



Runway RISKS

Reducing Incursions, Excursions, and Confusion

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Did you know...



Factors that may result in a runway incursion include:

- » Inadvertent non-compliance with ATC clearances. These often result from a breakdown in communications or a loss of situational awareness.
- » Inadequate signage and markings.
- » Controllers issuing instructions as the aircraft is rolling out after landing (when pilot workload and cockpit noise are both very high).
- » Pilots performing mandatory head-down tasks, which reduce situational awareness.

ALPA has worked hard and successfully for many years to improve runway design, markings, signage, and the technology that guides us. But nothing can replace the awareness of a pilot in the cockpit.

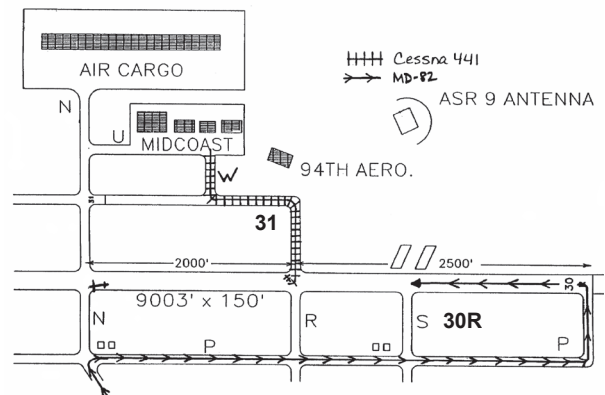
Through our new campaign, "Hold Short for Runway Safety," ALPA will focus its efforts on preventing runway incursions, excursions, and confusion. We will provide you commonsense guidance that will help prevent operational breakdowns. Every pilot knows we have too much to do and not enough time to do it between getting in the cockpit and hitting Vr.

Case Study—

St. Louis International Airport, November 1994

Following is an excerpt from the National Transportation Safety Board's Aircraft Accident Report #95/05, which describes the runway collision of an MD-82 and a Cessna 441 at the intersection of Runway 30R and Taxiway Romeo at the Lambert-St. Louis International Airport in November 1994. The Cessna pilot had been cleared into position and hold on Runway 31, but he mistakenly taxied onto Runway 30R instead and unwittingly became a fatal accident waiting to happen while sitting for several minutes in the darkness on the wrong runway. The MD-82 crew saw the Cessna just moments before impact and veered left, which minimized damage to the airliner, but the right wing sheared off the top of the C441 and instantly killed its two occupants.

Late in the evening of November 22, 1994, at 2203 Central Standard Time, Trans World Airlines Flight 427, a McDonnell Douglas DC-9-82 (MD-82), collided with a Cessna 441 at the intersection of Runway 30R and Taxiway Romeo, at the Lambert-St. Louis International Airport in Bridgeton, Missouri. The MD-82 was operating as a regularly scheduled passenger flight from STL to Denver, Colorado. There were 132 passengers, five flight attendants, and three flight crewmembers [including a jumpseat occupant] aboard the airplane. The MD-82 sustained substantial damage during the collision. The Cessna 441 was destroyed. A commercial pilot and a passenger, who were rated as a private pilot, were the sole occupants



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Visit www.alpa.org

to learn more about runway safety and ALPA initiatives to continuously improve aviation safety.

Did you know...

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Following are some of the questions investigators will ask after a runway incursion event.

1. How clearly could you see at the time?
2. Was weather a problem?
3. Did you review the airport diagram before taxiing?
4. Did you use the airport diagram as you taxied?
5. How many other aircraft were on the taxiway?
6. Were you following another aircraft that you believed had the same taxi clearance?
7. Could you see the airport signs, pavement markings, and lighting from the flight deck?
8. Were there elevated runway "Guard Lights" (wig wag) or in-surface lights available at the intersection?
9. Were "Stop Bar Lights" available at the intersection?
10. Were you or another pilot on board communicating with ATC?
11. Were you wearing a headset?
12. How congested was the radio frequency when you received your clearance?
13. How congested was the radio frequency when the event occurred?
14. Did you receive the taxi clearance you expected?

Case Study—St. Louis International Airport

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on board the Cessna and were killed. Of the 140 persons on board the MD-82, eight passengers sustained minor injuries during the evacuation.

The National Transportation Safety Board determined that the probable cause of this accident was: the Cessna 441 pilot's mistaken belief that his assigned departure runway was Runway 30R, which resulted in his undetected entrance onto Runway 30R, which was being used by the MD-82 for its departure. Contributing to the accident was the lack of Automatic Terminal Information Service (ATIS) and other air traffic control (ATC) information regarding the occasional use of Runway 31 for departure.

Crew Communications

Following are key radio transmissions and statements made in the MD-82 cockpit. It should be noted that not all of the radio transmissions were heard by all parties involved. The transcript has been redacted for brevity.

| | | |
|----------|-------|---|
| 9:55:02 | ATIS | Saint Louis Lambert Airport information Delta. Zero two five zero Zulu; weather two five thousand, thin scattered, visibility two five, temperature three four, dew point two two, wind two eight zero at eight, altimeter three zero five six; simultaneous visual approaches utilizing runway three zero right, ILS localizer, runway three zero left, LDA DME localizer; notice to airmen, VICHY VOR out of service, taxiway Alpha south is now known as taxiway Delta, taxiway Delta closed from taxiway Charlie to the airline ramp. Advise on initial contact you have Delta. |
| 9:56:03 | MD-82 | MD-82 taxi with ah, Juliet at, at Juliet |
| 9:56:13 | MD-82 | Ground, MD-82 at Juliet, taxi |
| 9:56:17 | Tower | MD-82, Saint Louis ground, roger and runway three zero right, hold short runway three zero left, taxiway Hotel |
| 9:56:23 | MD-82 | Three zero right, hold short of the left at Hotel, MD-82 |
| 9:57:49 | Tower | OK, C441, you're cleared to the India-Mike-Tango airport via the CARDS three departure, NEENS transition, then as filed, maintain three thousand, squawk one one zero five |
| 9:58:05 | C441 | OK, understand, three thousand, one one zero five, for C441 |
| 9:58:12 | Tower | C441, readback is correct, where you parked, and are you ready to taxi? |
| 9:58:15 | C441 | I'm at Midcoast and, yes, we are ready to taxi |
| 9:58:19 | Tower | C441 roger, back taxi into position, hold runway three one, let me know on this frequency when you're ready for departure |
| 9:58:23 | C441 | C441 |
| 10:01:22 | MD-82 | And MD-82's ready |
| 10:01:24 | Tower | MD-82, winds two seven zero at seven, runway three zero right, turn right heading three three five, cleared for takeoff |
| 10:01:30 | MD-82 | Three thirty five and cleared to go, MD-82 |
| 10:01:34 | Tower | And, uh, C441, you ready for departure? |
| 10:01:38 | C441 | C441, yeah, we're ready (unintelligible) |
| 10:01:41 | MD-82 | Confirm, uh, three twenty five for MD-82 |
| 10:01:47 | Tower | MD-82 three three five |
| 10:01:50 | Tower | Roger that, C441 hold on position on runway three one and monitor the tower on one two zero point zero five |

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| | | |
|----------|-------------------------|---|
| 10:01:50 | MD-82 | Three three five, thanks |
| 10:02:01 | C441 | (Unintelligible) understand position and hold, monitor the tower, C441 |
| 10:02:27 | MD-82 CVR | Sound of increasing frequency similar to aircraft accelerating on runway |
| 10:02:29 | C441 | And C441's ready to go on the right side |
| 10:02:30 | Tower | Roger, I can't roll you simultaneously with the, traffic departing the right. Just continue holding in position. I'll have something for you in just a second |
| 10:02:37 | C441 | C441 |
| 10:02:44 | MD-82 CVR Jumpseater | There's an airplane! |
| 10:02:47 | MD-82 CVR | Sound of impact |

Factors contributing to the accident

The two STL tower controllers were very busy, with one controller working four positions and monitoring seven radio frequencies. Normally during peak hours, each of those positions was staffed by a separate controller. Although visibility was good, this event demonstrates that it is not difficult for controllers to lose situational awareness of an airplane on the ground in periods of darkness. To complicate matters, the GA pilot had likely only activated the aircraft's navigation lights, displaying no red beacon, taxi lights, or wingtip strobe lights. Other factors that were part of the causal chain of events included:

- » ATIS only referenced operations on Runways 30L and 30R, omitting Runway 31.
- » C441 landed on Runway 30R and was making a rapid turnaround for home.
- » C441 pilot had operated into STL only once in last year, during daylight hours.
- » MD-82 crew heard only Ground Control radio transmissions to C441.
- » MD-82 crew only heard C441 transmissions when accelerating for takeoff, and then, ATC indicated that the C441 was not on 30R.
- » C441 was sitting in a runway intersection waiting for takeoff clearance for three minutes.

Lessons Learned

- » Even when visibility is good, the tower controller may lose situational awareness.
- » Listen to all radio transmissions to develop a mental picture of what is occurring around you. Don't hold on an active runway for long periods; FAA recommends holding no more than two minutes.
- » Aircraft can be very difficult to see at night from behind, even with lights on. Keeping landing and logo lights on whenever on an active runway will improve your conspicuity to ATC and other pilots.
- » If you have a jumpseat rider (i.e., Additional Crew Member (ACM)), put their eyes and ears to use for you outside of the cockpit. The ACM on flight 427 was the first one in the cockpit to call out a collision warning.

Did you know... Continued

15. *If all or part of the clearance was not completely clear, what about it was unclear?*
16. *Did you need to ask ATC for clarification?*
17. *Did you write down the clearance?*
18. *Did you read back the taxi clearance?*
19. *How did you note any hold-short locations in the clearance?*
20. *Did you read back the hold-short clearance?*
21. *Did you confirm the "hold-short" with another crewmember?*
22. *How much sleep did you have prior to the event?*
23. *How many hours was it from the time you woke up to the time of the event?*
24. *If you were feeling fatigued just prior to the event, indicate your amount of fatigue.*
25. *Were you feeling rushed at the time?*

Forewarned is forearmed.

To see the actual FAA form where these questions came from as part of the Runway Incursion Information Evaluation Program (RIIEP), please follow this link.

ALPA has developed a special website dedicated solely to runway safety. There you will find links to runway safety educational material and video recreations of several high-profile incidents. Material on this website is being added on a regular basis, so stop by for the latest information on runway safety. Previous issues of this newsletter can also be found there. The website address is holdshort.alpa.org.

ATC Terminology



Change Soon to Be Implemented in Canada

On April 10, 2008, as part of its continuing effort to conform to international best practices, NAV CANADA will adopt the ICAO-recommended phraseology "LINE UP" or "LINE UP AND WAIT" when controllers instruct an aircraft to enter the runway intended for takeoff.

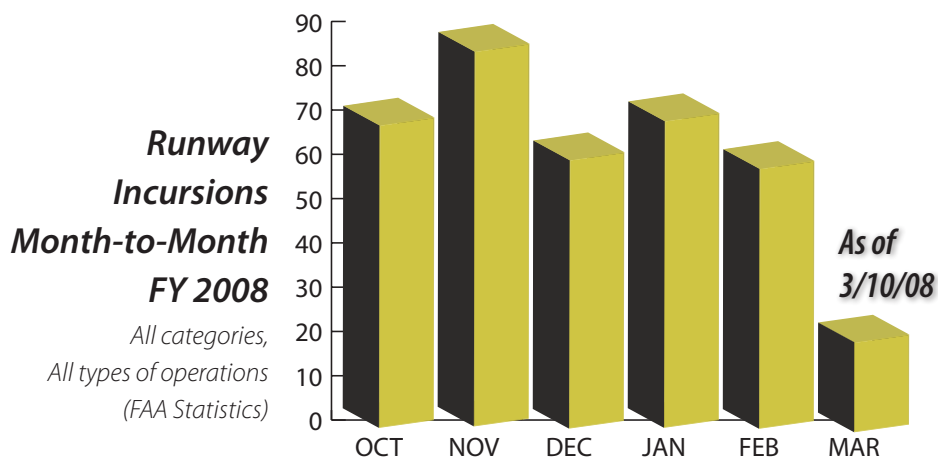
Current Phraseology

"TAXI TO POSITION" or "TAXI TO POSITION AND WAIT"

New Phraseology

"LINE UP" or "LINE UP AND WAIT"

Pilots are urged to remain alert to the different phraseologies that may be encountered when operating near runway thresholds.



Our Goals

While our main goal of distributing this newsletter is to increase your education and awareness of runway safety hazards, ALPA is also committed to providing access to educational resources on our website. In addition, we strive to:

1. immediately provide you with awareness tools,
2. conduct this educational campaign to provide information to line pilots,
3. continue the pursuit of long-term system mitigations of runway collision hazard.

Do you have a best practices recommendation for safe airport operations?

Through personal experience, many pilots have learned or developed their own best practices for safe operations. If you have a suggestion regarding safe operating procedures in the airport environment, please share it with us by clicking on the button below. All suggestions will be reviewed and considered for publication in subsequent newsletters.

Thank you for your contribution.

Thank you for reading this edition of ALPA's runway safety newsletter. Please provide us with your comments on this critical topic and look for future issues for more information regarding runway safety.