

Runway Incursions

What is a runway incursion?



"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."

Objective

Understand the causes of runway incursions and how to avoid them.

Motivation

Runway incursions are a significant safety concern in aviation. Understanding the causes and prevention strategies is essential for maintaining safety on the ground.

Overview

Tools in Our Toolbox

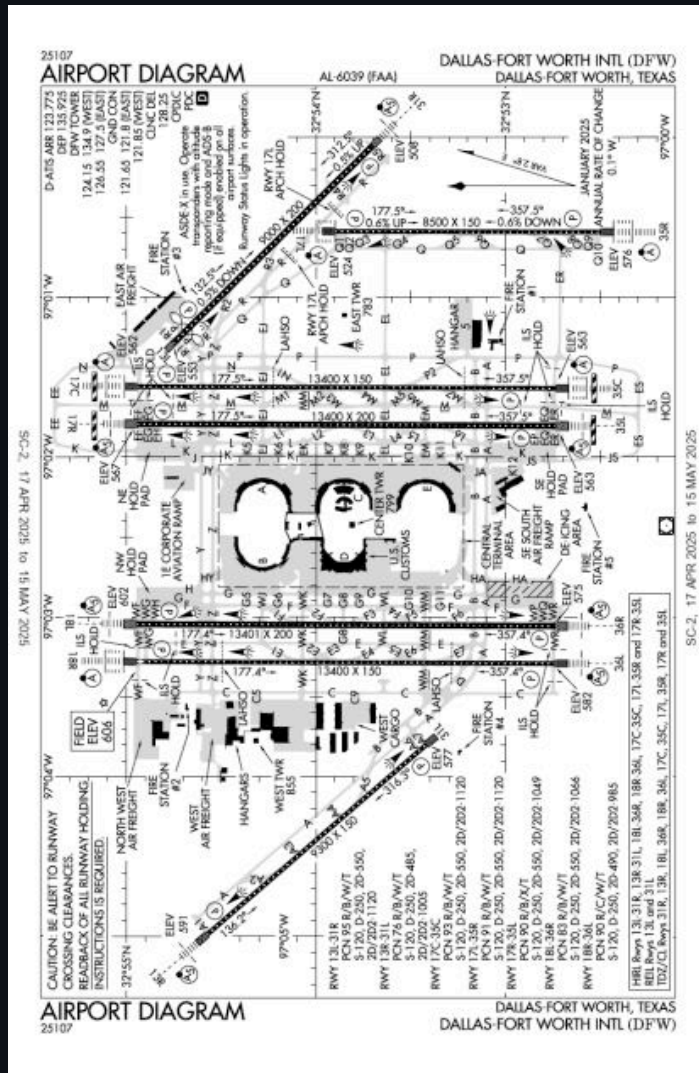
- NOTAMs
- Airport diagrams and EFBs
- Hotspots
- Progressive taxi
- Writing down taxi instructions
- Confirmation of instructions
- Distractions and a sterile cockpit

Situations Needing Extra Care

- Complex intersections
- Parallel runways
- Intersecting runways
- LAHSO
- ILS critical areas
- Night and low-visibility

Ground Operation Challenges

- Airplanes may have poor visibility on the ground
- Lots of airplanes are in close proximity
- Complex runway and taxiway layouts



Tools for Runway Incursion Avoidance

Notice to Airmen - NOTAMS

Close

KPDX
Portland International

★

Direct To

Add to Route

Fullscreen

Info

Weather

Runway

Procedure

NOTAM

Airport

Obstacle

TFR/ARTCC

Q Filter

OLDER

T

PDX TAXIWAY G BETWEEN RUNWAY 03/21 AND SOUTHWEST RAMP **CLOSED.** PDX 01/001

Effective Jan 2, 5:40 AM PST (Active)

Expires Dec 31, 2026, 3:59 PM PST (in 595 days)

PDX SERVICE AUTOMATED WX BCST SYSTEM NOW 458-212-2405. PDX 12/005

Effective Dec 3, 2024, 1:37 PM PST (Active)

Expires Jun 3, 2025, 4:59 PM PDT (in 19 days)

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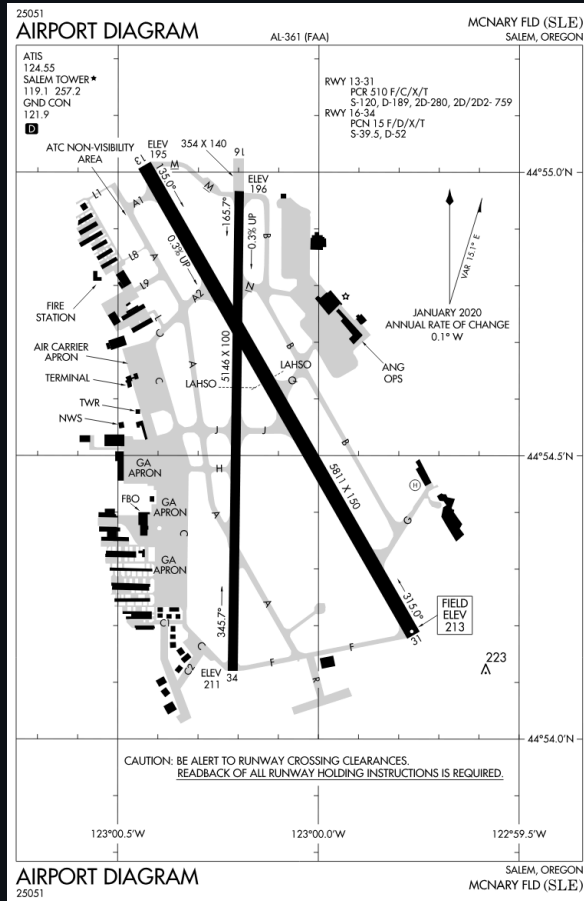
PDX TAXIWAY K BETWEEN GATE D5 AND GATE E3 **CLOSED TO AIRCRAFT WINGSPAN MORE THAN 118FT.** PDX 12/003

Effective Dec 3, 2024, 10:00 AM PST (Active)

Expires Dec 31, 2026, 8:00 PM PST (in 596 days)

- Check before every flight
- Found in an EFB or FAA NOTAM site
- May include:
 - Taxiway closures
 - Runway closures
 - Construction
 - Wildlife activity
 - Other hazards
- Mark closures or hazards on the airport diagram

Airport Diagrams



- Included in Chart Supplements
- GTN also includes SafeTaxi
- ForeFlight also includes airport diagrams
- Make a habit of displaying the diagram before taxi

not to
Landing

in Operation.

16L-34R
16L, 34R

0.8% UP
344.7°

ILS HOLD

ELEV 356

34L

TRANSIENT PARKING

FIRE STATION

ELEV 363

34C

0.8% UP
344.7°

05L X 106

NORTH RAMP

TWR/BCN

TOWER RAMP

SOUTH RAMP

ADMINISTRATION/TERMINAL

U.S. CUSTOMS

HS 1

SOUTH RAMP

CARGO

ILS HOLD

7

TANKS

SOUTH APRON

HANGARS

47°26'N

Ramp Frequencies:
North Ramp: 126.875
South Ramp: 122.275

operate transponders
ing mode and ADS-B
ed on all airport surfaces.

W/T
2D-550, 2D/2D2-1111

B/W/T
2D-550, 2D/2D2-1120

- Areas that may cause confusion or have a higher potential for runway incursions
- Marked on the airport diagram
- Read the hotspot information in the Chart Supplement

Taxi Clearances

- Expectation vs actual taxi instructions (expectation bias)
- Always record taxi instruction
- Unambiguous understanding of instructions
- Display an airport diagram in the cockpit (especially on a moving map)
- Use progressive taxi if unsure or unfamiliar

Example Clearance

The ATC clearance is:

N2017E taxi runway 9R via Bravo, Echo Juliet, Hold Short 4L at Echo

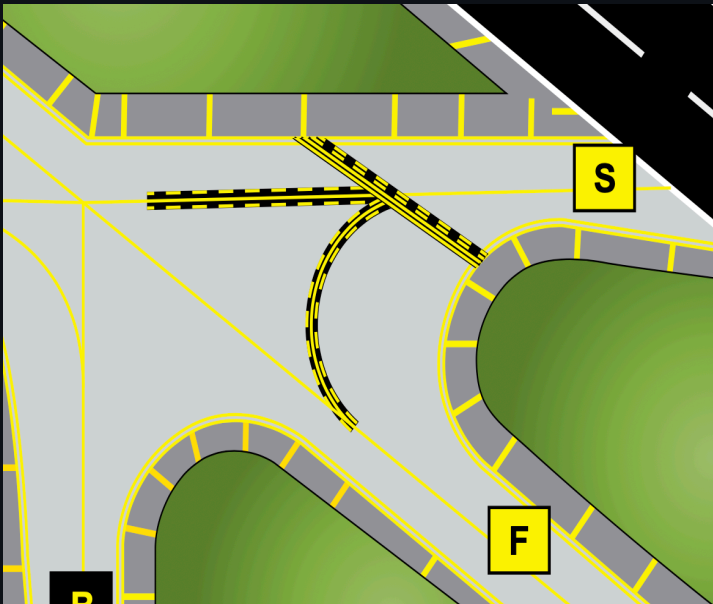
The ATC clearance written:

9R B E J 4L E.

Where the clearance limit of 4L at Echo is circled.

(AC 91-73B)

Stop and Confirm at Hold Short Lines



- Stop prior to any hold short line
- An explicit clearance ("cross runway 12") is always required
- Notice enhanced centerline stripes prior to the hold short line
- When in doubt, stop and ask ATC if you're cleared to cross

Runway Guard Lights - Hold short bars

Also called "wig-wag" lights

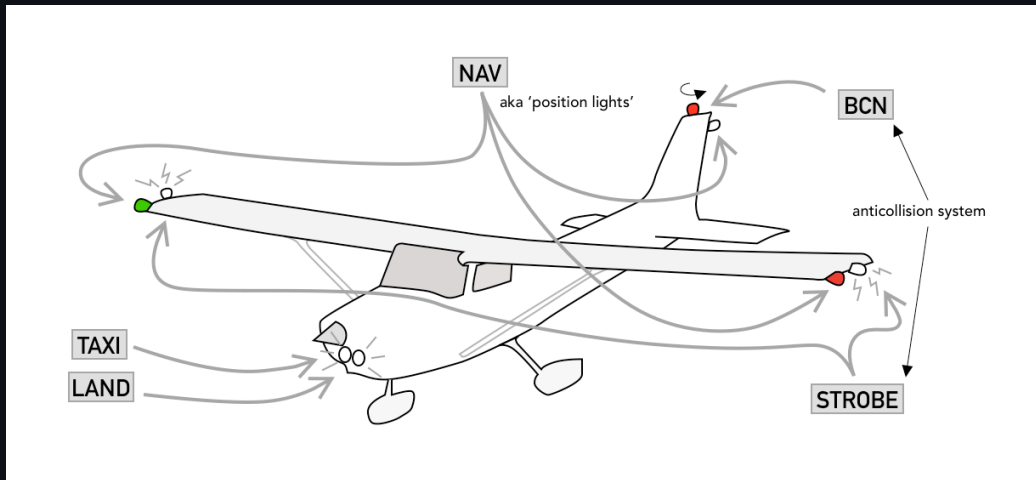


Avoiding Distractions and Managing Workload



- Keep additional workload to a minimum
- Avoid distractions while taxiing
 - Communicating with ATC, if not necessary
 - Programming avionics
 - Run-up procedures
 - Conversation with passengers
- Disorientation can lead to confusion

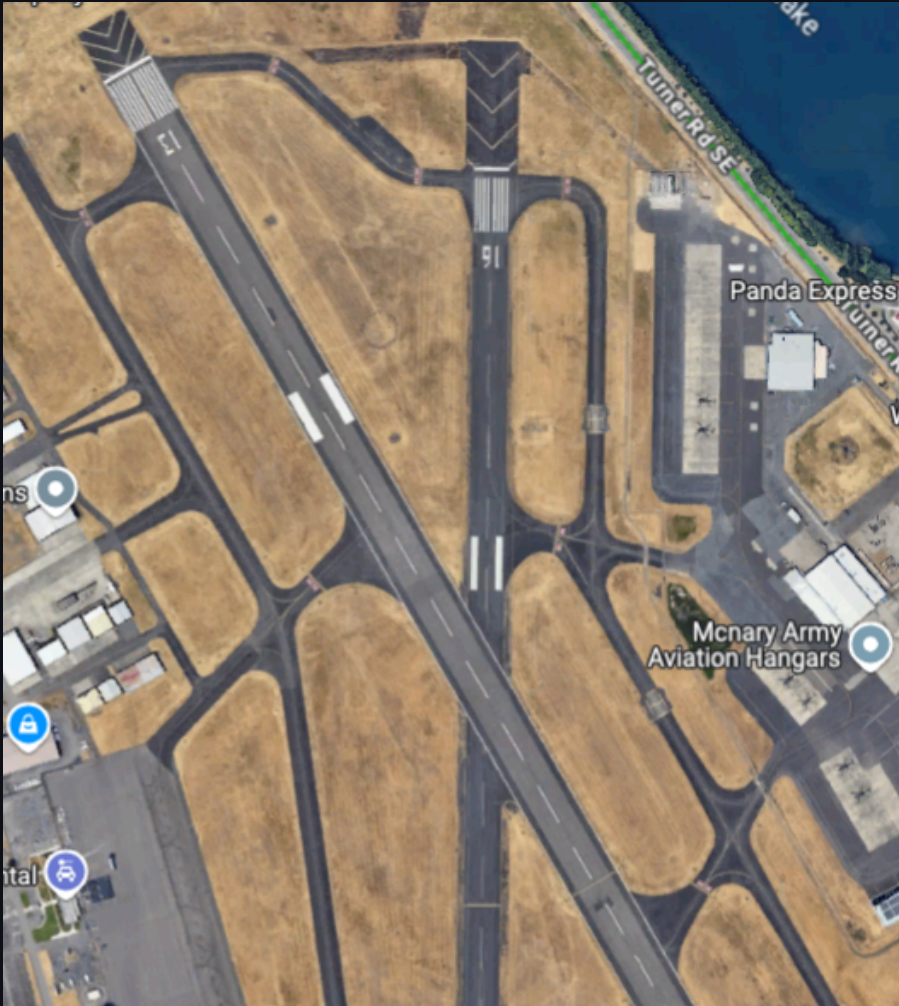
Aircraft Lighting (91.209)



- Anti-collision/beacon: On all the time
- Position lights (red/green): Sunset to sunrise
- Taxi light used for taxi
- Taxi + landing lights should be used for takeoff
- All lights on when crossing runways

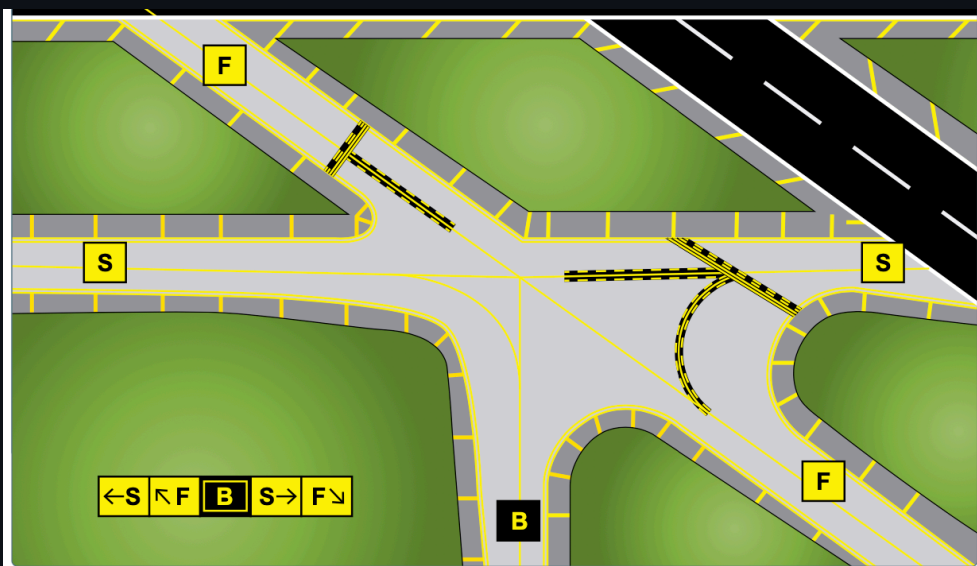
Scenarios Requiring Extra Diligence

Intersecting Runways



- Don't confuse intersecting run way with a taxiway
- Aircraft may be operating from the other runway
- Runway/runway crossing will not have the same signage and markings as a taxiway/runway crossing

Complex Intersections



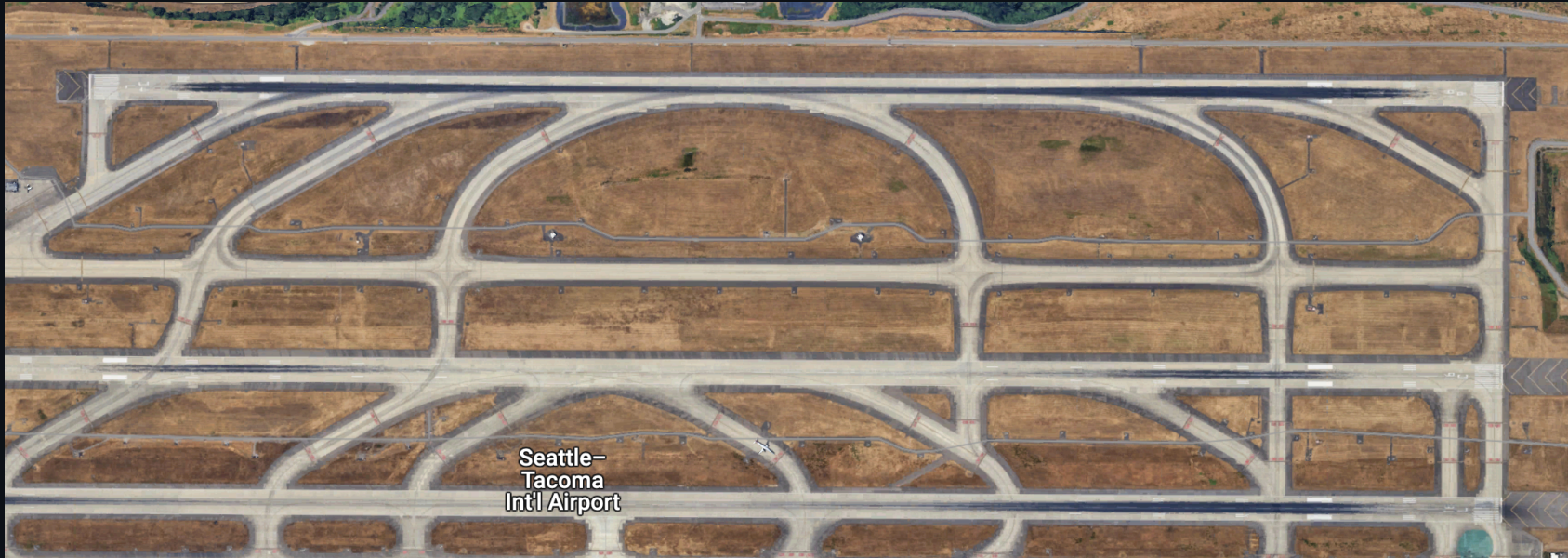
- Multi-taxiway intersections can be very confusing
- Be sure to read the signage carefully and cross-check with the airport diagram
- Use progressive taxi instructions if unsure
- Take extra care at night

Departing the Runway After Landing



- Departing the runway after landing
 - Move past the hold short line, getting out of the runway safety area
 - Run any checklists, then contact ATC
- Be careful rolling out onto a taxiway near another runway
- Never exit onto another runway without ATC authorization

Taxiing Between Parallel Runways



- Taxiing between parallel runways
 - Exercise increased awareness when taxiing in between active parallel runways
 - Ensure you're out of both runway's safety area

Uncontrolled Airfields



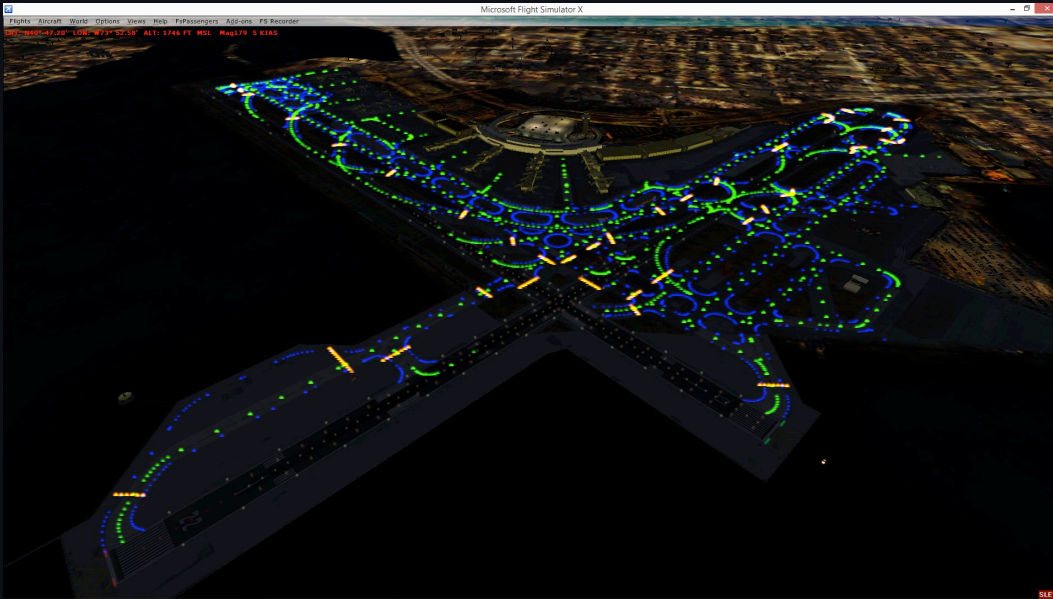
- Always scan the runway before entering
- Announce your intentions on the common frequency (AIM 4-1-9)
 - Announce before taxiing
 - Announce before taking a runway for takeoff
 - Announce when clear of runway after landing
- Remember not all airplanes have radios

Low Visibility Operations



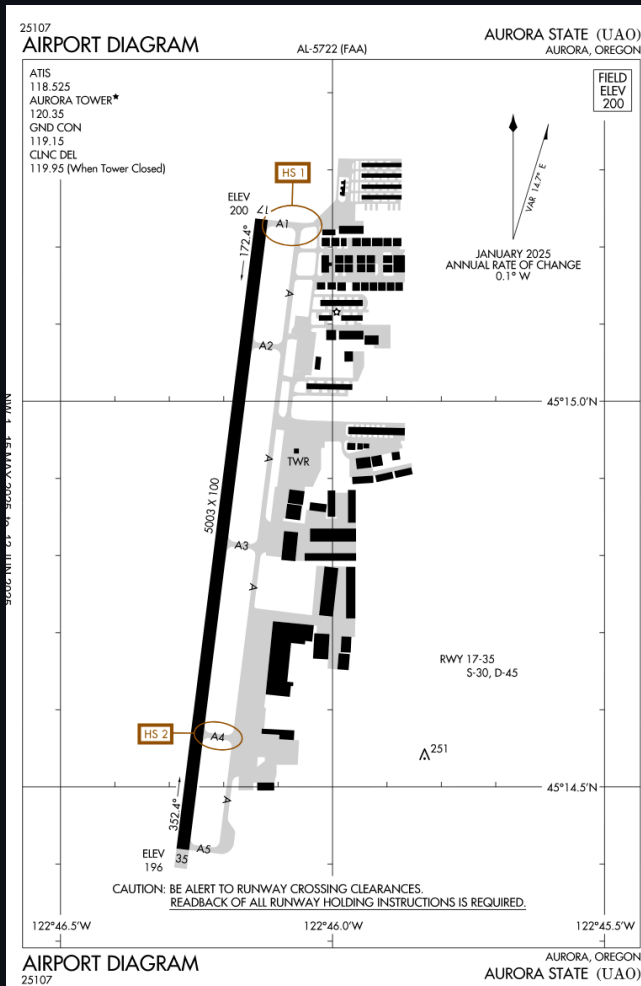
- Harder to see signs, other aircraft, and tell direction
- Taxi speed should be slower
- ATC may not be able to see you visually from the tower
- Take care to read lights and signs

Night Taxi Operations



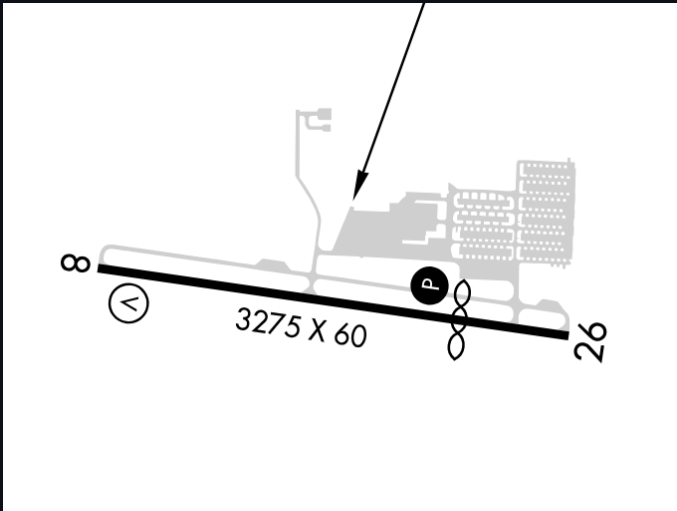
- Easy to get confused about position or direction
- Not all airport signs are illuminated
- Taxi speed should be slower
- Taxi lights should be used
 - But avoid shining into another airplane's cockpit
- Don't use strobe lights when taxiing

Local Examples: KUAO



- Aurora wasn't originally designed as a tower-controlled airport initially
- There have been historically been issues with pilots entering the runway from the ramp

Local Examples: KVUO



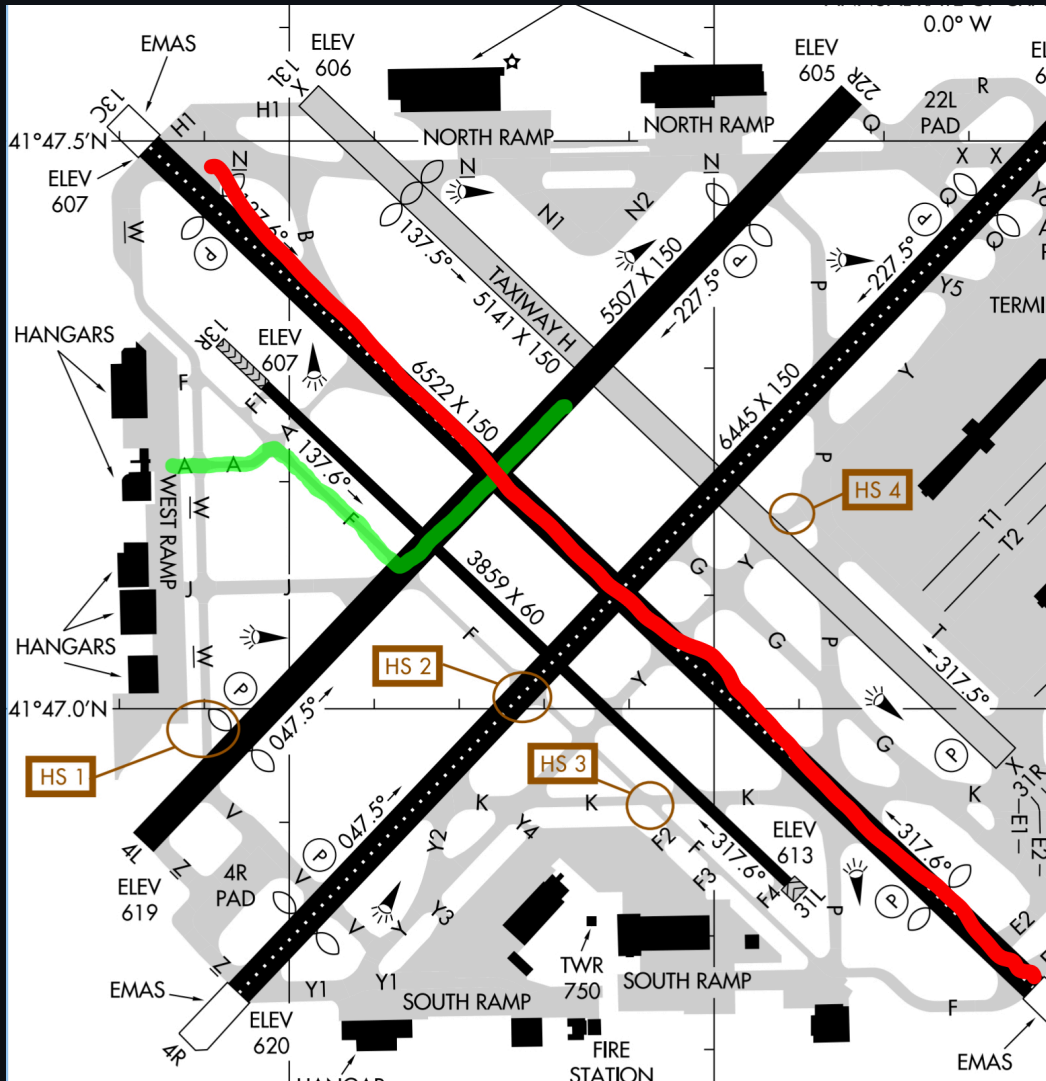
- SFRA rules apply
- We don't need a clearance to enter the runway, however
 - We *do* need to contact Pearson Advisory
 - We also need to announce our intentions like any other non-towered airport

Case Study: Chicago Midway Near-Miss



VASAviation Video

Case Study: Chicago Midway Near-Miss



- FlexJet obvious had some confusion from the start
- Crossing runways don't always have hold-short markings
- 31L is narrow, may have looked like a taxiway
- Other things we might not know:
 - Pilot's familiarly with the airport?
 - Distractions?
 - Expectation bias?
 - Time pressure?

Summary

- Ground Operations: Presents unique challenges
- NOTAMS, Hotspots, Complex Intersections
- Taxi Clearances: Expectations vs actual
- Hold Short Lines: Confirm you have a clearance to cross
- Distractions and Workload: Minimize distractions
- Specific Scenarios: Parallel runways, rollout near another runway
- Uncontrolled Airfields: No-radio airplanes are out there

Knowledge Check

Taxiing at a towered airport, you realized after passing a complicated intersection you that you've made a wrong turn. You're now on taxiway Juliet instead, when you were cleared via taxiway Bravo.

What should you do?

Knowledge Check

You've just landed and are taxiing off the runway. Where should you stop and do your after-landing checklist?

Knowledge Check

You are approaching a runway that you will need to cross to get to your destination.
You can't remember if ATC cleared you to cross.

What should you do?