of insightful articles and video demonstrations dedicated to the Piper PA-46 aircraft.

If you would like more information on this or other strategies for improving the safety of your flying, or if you have comments or questions, you may contact Dick directly at mail@rwrpilottraining.com or 410.435.3333.

Additional information on this and other important topics is available at the PA-46 Pilot Reference Library at: RWRPilotTraining.com

This article is available for reprint upon request.

Fly Safely – Train Often