

Oops, Wrong Airport

It's more than embarrassing; it's dangerous

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I used to think I was shielded from the problems because I had always flown for organizations that required their pilots to operate IFR “to the maximum extent possible.” But then I learned of a few pilots in very elite U.S. Air Force units who came very close to mistakenly landing large and expensive aircraft at very small airports ill-equipped to handle them. The problem is even worse in the civilian world and continues to this day, despite the advantages of highly automated, information-rich, advanced situational awareness cockpits. The good news is that by delving into a few high-profile examples, we can avoid having to make that dreaded phone call to say, “Boss, ah . . . Got a problem. I’ve landed at the wrong airport.”

On July 26, 1985, one of the highlights of a special ceremony at Offutt AFB, Nebraska, was to be a low-altitude,

high-speed pass of an SR-71 “Blackbird” spy plane. The assembled crowd knew the pilots would be overhead the runway on time, to the second. But that didn’t happen; the minutes ticked by. Presently, the local news media reported that the Mach 3 reconnaissance plane had done a low-altitude, high-speed pass over Millard Airport (KMLE), a small, general aviation field with a single runway about 10 nm northwest of Offutt. Fortunately for them, the Blackbird’s crew was spared even more notoriety because a landing was never part of the SR-71’s much anticipated appearance.

How could this happen? Air Force officials blamed the embarrassing incident on problems with the Blackbird’s navigational equipment. Although we’ll never know for sure, the more likely answer is that the real “problem” with the nav gear was the crew’s failure to use

it for the approach. Many pilots, even those wearing space helmets, are all too eager to accept a visual approach. But we often underestimate the task.

Just imagine the difficulty of peering out the tiny windows of the SR-71 while looking for a small piece of asphalt at low altitude and high speed. Both airports have a Runway 12/30 but that’s where the similarities end. Millard has a 3,801-ft. runway, while Offutt’s is 11,703 ft. long. KMLE is in a small town surrounded by farmland. Offutt is a very large Air Force base and sits just west of the Missouri River some 10 mi. south of downtown Omaha. The smaller airport did not have any precision instrument approaches while the larger airport had an ILS on both ends of its runway.

Lessons Learned: Simply put, if you’re going to shoot a visual approach, you need to add geography to



An SR-71 “Blackbird” landing

NASA

your pre-mission planning. You need to know what airport and runways you're looking for, and their orientation and relationship to nearby landmarks. Prominent rivers, lakes, cities, highways and topographic features all make good landmarks, but the even the best landmarks should be backed up with your aircraft's most precise nav equipment. You should take advantage of any instrument approach available, even when the weather allows a visual. And finally, don't be afraid to ask ATC for a "point out" of the airport or a vector if you're unfamiliar with the area.

An Unstable Approach May Be a Hint

Some airport pairs are just magnets for mistaken landings. One such pair is Rapid City Regional (KRAP) and Ellsworth AFB (KRCA), South Dakota. In June 2004, Northwest Airlines Flight 1152, an Airbus A319, was bound for the former and ended up at the latter. Five minutes after what the airline euphemistically called an "unscheduled landing," the passengers were told they had landed at an Air Force base and were instructed to close their window shades and not look out. The plane remained on the ground for more than 3 hr. as the pilots carefully and thoroughly explained to Air Force security officers what went wrong. The airline eventually dispatched a new crew to make the short hop to Rapid City, a mere 6 nm to the south.

Then, in August 2015, a Hawker business jet inbound to the area from the west was vectored northwest of Ellsworth for a visual approach to Runway 14 at Rapid City. Descending out of a cloud layer, the crew misidentified Ellsworth as their destination and completed an unauthorized landing.

The most recent event occurred 4 min. after sunset on July 7, 2016, when Delta Air Lines Flight 2845, an Airbus A320, landed at Ellsworth after an extended downwind to lose speed and altitude. Two hours and 21 min. of waiting ensued for the plane's crew and passengers while airmen at Ellsworth followed their protocol, which was well established from four wrong airport landings within the previous year.

How could this happen? In the case of Delta Flight 2845, the crew appears to have been conscientious professionals in most regards. Their trouble began when they arrived from the east



Delta Flight 2845 Flight Path

too high and too fast for the visual. This necessitated a vector to the northwest to extend their downwind in order to lose altitude and speed. When the first officer (FO) finally told ATC they could accept a left turn onto base and they had the airport in sight, they were 12 mi. north of Rapid City, less than 2 mi. abeam of the extended centerline, and 6 mi. north of Ellsworth. The approach controller advised the pilot "cleared visual approach runway one-four. Use caution for Ellsworth Air Force Base located 6 mi. northwest of Rapid City Regional." The FO acknowledged the approach clearance, and said to the captain "you got the right one in sight?" The captain replied, tellingly, "I hope I do."

The captain selected a direct radial to the final approach fix for Runway 14 at Rapid City, and armed the approach. The aircraft captured the approach, but once on final, the crew got "fixated" on making a visual approach to the only runway they saw, estimated to be about 6 mi. away. The captain disconnected the autopilot, had the FO clear the flight director, and started a steeper than normal descent for the runway. As the airplane was descending through 500 ft., the captain said "well that's kind of *%@!^# up. Most *%@!^# up approach I've made in a while."

The pilots later said they misheard the controller's warning regarding Ellsworth, and thought their destination was only 6 mi. ahead, not 12. They didn't realize they were at the wrong airport until after landing.

Lessons Learned: Despite this crew's best efforts at briefing approaches to both runways at Rapid City, as well as the proximity of Ellsworth, it was probably the expectation that their runway was 6 mi. ahead and the unstable approach that sealed their fate. The first lesson is to plan to arrive into the terminal area on speed and on altitude because bleeding that energy can mean

getting too far away from your destination to execute a reliable visual approach once you get turned around.

If you do end up miles away from your destination, request an approach and let the automation fly the aircraft to the final approach fix before disconnecting the autopilot or accepting the visual. If runway or airport lighting is not what you expect to see, or is missing, go around or confirm before continuing the approach. And most importantly, if you find yourself in an unstable approach, don't bend the rules, just go around.

If these pilots had done that, they probably would have noticed the B-1B Lancers parked on the ramp and we wouldn't be using their experience as an example here.

Use All Situational Awareness Tools Available

On the night of Nov. 20, 2013, an Atlas Air crew operating a massive Boeing 747 Large Cargo Freighter, commonly known as the "Dreamlifter," mistakenly landed at Col. James Jabara Airport (KAAO), short of their intended destination, McConnell AFB (KIAB), in Wichita. Although Wichita's weather was good, the pilot flying (PF) programmed an RNAV GPS approach to Runway 19L at McConnell. The pilot said previous VFR approaches to McConnell had often put him at a higher altitude than expected and that difficulties in picking out McConnell's runway prompted him to make the instrument approach.

Even though the Boeing was still 25 mi. north of the destination, the Wichita approach controller cleared "Giant 4241" for the RNAV GPS Runway 19L approach with the restriction to cross WITBA (the IAF) at 4,000 ft. About 5 min. later, with the airplane at 3,900 ft., 12 mi. north of McConnell and 4.6 mi. north of Jabara, the controller instructed the pilot to contact McConnell tower. The pilot kept the Boeing on autopilot until passing WITBA, at which time he saw a brightly lit runway slightly to his left that seemed to match the one for which he was searching. Believing the aircraft was too high to land safely, he disconnected the autopilot and increased the rate of descent toward what he thought was Runway 19L at McConnell; unfortunately, it was Runway 18 at Jabara.

Moments after touching down, when puzzled controllers told the pilot that he was 9 mi. north of his intended



A Boeing 747LCF Dreamlifter

FRANK KOVALCHEK

destination, he made an unusual, uncomfortable admission: “Uh, yes sir, we just landed at the other airport.”

How could this happen? The crew had flown southbound into an area east of downtown Wichita where there were four airports with similar runway configurations: Jabara, the Beech Factory Airport (KBEC), the Cessna Aircraft Field (KCEA) and, finally, McConnell. However, they did not brief each other about the other airports or the 19L approach lighting system that could have helped them to verify that they were landing at McConnell. When the pilot spotted the wrong airport he was still well outside a normal glidepath intercept point for the correct airport; he should have realized an abrupt, unstable approach should not have been necessary.

Lessons Learned: Atlas Air now requires pilots to remain on an instrument approach procedure — even in visual conditions — until passing the final approach fix. But even this procedure fails to address the root cause of the incident: The pilots lost situational awareness and didn’t realize their destination was still 9 mi. ahead.

To help establish and maintain situational awareness, you should brief nearby airports to avoid possible confusion. You should use all available information in the cockpit and on the approach plate to remain situationally aware. You can use range rings, waypoints, DME and even crossing radials to determine when a descent should be started. If your avionics can display electronic vertical guidance (a glide-slope needle, a VPATH indication or even

a synthetically derived vertical path), stay on it until you can safely transition or “connect” to visual vertical guidance from the runway (VASI, PAPI, etc.).

We naturally “connect the dots” with lateral navigation, by deleting discontinuities in the FMS flight plan. Apply this concept to your vertical navigation as well. And if what you see out the windows differs significantly from what you see in your cockpit, ask for help. “Tower, we have an avionics issue here, can you confirm you see us on about a 5 mi. final for Runway 19 Left?” It sounds weird and may earn you some ribbing at the bar, but it could save your job or perhaps even your life.

Trust But Verify

About an hour after sunset on the clear, dark night of Jan. 12, 2014, Southwest Airlines Flight 4013, a Boeing 737, mistakenly landed at M. Graham Clark Downtown Airport (KPLK), 6 mi. north of the intended destination, Branson Airport (KBBG), in Branson, Missouri. The flight had been cleared to land on Runway 14 at Branson, which was 7,140 ft. long. Instead, the flight landed on Runway 12 at KPLK, which was only 3,738 feet long. Both crewmembers stood on the brakes for the last 50 ft. or so with the aircraft finally stopping only 340 ft. from the end of the runway, just short of a steep ravine.

How could this happen? The crew was initially cleared to the IAF for the RNAV (GPS) Runway 14 at Branson when they spotted what they thought was Branson’s beacon in the distance. About a minute later, the approach controller

called the airport at “eleven o’clock and one five miles.” But this statement was misleading because the shorter runway was at 11 o’clock and 15 mi., while Branson was actually at 10 o’clock and 20 mi. The captain, who was handling the radios, asked the FO if he was “OK?” and the FO replied, “I’m OK with it.” The captain called “field in sight” and they were cleared for the visual approach to Runway 14.

As they got closer, the FO stated, “We’re high,” and turned right, away from the airport, to configure and lose altitude. When they turned back toward the runway, they were totally visual and focused on making a successful approach and landing on the only runway they saw. Due to gusty winds, and the lack of an ILS, the captain was preoccupied looking out the heads-up guidance system (HGS) for glideslope and airspeed information, and was no longer cross-referencing anything in the cockpit, including the 5- and 10-mi. range rings he had previously set around the landing runway.

Lessons Learned: The crew had set themselves up for success by having the correct instrument approach in view as well as additional avionics system cues to show distance remaining to the intended runway. But they dropped these cues after an erroneous call from approach control confirmed their expectation of seeing the runway where they had earlier spotted the wrong airport beacon. Had at least one pilot continued to cross-reference the approach they could have realized they had rushed themselves toward the wrong airport.



It Could Happen to You

Even if you have the correct airport in your sights, you still have the task of finding the correct landing surface. This can be difficult at night, especially when runways are closed, approaches are out of service or the airport is undergoing construction, as is so often the case.

A few minutes before midnight on July 7, 2017, Air Canada Flight 759, an Airbus A320, was cleared to land on Runway 28R at San Francisco International Airport (KSFO). Instead, the crew lined up on and then overflew parallel Taxiway C, which had four heav-

Southwest 4013 came within 50 feet of this steep ravine at the end of the short runway at M. Graham Clark Airport.

lighted runway on their left was 28L, and that they were lined up for 28R.

How could this happen? It appears KSFO management did its best to inform all airport users of the status of 28L. Construction on that runway was part of a project that started in February 2017, and Notices to Airmen (NOTAMs) were issued to alert operators of its operational status. In addition, at the time of the near miss, the Automatic Terminal Information Service (ATIS) included an advisory that its approach lighting system was out of service.

Meanwhile, runway and approach lighting for Runway 28R were on and set to default settings, which included a 2,400-ft. approach lighting system, a precision approach path indicator, touchdown zone lights (white), runway centerline lights (white at the approach end), runway threshold lights (green) and runway edge lights (white at the approach end). Lights for Taxiway C were also on and set to default settings that included centerline lights (green) along its length. Default settings also included edge lights (blue) and centerline lights (green) illuminating the transition or stub taxiways from the runway to the taxiway.

The ILS approach to Runway 28R at KSFO allows pilots to capture the runway's localizer course of 284 deg. as far out as 16 DME. The typical visual approach to Runways 28L and 28R, on the other hand, begins with the QUIET BRIDGE VISUAL which brings aircraft in on the SFO VOR 095-deg. radial

(a 275-deg. course inbound) until the Dumbarton Bridge around 6 DME. At that point aircraft are expected to visually align to their assigned runways. The visual alignment can be tricky at night because the approach is over the featureless San Francisco Bay and the start of Runways 28L and 28R sit on a peninsula surrounded by water. There can be little to no contrast between the runways, and the lights of aircraft on parallel taxiways can be mistaken for runway lights. The Air Canada pilots appeared to have been victims of expectation bias: They thought they saw Runways 28L and 28R, but actually saw Runway 28R and Taxiway C.

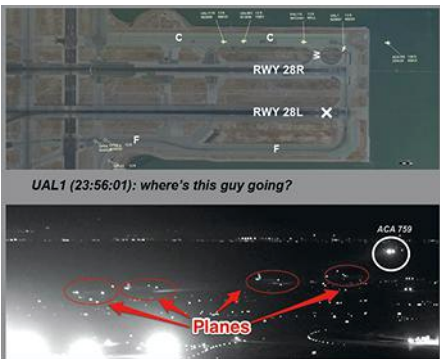
Lessons Learned: An FAA spokesperson says they will “no longer issue visual approaches to air crews approaching SFO at night when an adjacent parallel runway is closed.” The pilots will be forced to use instrument landing system approaches or satellite-based approaches that help them line up for the correct runway. We can improve upon that idea by always having an electronic course available to any approach made at night.

The Air Canada pilots said something did not look right to them. At 300 ft. above the ground, the flight crew contacted the tower, mentioned seeing lights on the runway, and requested confirmation that they were cleared to land. When pilots get that “hinky” feeling, or become aware of unresolved ambiguities, it's best to go around. But despite all the technology, in the end, it was an alert crewmember on United Airlines Flight 1, the first airplane in the taxiway queue, who most likely averted the worst aviation disaster in U.S. history by broadcasting: “Where's this guy going? He's on the taxiway!”

Precursors and Preventative Measures

Although there are a variety of contributing factors that result in wrong airport landings, there are a few common threads we can look out for to avoid being on the nightly news. These “precursors” should raise a red flag and alert crewmembers to the potential for a wrong airport landing.

► **Geography.** Airport pairings that tend to confuse approaching pilots have similar runway alignments, which is to be expected given prevailing wind conditions. The extended centerline of one airport's runway can be very near to



Air Canada Flight 759 approaches a crowded taxiway.

ily fueled airliners on it packed with over 1,000 passengers. When the pilots spooled up the engines to abort their landing, the Airbus was just 85 ft. above the surface, and dipped to as low as 59 ft. before climbing to safety. In post-incident interviews, both incident pilots stated that, during their first approach when they almost landed on the airliners waiting to take off, they believed the

the other's. Such airports are also often in close proximity, generally 6 to 9 nm apart. If they are too close, or too far apart, there's generally no mistaking them.

It may be helpful for pilots to add satellite imagery to preflight study. Free services such as Google Earth provide excellent situational awareness tools from a "bird's eye" view as well as 3-D views from expected approach corridors.

Many modern cockpits include ways to increase geographic situational awareness. Some displays, for example, can paint the runway onto a synthetic view of the terrain. Others will allow pilots to "draw" an extended centerline to a geographically accurate depiction of the runway. Even older technology cockpits can be used to provide distance remaining and lateral cues to prevent a wrong airport landing.

► **Familiarity.** We pilots seem to overestimate our memories and abilities to recall the visual picture of airport environments. Even though you may have been to an airport a hundred times, your experience may not be helpful if the last visit was years earlier. If you've been to an airport once or twice, the experience may not be applicable in different environmental conditions.

The best aid to landing at unfamiliar airports is an instrument approach, especially one with vertical guidance. Even when using an instrument approach as a "backup," you should ensure the approach is used correctly. A conventional ILS, VOR or NDB approach requires you to tune, identify and monitor. If using a satellite-based approach, ensure it is retrieved from the navigation database and loaded in accordance with the manufacturer's procedures, i.e., don't "build" it from scratch.

Pilots should think vertically as well as laterally when backing up a visual approach with instruments. Since many wrong airport pairs have very close extended runway centerlines, having the vertical glideslope or path displayed can provide the needed discriminator.

► **Time of Day and Weather.** In most cases, wrong airport or wrong runway landings occur in clear weather with very good visibility. Although some wrong airport landings happen during the day, many happen at night. Our vision at night is easily tricked. Our eyes deceive our brain with respect to height, distance and closure rate — all critical visual elements for piloting.

Here again, the cure is having an

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instrument approach to confirm or deny what we think our eyes are telling us. With or without an instrument approach, in day or night conditions, you should also brief the expected lighting. In every example given, recognition of a difference in the approach lighting system or visual glideslope lights (VASI, PAPI) could have provided pilots a warning about landing at the wrong airport.

► **Early Approach Clearance.** Another common thread to wrong airport landings is an early visual approach clearance. A radar controller's lateral callout can be wrong because of the aircraft's drift angle. A distance callout can be wrong because of the time lag of the scan, the recognition time of the controller and the transmission time to the pilot. But even with an accurate callout, pilots tend to overestimate their ability to turn called-out distance and bearing information into visual distance and direction.

Because cockpit avionics provide varying degrees of situational awareness in a visual environment, pilots must become expert consumers of the information provided. As with the other precursors, an instrument approach and other electronic means of distance measuring can keep pilots out of trouble.

► **The Desire to Go Visual.** It is a profound paradox in aviation that new VFR pilots dream of becoming IFR pilots and IFR pilots yearn to fly visual approaches.

Professional IFR pilots should learn to fly visual approaches while keeping an eye on the instruments until all available lateral and vertical guidance

agrees with their eyes, before relying solely on their eyes. In many cases of wrong landings, the pilots involved expressed doubt in the cockpit but continued the approach onto the wrong runway or wrong taxiway. It seems many of us are too proud to ask for help until it is too late. The cure should be obvious: When in doubt, ask. In several of our examples, a simple "do you see us on a mile final?" would have saved a career or two.

► **Fatigue and the Stable Approach.** Pilot fatigue is often a documented factor in wrong landings, often leading pilots to fixate on the first airport or surface sighted and rush the subsequent visual landing. An early callout, it seems, is a sign of good eyesight or pilot skill. When our eyes see what we expect to see, circumstances can conspire to confirm our expectations.

A good way to avoid the rush to errant judgment, especially at the end of a long duty day, is to refrain from accepting a visual approach until the instruments agree with our eyes. If we find ourselves unexpectedly high and needing to abandon stable approach criteria, our instincts should cry out, "go around!"

How to Avoid Being Headline News

Should we be overly concerned with a wrong runway or wrong surface landing? With modern avionics and the proliferation of radar-equipped approach and tower controllers, the odds are stacked in our favor. But wrong airport landings continue to occur and we very nearly had a catastrophe on our hands just last summer in San Francisco. The solution, quite often, is simply keeping our situational awareness up with an instrument approach as a backup to the visual approach. These days, with the proliferation of RNAV (GPS) approaches there can be no excuse for ending a flight on the wrong surface.

During my first year as an Air Force pilot we had two Northrop T-38 Talons crash into the approach lights of two different airports while their pilots attempted visual landings without course or glidepath guidance. I became paranoid about always picking runways that gave me both whenever possible, especially at night. After 40 years of flying, I'm thinking perhaps a little paranoia is a good thing. **BCA**