Communication Breakdown During Landing - Erie, Colo.

BY DICK ROCHFORT, ATP, CFII, MASTER INSTRUCTOR

NTSB Preliminary Report
14 CFR Part 91: General Aviation
Accident occurred Sunday, Aug. 31, 2014, in Erie, Colo.
Aircraft: PIPER PA-46 350P, registration: N228LL
Injuries: Five 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 Aug. 31, 2014, about 1150 MDT, a Piper Malibu PA-46, N228LL, was substantially damaged when the airplane impacted terrain near Erie Municipal Airport (EIK), Erie, Colo. The airplane was owned and operated by the Real Estate School, LLC, Erie. The private pilot and four passengers on board were fatally injured. Visual meteorological conditions prevailed, and no flight plan had been filed. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

In statements provided to the National Transportation Safety Board investigator-in-charge, witnesses saw the accident airplane on final approach to Runway 33 while another airplane was departing Runway 15. Witnesses stated the two airplanes crossed in "close proximity." The airplane continued down Runway 33, and power was applied "as if to go-around." A witness in the FBO's building described the airplane at low altitude with full power, in a left bank with a nose-high attitude. Witnesses said it appeared the "airplane did not want to fly. It appeared to be in a stall," and "it did not accelerate or climb." The airplane continued in a "rapid descent" until impacting terrain.

At 1135, the EIK automated weather-reporting facility reported wind from 160 degrees at 6 knots, visibility 10 miles, temperature 21 degrees Celsius (C), dew point 10 degrees C, and an altimeter reading of 29.95 inches of mercury.

The main wreckage contained all primary

criteria do not consider lightning, precipitation or severity (i.e., tornadoes, large hail or damaging winds). It's really all about describing convection that is disrupting busy airspace.

Another unique aspect of the CCFP that continues to confuse some pilots is the echo tops forecast; the echo tops provided in the CCFP are not a forecast for maximum tops as they are in a convective SIGMET. The best way to understand this aspect is to use an example.

Assume that an area of convection meeting the CCFP criteria has been identified as a polygon on the graphics. Using the table below, the automated tool believes that, with this area of convection, isolated coverage of echo tops will exceed 40,000 feet. On the opposite extreme, broken coverage is expected with echo tops anticipated to be between 25,000 feet and 29,000 feet. Even though widely scattered or isolated echo tops are expected to occur above 35,000 feet, the CCFP graphic will show scattered (sparse) coverage at 34,000 feet since most of the echo tops will be located at or below 34,000 feet in the example at the bottom of page 24.

CCFP GRAPHICS

The automated CCFP graphics can be viewed online at AviationWeather.gov/ccfp/. Each of the four forecasts for two, four, six and eight hours will largely consist of one or more hatched or filled polygons describing areas of convection (if any) that are expected to meet the CCFP criteria. The color of the polygons describes the confidence, and the hatching or fill denotes the expected convective coverage. Note that areas of higher convective coverage or lines of convection can be included within other polygons of lower convective coverage. Each polygon will also include a categorical echo tops forecast as described earlier.

This legend depicts the symbology used in the CCFP graphics to include categories for convective coverage, confidence and echo tops.

Coverage is identified within each area of convection, in one of three possible categories:

- Sparse 25-39 percent (sparse fill)
- Medium 40-74 percent (medium fill)
- Solid 75-100 percent (solid fill)

The confidence is an estimate that conditions defined by the minimum CCFP criteria will occur in the forecast polygon at the specified time and place. It is identified in one of two possible categories:

- ► Low confidence – 25-49 percent (border and fill gray)
- ► High confidence – 50-100 percent (border and fill slate blue)

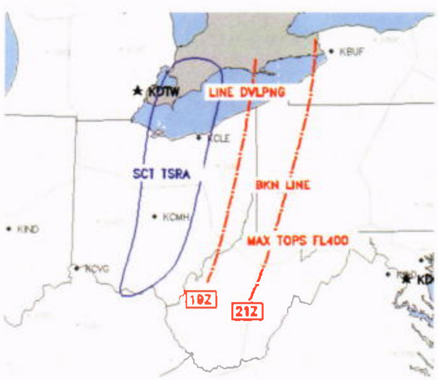
Echo tops within each area of convection are forecast in one of four possible categories:

- 25,000-29,000 feet MSL
- 30,000-34,000 feet MSL
- 35,000-39,000 feet MSL
- At or above 40,000 feet MSL

HUMAN IN THE LOOP

Despite the fact that the new CCFP guidance is totally automated, there is still a human element. As of March 3, the NWS will implement the experimental Collaborative Aviation Weather Statement (CAWS). The CAWS is a new product collaborated by NWS meteorologists, airline meteorologists and other airline and FAA personnel. Sounds vaguely like the legacy CCFP guidance, right? Well, yes and no. CAWS is event-driven and focuses on specific, convective impacts to the Core 29 airports and high traffic en-route corridors. So it's not a product that you will see issued in northern Montana, ever.

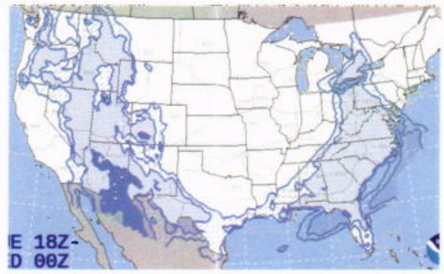
When the automated product isn't aligned with reality, forecasters can issue one of these statements. This could be due to convection that developed but was not properly depicted by the automated tool or perhaps it could be the opposite situation — convection that was expected and did not form or have a great enough impact. You can find the CAWS product here: AviationWeather.gov/caws.



The Collaborative Aviation Weather Statement (CAWS) will include a graphic such as the one shown here as well as a textual description of the situation.

EXTENDED CONVECTIVE FORECAST PRODUCT (ECFP)

The automated CCFP is only valid out to eight hours. However, to provide traffic planners and collaborators with a quick-look forecast of the greatest probability of thunderstorms (not just convection) beyond this period, the AWC issues an Extended Convective Forecast Product (ECFP) valid in six-hour time periods out to three and a half days (84 hours) in the future. The ECFP is updated four times a day and can be viewed online at AviationWeather.gov/ecfp.



The Extended Convective Forecast Product (ECFP) uses similar CCFP-style shading. Contours are drawn at 40 percent, 60 percent and 80 percent and represent the probability of thunderstorms. Hashed areas represent 40-59 percent probability; solid lined areas represent 60-79-percent probability; and solid blue-filled areas represent greater than 80 percent probability.

The ECFP planning tool is a graphical representation of the forecast probability of thunderstorms. The product will identify graphically where in the U.S. thunderstorms are the most likely based solely on the calibrated thunderstorm-probability forecast from the Short Range Ensemble Forecast (SREF) model. While this graphical product will use CCFP-style graphics, it is automatically generated and does not use the same CCFP criteria since this is a thunderstorm forecast. This is to facilitate ease of interpretation and use by those already familiar with the operational CCFP and is intended to support the long-range planning for CCFP-type of constraints in the NAS.

In the end, the CCFP can provide some useful forecast guidance concerning convective weather along your proposed route of flight, assuming you are aware that it is not a forecast for thunderstorms. Be sure always to integrate this forecast with other official guidance (especially convective SIGMETs) provided by the NWS before making any preflight decisions using this new automated guidance. MMOPA

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structural components and flight control surfaces. The wreckage was retained by the NTSB for further examination.

This accident was quite likely precipitated by a traffic conflict with a last-minute overly aggressive pull-up, ending with a stall-spin. The accident pilot was lining up for a landing with a light tailwind while a second aircraft was taking off in the opposite direction. It is also entirely possible that he was not hearing the other pilot's transmissions and/or was not being heard during his approach.

These are relatively common occurrences at non-towered airports, but they almost never present a problem, let alone lead to a fatal accident. It would be easy to find fault with the accident pilot for his actions, but all human beings are capable of error, even experienced pilots.

We know that managing safety is mostly not about probabilities; it is mostly about consequences. So let's discuss some procedural items which may be of help.

The most common error in non-towered airport communication is the expectation that if no one is talking, no one is there. Searching for other aircraft requires the discipline to believe that another aircraft might be present, even though there is no radio communication.

COMMUNICATION

According to the Pilot's Handbook of Aeronautical Knowledge Chapter 13, Section 2: "Two-way radio communications are not required (at non-towered airports) although it is a good operating practice for pilots to transmit their intentions on the specified frequency for the benefit of other traffic in the area. The key to communicating at an airport without an operating control tower is selection of the correct common frequency."

One way this system could be improved in the U.S is to program the CTAF to respond to each pilot broadcast with a recorded voice stating the airport name. This practice is already in use in some locations outside the U.S. (Australia, for example), and it would help confirm the airport name and, in the absence of an auto response, the pilot would be aware that the wrong frequency may be in use.

It is also important to keep the transmission short. Say your model/tail number, distance and cardinal direction from the airport and your intentions (Ipswitch Airport: "Meridian 3232 Bravo 5 South landing 36 Ipswitch"). Avoid referencing local landmarks or using IFR terminology, which may be unrecognizable to rookie or itinerant pilots. Avoid carrying out a conversation on the CTAF because it may tie up communications at nearby airports using the same frequency. Position updates are appreciated, but don't get carried away.

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ered airport communication is the expectation that if no one is talking, no one is there. Searching for other aircraft requires the discipline to believe that another aircraft might be present, even though there is no radio communication.

USE OF AIRCRAFT LIGHTS

I recommend that each PA-46 pilot adopt procedures for operation of aircraft lighting systems, in accordance with AIM 4-3-23 and best professional practice, as follows:

- Nav lights shall be ON whenever power is applied to the aircraft battery bus. This essentially means: Turn that switch on and leave it on. The lights will then go out only with the master switch or by removing external power.

- Taxi lights shall be used whenever the aircraft is moving on the ground or for landing at night.

- Pulse lights shall be used at all times in the runway environment below 10,000 feet. This is important in order to make yourself visible to other pilots and wildlife.

- A landing light shall be used with a clearance to takeoff or to land.

- Anti-collision lights shall be used at all times, except when they interfere with the pilot's vision or the vision of other pilots or ground crew. This means the red beacon (if the aircraft is so equipped) should be used whenever the engine is running, and strobes should be used except in clouds at night, but never on taxiways or ramps.

THE DECISION-MAKING PROCESS DURING TAKEOFF AND LANDING

Good decisions are timely, and limited options are well rehearsed. Anything else leads to guesswork and the use of fast-twitch muscles. When this sequence of events is not done well, it is frequently implicated in serious accidents. The use of call-outs (memory items) during take-off and landing are a time-honored way to get the tasks done in proper sequence and without distraction. Consider the following:

Normal take-off: "Airspeed alive, gauges green, annunciation clear, 60 knots, cross-check, 85 knots – rotate, positive rate – gear up, flaps up, trim for the director bars, autopilot on, D bars in the blue, aircraft performing as commanded, cockpit flow."

Normal landing: "Runway in sight (within five miles), autopilot off, flaps 20, verify three green, verify the runway is clear and a clearance is received (landing light on)." Say, "I recommend we continue." (There is no commitment to land, yet.) Runway is clear, full flaps, 90 over the numbers, 85 in the flare, run the trim to assist the flare, once the mains have touched or when a go around is not possible, idle the power and remove your hand from the power lever, beta (if you have it), back pressure and brakes. Get to

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taxi speed before clean up. Start the flow with pump(s) and do it in order, only when stopped or taxiing slowly straight ahead.

If these techniques seem familiar, thank you. It is nice working with you. If not, consider learning more. Here is a link to the PA-46 Pilot Reference Library: RWRPilot-Training.com/training-library.html

Each PA-46 owner/pilot is his or her own aviation safety management team, and no safety management system will be policy unless you decide to make it so. I encourage each of you to make it a policy to make proper use of checklists, flows, memory items and SOP.

If you are flying a PA-46, you should consider yourself lucky. In my opinion it is the most capable GA aircraft available today, and it is getting better every year.

Fly safely — train often

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 PA-46 instructors, owners and pilots worldwide through his company, RWR Pilot Training and the Professional Association of 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. This article is available for reprint upon request.

Maintenance

Save yourself some time and money by paying attention to some nuts and bolts — literally!

BY KEVIN MEAD

Some wear and tear on your plane is inevitable, but some is easy to prevent with a little attention — and a wrench. Extensive damage can occur if certain components are allowed to loosen, so in this article I will point out selected nuts and bolts that should be checked and tightened at every annual, or even more frequently, if you rack up a lot hours throughout the year.

TIGHTEN THIS: WING FUEL-LINE HOSE-COUPLING CLAMPS

What happens if you don't: You might see fuel leaking from the inboard wing section after fueling the aircraft in cold weather or after it has been sitting with empty tanks in the shop. About eight rubber hose couplings in each wing connect two metal tubes. Materials can shrink with time and temperature, leaving the attaching hose clamps very loose.

HOW: At every annual, each of the access panels will be open, allowing the shop to see and tighten the loose clamps. It takes very little time at this point, and it's much easier than finding someone to tighten the clamps on an extremely cold day.

TIGHTEN THIS: WING AND EMPENNAGE ATTACH BOLTS AND NUTS

What happens if you don't: I have found many attach bolts so loose that I could turn them with my fingers. I have also found the empennage attach bolts so loose that there was noticeable movement in the horizontal stabilizer. The aft and forward wing spars, vertical fin and horizontal stabilizer are attached to the fuselage with bolts and nuts that become loose, despite the fact that the nuts are a steel-locking style. I believe the flexing of the wings and surfaces may cause the loosening. I even know of one aircraft where the aft wing-spar bolt holes were elongated from flying for an extended period with loose bolts.

HOW: The tightness of these bolts should be checked at every annual, using a wrench or socket.

One complicating factor is that most aft wing-spar attach bolts are not standard-looking fasteners, but a Hi-Lock unit that will not have any wrench flats on the nut. For that style, you should attempt turning the head of the bolt with vise grips. If this bolt is loose, you must replace both parts (pin and collar).

TIGHTEN THIS: NOSE-GEAR ATTACH/PIVOT BOLTS

What happens if you don't: The nose-gear assembly is attached to the engine mount using two bolts and lock nuts. They do get loose in a short time and will cause the expensive mount bushings to break.

HOW: This is simplest while the aircraft is already off the ground for some other reason. If the bolts are loose, tighten them. Shops have been known to over-torque these bolts, affecting the ability of the nose gear to free-fall. Make sure your shop consults the service manual for correct figures.