CALLBACK
From NASA's Aviation Safety Reporting System
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Crossing the Line: Runway Incursions

Runway incursions, a top FAA safety concern, are formally defined as "any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft."[1] Runway incursions can be caused by Pilot Deviations, Air Traffic Controller Operational Incidents, and Ground Vehicle Deviations. Examples of these errors include:

Pilot Deviations
- Crossing a runway hold marking without ATC clearance
- Taking off without clearance
- Landing without clearance

Controller Operational Incidents
- Clearing an aircraft onto a runway while another aircraft is landing on the same runway
- Issuing a takeoff clearance while the runway is occupied by another aircraft or vehicle

Vehicle (Driver) Deviations
- Crossing a runway hold marking without ATC clearance

Regardless of whose actions caused it, the inappropriate or unauthorized presence of an aircraft or vehicle on an active runway can lead to serious consequences. The following ASRS reports offer insight into some of the human factors and other issues involved in runway incursions.

Primed and Ready for an Error

Expectation bias, fueled by familiar precursors to a "line up and wait" clearance, led this B737 flight crew to enter the runway prematurely.

■ *We were holding short of Runway 06L and takeoffs and landings were being conducted on the runway. The Captain had mentioned that he had a commute to catch at [our destination] and we were issued a wheels up time. The aircraft ahead in the run-up area was cleared for takeoff. I glanced right, saw the next arrival for the runway and thought we might be able to get out before him if we got clearance right now. The Captain released the parking brake to inch forward to the Hold Short line since the aircraft ahead had departed. As we were rolling, the Tower Controller issued instructions to amend our departure. I read them back and then focused my attention on the automation to reset the departure…. As I looked back outside the aircraft, I saw that we were lining up on the runway. As my focus had been inside the airplane, I did not immediately perceive any error. I then tried to think back whether we had been cleared to line up. As we lined up, ATC instructed another aircraft to go-around. It then clicked that we had never been cleared to line up and wait. The Captain then also realized his error.*

Some factors included how ATC worded the departure amendment in a way that sounded like the precursor to a line up and wait or takeoff clearance. Another was glancing at the next arrival. Since our wheels up time had come, my mindset was that we were next and had enough room if we got clearance to takeoff right away. When ATC issued the departure amendment, the aircraft was already rolling forward as my head went down. I felt aircraft movement because we had been creeping forward, but did not realize how far we had gone before putting my head back up.

Eighty Degree Error

A PA28 pilot learned a lesson about the importance of a basic sense of direction or the use of basic navigation equipment in selecting the correct runway. The incident also serves as a reminder to Tower Controllers to be aware of the possibility that a pilot is approaching the wrong runway when an aircraft doesn't show up where it is expected to be.

■ *Approach Control reported radar contact and gave me visual approach instructions for landing on Runway 14. Approaching from the east, I had [the field] in sight from about 10 miles out. From the moment I had the field in sight, I incorrectly viewed Runway 06 as my assigned runway. I had the Airport Diagram on my knee board. I simply failed to identify the assigned runway with my heading indicator, compass, or other ground references. The Approach Controller advised that the Tower Controller's Radar was inoperable. I was asked to report a two mile left base for Runway 14. I actually reported a two mile left base for Runway 06. I was cleared to land on Runway 14, but I continued for Runway 06. On final, the Tower Controller advised he did not have me in sight. As I was touching down on Runway 06, the Tower Controller asked for my current position and I advised I was touching down.*

I believed I was landing on Runway 14, however I was clearly flying to the northeast. As a new private pilot with [about 100] hours of experience, I failed to properly plan for and make accurate decisions on this approach and landing.

I should have been much more concerned that the Tower Controller did not have me in sight. Although I was cleared to land, the better decision would have been to execute a missed approach and land only after the Tower had me in sight.

Right Runway... Wrong Airport

In some instances landing on the correct runway is only half of the problem. You also have to land at the correct airport. A TRACON Controller and a low-time private pilot reported their perspectives on an excursion to a distant incursion. It should be noted that ASRS reports indicate high-time pilots are also susceptible to this type of visual distraction, particularly on night approaches.

Controller's report:

■ *Pilot was cleared for a visual approach to Runway 18 and was told to follow traffic. The pilot said that he had the traffic in sight and would follow the traffic. He then descended and landed on Runway 18 at an airport six miles north. When the pilot called the TRACON, I asked him what happened. He advised that when he turned behind the traffic to follow, he was lined up perfectly for Runway 18 at the other airport, got focused on the runway, and just landed there.*

Pilot's report:

■ *I was on an easterly heading northwest of [destination] at 3,000 feet MSL. I was cleared for the visual to Runway 18 and told to follow a King Air. When I turned to the south I misidentified Runway 18 at [a nearby field] as Runway 18 at [destination]. The runway lights were illuminated on Runway 18 at [the other airport]. I lost visual contact with the King Air and proceeded to land on Runway 18 at the wrong airport. This mistake could have been avoided by flying the approach to Runway 18 at [destination] using the navigational equipment available in the airplane.*

Follow That Plane

Taxi clearances that include instructions to follow a preceding aircraft can be problematic. In the following report a Ground Controller advised that he "should not have relied on the pilot to follow the preceding aircraft."

■ *When we are using Runway 06, our taxi routes get quite complex and Runway 18R is used as a taxiway. A Grumman was given instructions to taxi via Echo, Runway 18R, and Hotel, Cross Runway 18L. I provided him with progressive taxi instructions as he was taxiing. A Cessna called up right after him and was given the same taxi instructions. The Cessna was also instructed to follow the Grumman and reported it in sight. The Cessna was taxiing on Runway 18R as expected and was approaching the turn onto Taxiway Hotel which runs adjacent to Runway 06. I was distracted for a moment and then the Local Controller said the Cessna missed his turn and was going onto the runway. The Local Controller had just cleared the Grumman for takeoff, but was able to stop the aircraft in time.*

I instructed the Cessna to hold position and informed him that he missed Taxiway Hotel and had taxied onto the runway. I then instructed him to make a "180" and turn left on Taxiway Hotel.

After listening to the recorded transmissions between the Cessna and myself, it is apparent that he did not readback the taxi instructions correctly and I failed to hear the readback and correct him. Knowing that Runway 06 operations are tricky when it comes to taxiing, I should not have relied on the pilot to follow the preceding aircraft. I believe that by the pilot agreeing to follow the aircraft it allowed me to relax and miss errors in the readback.

Head to Head with a Snowplow

Seasonal deterioration of airport weather conditions increases the need for taking runway condition readings and removing snow. The chance of runway incursions by the associated airport vehicles also increases. In the following report, a PC12 pilot had a face-to-face encounter with a snowplow when it was too late to reject the takeoff.

■ *The field conditions were snow depths of .5 to 1.0 inches and braking action fair to poor. Prior to takeoff, I made a radio call on the CTAF that I was taxiing to Runway 30. I saw a snowplow on Taxiway A. I did not hear any ground vehicles using the CTAF. I heard a Metroliner transmit on CTAF their intentions of landing Runway 30. We had a brief two-way communication and agreed that I would hold short of Runway 30 on Taxiway B, at the approach end of Runway 30, for the Metroliner landing.... I watched the Metroliner clear Runway 30 then switched my radio to ATC and received my IFR Clearance. I switched back to CTAF and, prior to entering Runway 30, transmitted my intentions for takeoff.*

Visually checking the final approach path and the runway to be clear of traffic and hearing no traffic on CTAF, I commenced the takeoff. During the takeoff roll, a snowplow entered Runway 30 from the crossing runway. The snowplow turned right, making a 90 degree turn towards me. When I saw the snowplow pull in front of me, I was at rotation speed and continued the takeoff. I would estimate that I crossed over the snowplow by 100 feet vertically and less than 50 feet horizontally.

There were no NOTAMs for snow removal that morning. I did not hear any airport personnel utilizing the CTAF.

[1] FAA definition

ASRS Alerts Issued in September 2014	
Subject of Alert	**No. of Alerts**
Aircraft or Aircraft Equipment	8
Airport Facility or Procedure	9
ATC Equipment or Procedure	1
TOTAL	**18**

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September 2014 Report Intake	
Air Carrier/Air Taxi Pilots	4,585
General Aviation Pilots	1,306
Controllers	633
Flight Attendants	449
Mechanics	192
Military/Other	133
Dispatchers	105
TOTAL	**7,403**