PA-46 accident, Spokane, Wash.

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NTSB Identification: WPR15FA158
14 CFR Part 91: General Aviation
Accident occurred Thursday, May 07, 2015, in Spokane, Wash.
Aircraft: PIPER PA-46 350P, registration: N962DA
Injuries: Two 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 May 7, 2015, at 1604 PDT, a Piper PA-46-350P, N962DA, collided with water in the Spokane River after an attempted landing at Felts Field Airport, Spokane, Wash. The airplane was owned by Flying Colors Aviation LLC and operated by the pilot, under the provisions of 14 Code of Federal Regulations Part 91. The commercial pilot and pilot-rated passenger sustained fatal injuries, and the airplane was destroyed during the impact sequence. The local flight departed Felts Field at 1553. Visual meteorological conditions prevailed, and no flight plan had been filed.

The airplane had just undergone an annual inspection at the facilities of Rocket Engineering, and the accident flight was to be a post-maintenance test flight. Both the pilot and passenger were employees of Rocket Engineering, and the planned flight time was about 40 minutes.

Audio and preliminary radar data provided by the Federal Aviation Administration captured the entire flight sequence. The accident was also observed by multiple witnesses at the airport, along with Air Traffic Control personnel in the control tower.

The airplane departed from runway 4L, and radar data indicated that almost immediately after takeoff it began a climbing 10-degree turn to the right. After flying on that heading for about 1.5 miles, the airplane began a more aggressive turn to the right, reaching 1,000 feet above ground level (agl) while on a southbound heading. The tower controller asked over the traffic advisory frequency, if everything was okay, and the pilot responded, "That's negative."

The airplane's turn radius then tightened to about 700 feet and, within about 45 seconds, it had turned an additional 270 degrees while descending about 600 feet. Control tower personnel stated that during this period the airplane was banking about 90 degrees to the right and descending and that they assumed it was about to crash. A short time later the bank angle began to reduce, and the airplane appeared to recover. The airplane then began a meandering climb to the east, and about 2.5 minutes later the pilot reported, "We are trying to get under control here. Be back with you."

The airplane eventually reached the town of Newman Lake, about 11 miles east of the airport, having climbed to about 5,600 feet mean sea level (4,000ft agl), and the pilot reported, "Things seem to be stabilizing." When asked his intentions by the tower controller, he replied, "We are going to stay out here for a little while, play with things a little bit, and see if we can get back."

The airplane began a gradual left turn, and the pilot requested and was approved for a straight in landing for runway 22R. The airplane lined up with the runway about seven miles east of the airport and, a short time later, the controller asked the pilot the nature of the emergency. He responded, "We have a control emergency there, a hard right aileron."

The flight progressed, and a few minutes later he reported that the airplane was on

a three-mile final. The airplane remained closely aligned with the runway centerline throughout the remaining descent. Control tower personnel stated, that having reached the runway numbers, the airplane appeared to be flying in a 20-degrees right wing low attitude.

The controllers and multiple witnesses reported that as the airplane passed close to Taxiway D, the engine sound increased and the airplane began a sharp roll to the right. It subsequently collided with the river just north of the airport.

Both wings and the horizontal stabilizer and elevators separated during the impact, and the forward cabin sustained crush damage through to the area of the main wing spar. The river was about 25 feet deep at the accident site, and all major airframe components sank within a few minutes of impact. The airplane was recovered by a diving team from the Spokane County Sheriff's Department over a two-day period during the week after the accident.

AUTHOR'S COMMENTS:

What are some of the potential causes of this accident? There are probably more, but here are five possibilities along with some avoidance strategies you may wish to consider:

1) INCORRECTLY RIGGED AILERON CABLES

This scenario is highly unlikely because the Piper design makes it nearly impossible to cross these cables during re-installation. Additionally, proper post maintenance checks and preflight procedures require this to be checked with no exceptions. This check takes very little time, and it's certainly a good idea before any flight.

Conduct the pre-flight walk around in a quiet area, but first be sure nothing is obstructing the flight controls, such as headsets, GPS or iPad yoke mounts. Gently move the control surfaces to full deflection. Feel and listen carefully for any unusual resistance or scraping. Once in the aircraft, place your hands on the yoke with both thumbs up. Turn the control in the direction of your choice and look towards the side to which your thumbs are pointing. Notice that the aileron is deflected upward. Repeat the process in the opposite direction. Push and pull on the controls as well. Look over your right shoulder and observe proper deflection of the elevator with no binding. This should be a checklist item, and it should be done the same way each and every time. If you observe something questionable, don't fly until it is evaluated and/or repaired.

2) A HARD OVER AUTOPILOT ROLL CLUTCH

In my capacity as a flight instructor, I have extemporaneously "failed" the PA-46 AP systems thousands of times in order to help pilots learn the correct response to this unlikely event. The most common error I note during this training is not an incorrect response, but rather a slowness to respond associated with the "Whisky Tango Foxtrot" delay, followed a half second later by a fast jerk on the controls using the infamous "fast twitch" muscles. This is not poor technique so much it is

human nature, and it will quickly cause the situation to get worse. Excellent training is needed to minimize poor response to WTF moments, so skip the zero-thrust return-to-the-airport drills and spend the time working on unusual attitude-recovery instead.

UA recovery must be correct, and it must occur within a few seconds, or a catastrophic loss of control is entirely possible. You should therefore consider this a "memory item." The UA recovery must be a simple immediate-action drill. Here is what I recommend in three simple steps:

1. Press and hold the red AP (autopilot) disconnect button which is under your left forefinger on the yoke. Do this whether you thought the AP was connected or not. When you do, the AP will disconnect and the trim will stop running. (Remember, you must continue to hold the button.) Whether the electric trim was running or not in the first place is not relevant, so stay with me now. We're not done so don't let go of that button just yet.

2. Make the control inputs (push-pull-left-right) necessary to recover from the unusual attitude. Remember, if the nose is high, lower the nose first, and then level the wings. If the nose is low, level the wings first, and then raise the nose. If pitch trim is needed, accomplish this with your right hand and the manual trim wheel, but don't let go of the AP disconnect button just yet.

3. Find and pull the pitch-trim breaker. This breaker (not the AP breaker) should have a red hard plastic cap on the neck to help identify it. It should be the only breaker with a red cap on it so it can be found quickly in the heat of battle. In fact, I'd ask that you consider the following: In addition to the red cap on AP trim, consider a yellow cap on the "flap warn" breaker (more about this one below), a blue cap on the "cabin press dump" breaker and a white cap on the 25-amp landing-gear pump motor. If you already have these color caps in place and have trained on these four scenarios in the last 12 months, you have received excellent training, and you should thank your flight instructor.

So, why pull the trim breaker and not the AP breaker? You should pull the trim breaker because the trim has an electric motor with switches (on the yoke), which are separate from the engaged autopilot. Although it is unlikely, these two switches can fail closed, causing an un-commanded pitch up or down. The trim switches are separate and active even when the AP is disconnected. The red AP disconnect button interrupts both AP and trim. Since there is no time to troubleshoot or observe which problem exists, it is the "one best way" to stop the loss of control. I recommend all pilots consider this "one best way" to accomplish this recovery. Ask your flight instructor to help you learn this very simple standardized process.

3) FAILED FLAP BELCRANK

PA-46 flaps are electrically operated via mechanical pushrods and belcranks (some older aircraft excepted). The belcranks are welded steel mechanical devices which convert axial energy from a pushrod to rotational energy. It is a highly reliable component, but if one fails, asymmetrical flap deployment is possible.

One of the systems on your aircraft, designed to protect from an asymmetrical flap deployment, is an over-torque limit circuit. If the electric flap motor torque limit is reached, the over-torque circuit discontinues power to the motor. The pilot will observe a red Flap Fail annunciator when this circuit is interrupted. If at the same time or soon thereafter a belcrank should fail on one side, the aircraft would be inclined to roll in the direction of the failed belcrank. If this happens, the pilot will need to slow down, put the flap handle in the full up position and pull the "flap warn" breaker out and immediately reset it. (This is the one with the yellow breaker cap from item No. 2 above.) This action will allow the remaining deployed flap to retract. Without this immediate action, a loss of control is possible.

4) CONTROL INTERFERENCE FROM AFTERMARKET YOKE MOUNTS OR AVIONICS/MAINTENANCE WORK UNDER THE PANEL

Yoke mounts or suction cup mounts on the windows of a pressurized airplane are a really bad idea. They are not allowed in professional cockpits, and they certainly don't belong in your cockpit either. If you have any of these, take them off and donate them to the trash can, and then seek excellent training on how to organize properly without these items using the "one best way."

5) INITIATING A "GO-AROUND" AFTER COMMITTING TO THE LANDING

I recommend that you develop the procedural habit of consciously determining that point in time when NOT to "go around." It seems that we get complacent about this, and we tend to make the decision to land when we see the runway. Make a concerted effort to delay the actual decision until the moment when it is unwise to do otherwise; that is, continually review the circumstances by evaluating that which you see and your current intention. For example, "the runway appears clear; not sure about landing yet but I'm going to keep looking, I have three-green, and the landing light is on." Therefore I know I have a clearance, and I am configured to land. "I am going to continue." At some point your aircraft will reach a low-energy state consistent with a touchdown

and landing. Recognize this point in time and commit to the landing.

Once you have committed to the landing, place both hands on the yoke to remind your hands of the commitment your brain has made. This moment could be on a three-mile final if there is an accumulation of airframe ice, but it is probably going to be when the power lever is at flight idle and energy is insufficient for a go-around. Once the decision is made, do not change it, even if it means a slow-speed crash into a herd of deer one second later. In other words, don't make the decision to land too early; don't make the decision to land too late. Yes, it is a judgment call, but please remember that at some point, a slow-speed, low-power, in-control crash is preferable to a faster-speed, high-power, out-of-control crash. Train with this concept in mind. It will definitely improve your procedural discipline and the safety of your flight.

In summary, I encourage you to seek excellent training — training based on standardized procedural discipline. It doesn't matter which aircraft you fly, what avionics systems you have or where the buttons are located in your aircraft. Ask your flight instructor to train you on how to use well-vetted checklists, flows, memory items and SOP (Standard Operating Procedures). Insist on it. Work at it. Furthermore, consider training to ATP standards at least twice per year. This very simple process works for many successful organizations and individuals. It is not difficult, and it will help you find and correct your own single-pilot errors, making you a better, safer pilot. Excellent training doesn't cost any more or take any longer. Remember, there are many ways to accomplish any task using varying degrees of skill and attentiveness, but there is only "one best way."

One additional reminder: Post-maintenance test flights are required by FAA regulation after any major repair or alteration, and they are required to be accomplished with "crew only" (no passengers). It should also be noted that an annual inspection, in and of itself, is not considered major repair or alteration. Most repair shops will conduct a post-maintenance test flight after a regular annual inspection anyway, but it is not required by regulation and therefore not subject to the "no passengers" rule. Remember if a test flight is required by FAA regulation, the test flight must be conducted without passengers.

If you are flying any PA-46, you should consider yourself lucky. The new M500 is available now and the M600 is expected this fall. These aircraft will provide a significant improvement in personal comfort and safety. In my opinion the PA-46 is the most capable aircraft available today, and it is getting better every year. MMOPA

Fly Safely - Train Often

Dick Rochfort is an FAA-rated Airline Transport Pilot and full-time PA-46 Master Certified Flight Instructor. He provides excellent training and consulting services worldwide to pilots and instructors of the Piper PA-46 aircraft; M350, M500, M600, Matrix, Malibu, Mirage and Meridian through his company RWR Pilot Training and the Professional Association of PA-46 Pilot Instructors of which he is a founding member. 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 or visit his website at RWRPilotTraining.com This article is available for reprint upon request.