Don’t Cross The Line! Runway Incursion Awareness & Avoidance

Federal Aviation Administration

Presented to: FAA Safety Seminar Attendees

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How to Download this Presentation

- You can download this presentation at the link below.
  - http://williamjdoylejr.net/FAAST/Runway_Incursions_2016/Runway_Incursions_2016.ppt
  - The link is case-sensitive.
  - You can email me doylewj@ix.netcom.com to request the link.

Presentation Agenda

- Pilot's Handbook of Aeronautical Knowledge – Runway Incursions
- ATC Taxi Instructions
- Airport Lighting – An Overview
- Runway & Taxiway Signs Flash Cards – A Quiz
- Pilot's Handbook of Aeronautical Knowledge Chapter 14 – Airport Operations
- Land and Hold Short Operations (LAHSO)
- A FAR You Really Need to Understand: 91.103
- Pre-Flight Planning: What You Can Do
- EFB "Gotchas"
- FAA Baseline Remedial Training Lesson Plan – Runway Incursions
- Appendix – Understanding Impairment Risk
  - **Meds and what they can do to you**

Runway Incursions

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Pilot's Handbook of Aeronautical Knowledge Chapter 14

Runway Incursions Overview

- **Types of Runway Incursions**
  - **Pilot Deviations**
    - Crossing a runway hold marking without clearance from ATC
    - Taking off without clearance
    - Landing without clearance
  - **Operational Incidents (OI)**
    - 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 clearance from ATC
- **FAA Data (approximately 3 incursions per day at towered airports in U. S.)**
  - 65% of runway incursions are caused by pilots
  - **≈50% of pilot runway incursions are caused by GA pilots**

Runway Incursions Overview

- **Causal Factors of Runway Incursions**
  - Airport complexity
  - Close proximity of runway thresholds
  - Joint use of a runway as a taxiway
  - Failure to comply with ATC instructions
  - Lack of airport familiarity
  - Nonconformance with standard operating procedures

Runway Incursions Overview

- **Ways to Avoid Runway Incursions**
  - Clear, concise, and effective pilot/controller communication for safe airport surface operations.
  - Pilot must fully understand and comply with all ATC instructions.
  - It is mandatory to read back all runway “hold short” instructions verbatim.
  - Taxiing on an unfamiliar airport can be very challenging, especially during hours of darkness or low visibility.
  - Pilot must ensure he/she has a current airport diagram
  - Pilot must remain “heads-up” with eyes outside, and devote his/her entire attention to surface navigation per ATC clearance.
  - All checklists should be completed only while the aircraft is stopped.
  - There is no place for non-essential chatter or other activities while maintaining vigilance during taxi. (Sterile Cockpit)

ATC Taxi Instructions

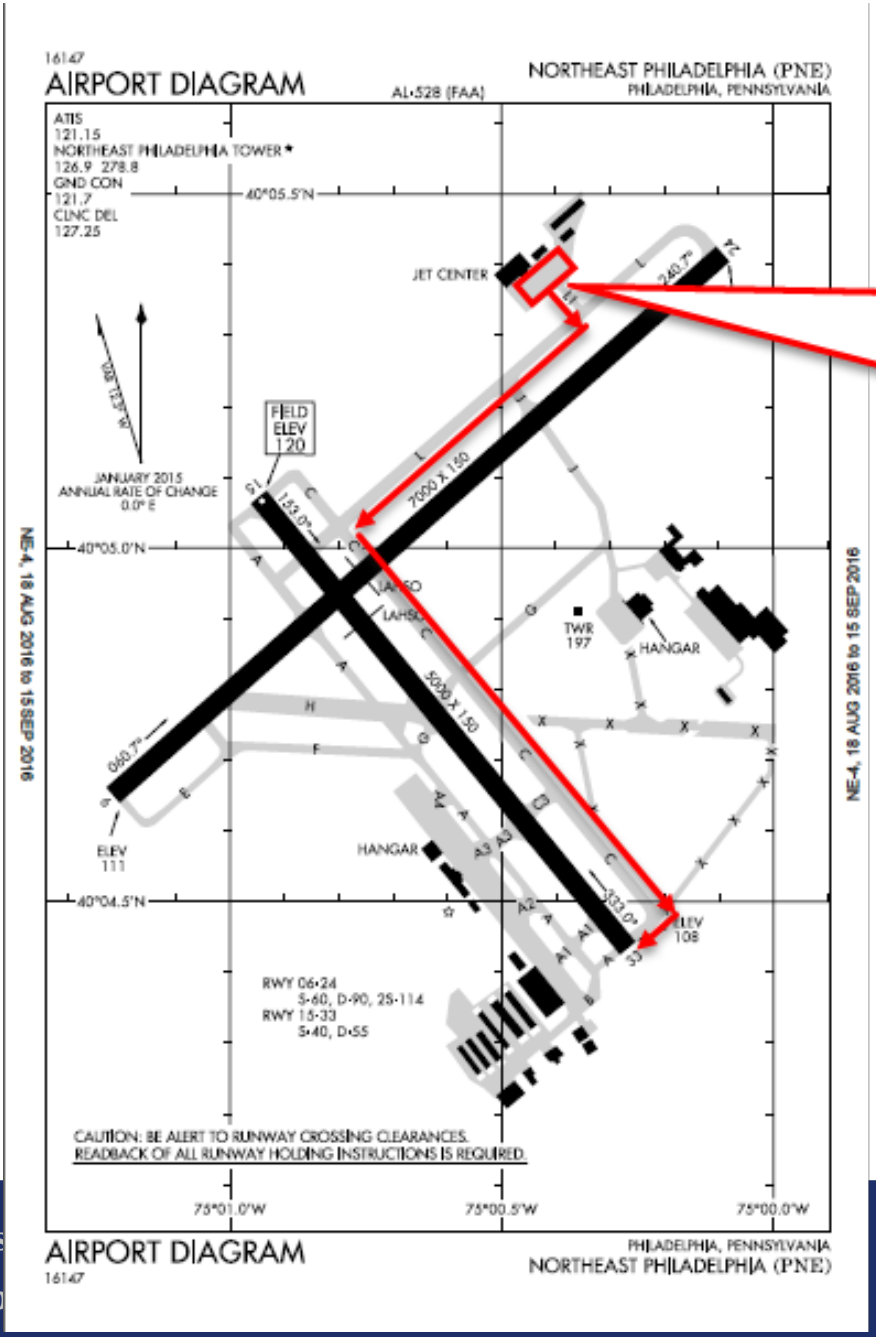
ATC Taxi Instructions

- **You are at Northeast Philadelphia Airport (KPNE) and want a northwest departure to Reading (KRDG). What do you do next?**
  - Get a briefing from Flight Service. ***Do this at home and again in the Pilots' Briefing Room.*** Pay attention to NOTAMS. Consider filing a VFR flight plan, if VMC.
  - Print out the KPNE Airport diagram and put it on your kneeboard. ***Do this at home.*** Consider using an EFB, if you have one.
  - Do a thorough preflight of your airplane.
  - Get the ATIS (after starting the engine and everything is in the ***"green"***).
  - Call ATC, using language similar to what is shown below.
    - You: "Northeast Ground, Cessna 12345"
    - Ground: "Cessna 12345, say request"
    - You: "Northeast Ground, Cessna 345, Cessna 182, at Jet Center, departing Northwest, with Information Charlie"
    - Ground: "Cessna 345, Taxi to Runway 33 via Taxiway Lima 1, Taxiway Lima, Taxiway Charlie. Cross Runway 24 at Taxiway Charlie."

ATC Taxi Instructions

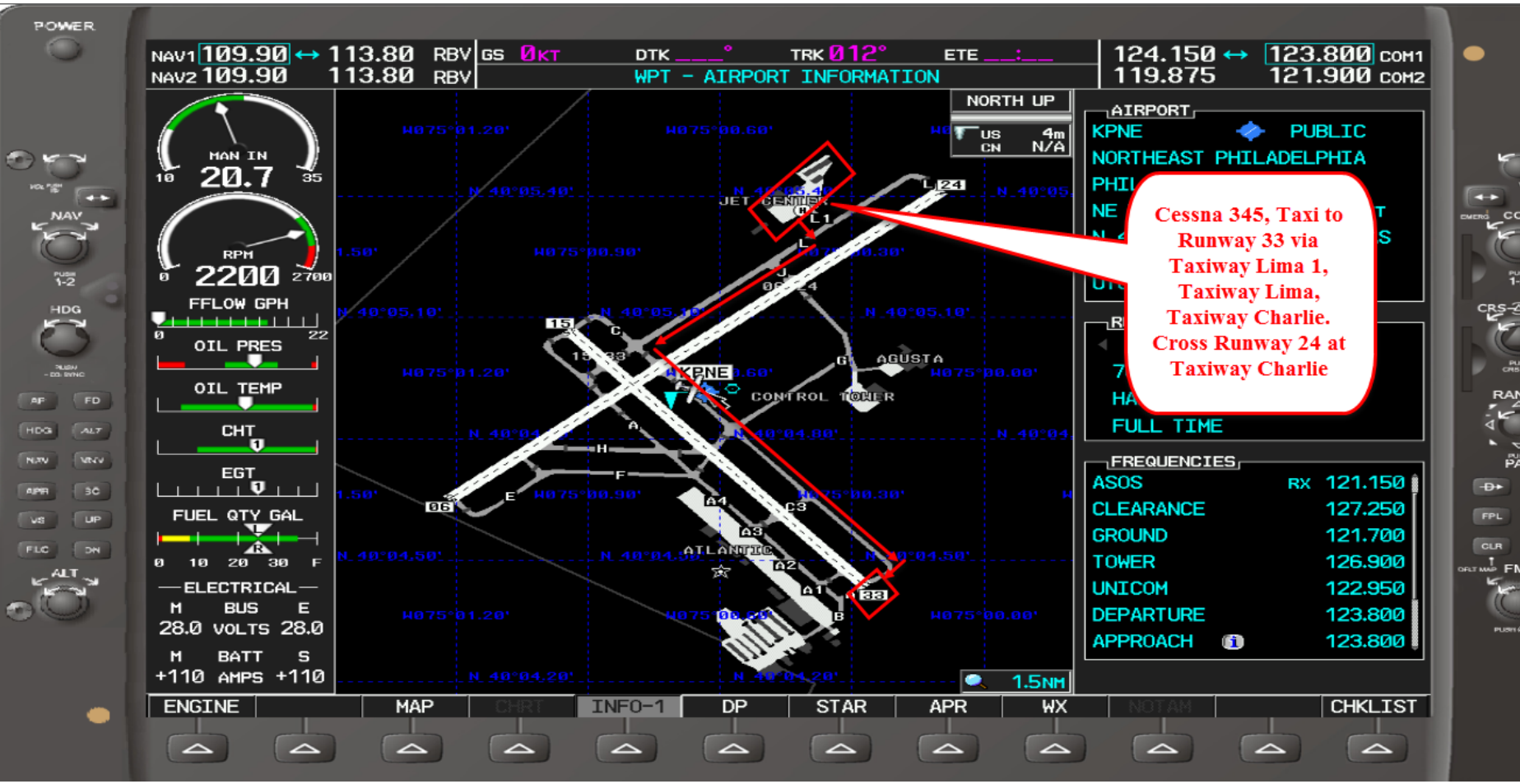
- **Ground: "Cessna 345, Taxi to Runway 33 via Taxiway Lima 1, Taxiway Lima, Taxiway Charlie. Cross Runway 24 at Taxiway Charlie." What do you do next?**
  - Write down the clearance on your knee board. Compare against Airport Diagram.
  - Read back the clearance.
  - If Ground replies, "Read back correct," **consider asking for a progressive taxi**.
    - If Ground replies with corrections, write corrections on your knee board, read back the clearance again, and **consider asking for a progressive taxi**.
  - When you get to the hold short line for Runway 24 at Taxiway Charlie, confirm that you are cleared to cross Runway 24.
    - If Ground clears you to cross Runway 24, transmit "Cessna 345 crossing Runway 24 at Taxiway Charlie."
    - If Ground tells you hold short of Runway 24, transmit "Cessna 345 holding short of Runway 24 at Taxiway Charlie."
  - When you arrive at hold short to Runway 33 on Taxiway Charlie, do your run up.
  - When your run up is completed, switch to the Tower frequency and transmit "Northeast Tower, Cessna 345 is ready for departure from Runway 33"
  - Do not taxi onto the runway until Northeast Tower transmits "Cessna 345, cleared for takeoff."

Taxi Instructions Using Airport Diagram



Cessna 345, Taxi to Runway 33 via Taxiway Lima 1, Taxiway Lima, Taxiway Charlie. Cross Runway 24 at Taxiway Charlie

Taxi Instructions Using G1000 MFD (Multi Function Display)



Complying with ATC Taxi Instructions

- Some avionics devices will show your airplane's movement on the airport surface.
- This makes it easy to comply with your taxi clearance.
- Examples are:
  - Garmin G1000 MFD
  - ForeFlight on Apple iPad or iPhone

Runway & Taxiway Lighting

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Overview

Runway Edge Lights

- Runway edge lights are white (although on the last 2,000 feet of an instrument runway the edge lights will be yellow).
- Note: Picture also shows runway centerline and touchdown zone lights.

Taxiway Lights

- Taxiway edge lights or reflectors are blue.

Taxiway Centerline Lights

- Taxiway centerline lights or reflectors are green
- Except for the lead-on and lead-off lights,
  - which alternate yellow and green to indicate the aircraft is entering or leaving the runway environment.

Runway Guard Lights

- Runway guard lights are flashing yellow lights
- Either in the pavement or located on the side of the taxiway
- Highlight a runway holding position.

Runway Guard Lights

- Runway holding position as viewed from a taxiway centerline. This holding position has both above ground and in-pavement runway guard lights.
  - Never taxi across a row of illuminated red lights. This is a stopbar, do not proceed until the lights are turned off.

Runway & Taxiway Signs Flash Cards

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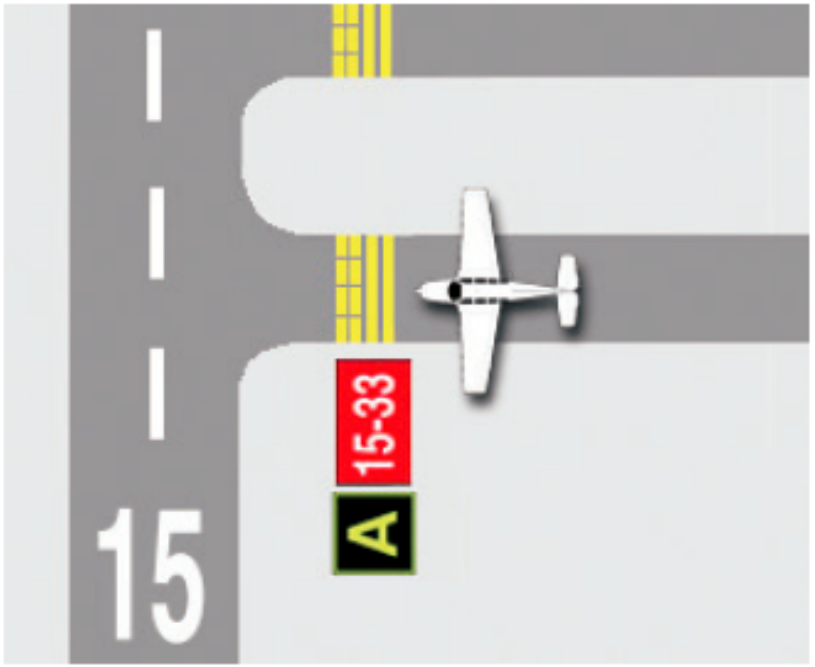
Quiz

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



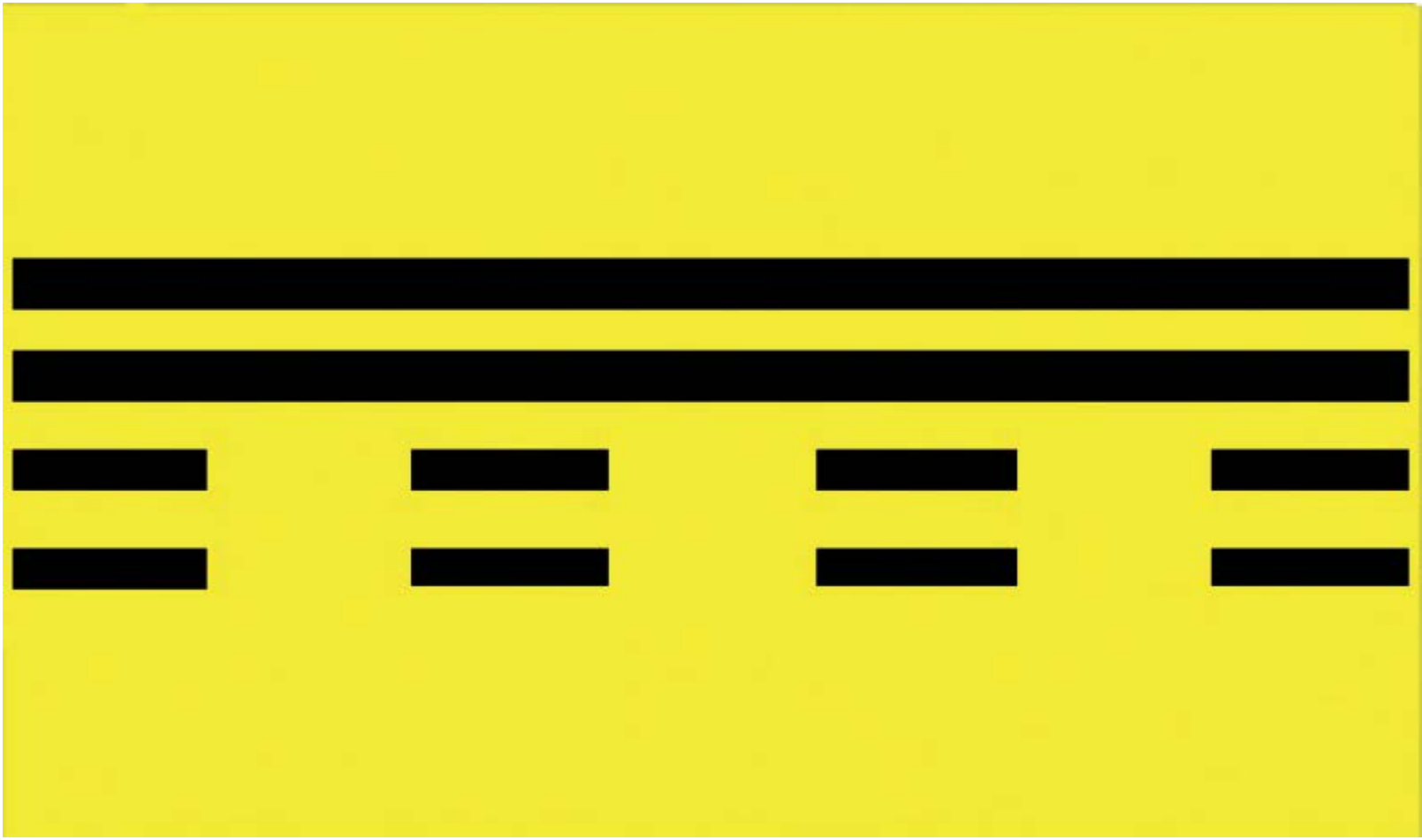
Taxiway Location Sign

Indicates the taxiway on which the aircraft is located. May be co-located with direction signs or runway holding position signs, as shown in graphic.

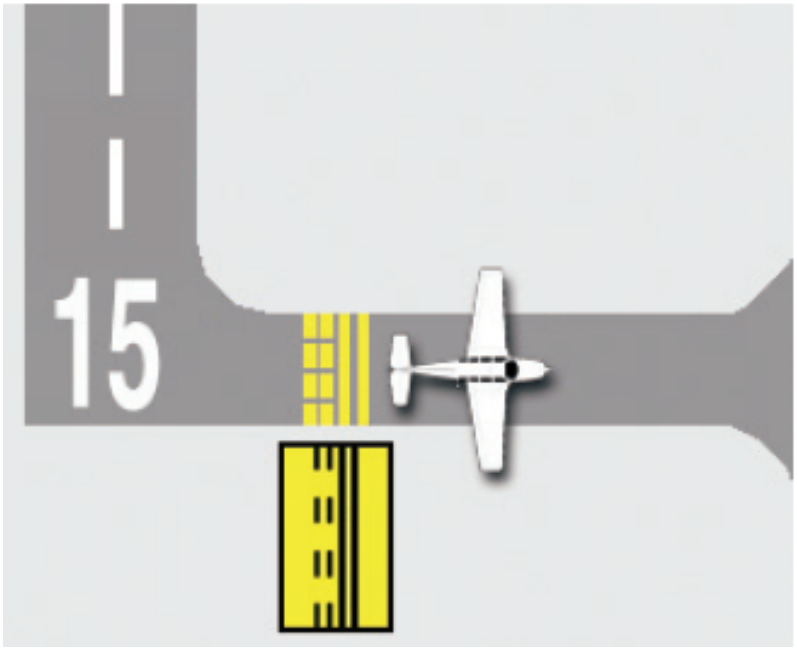
Ref. AIM Para. 2-3-9-a-1

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?



Runway Safety Quiz - Answer



Runway Boundary Sign

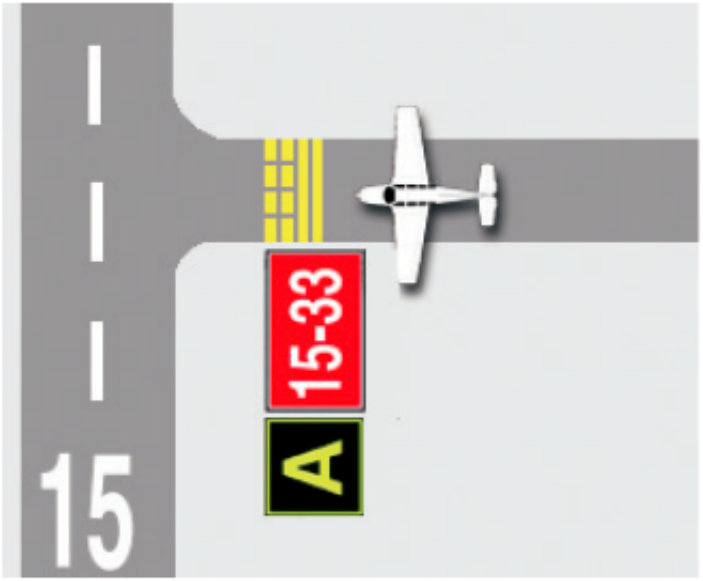
This sign faces the runway and is visible to pilots exiting the runway. It is located next to the yellow holding position markings painted on the taxiway pavement. Taxi past this sign to be sure you are clear of the runway.

Ref. AIM Para. 2-3-9-a-3

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?

Runway Safety Quiz - Answer



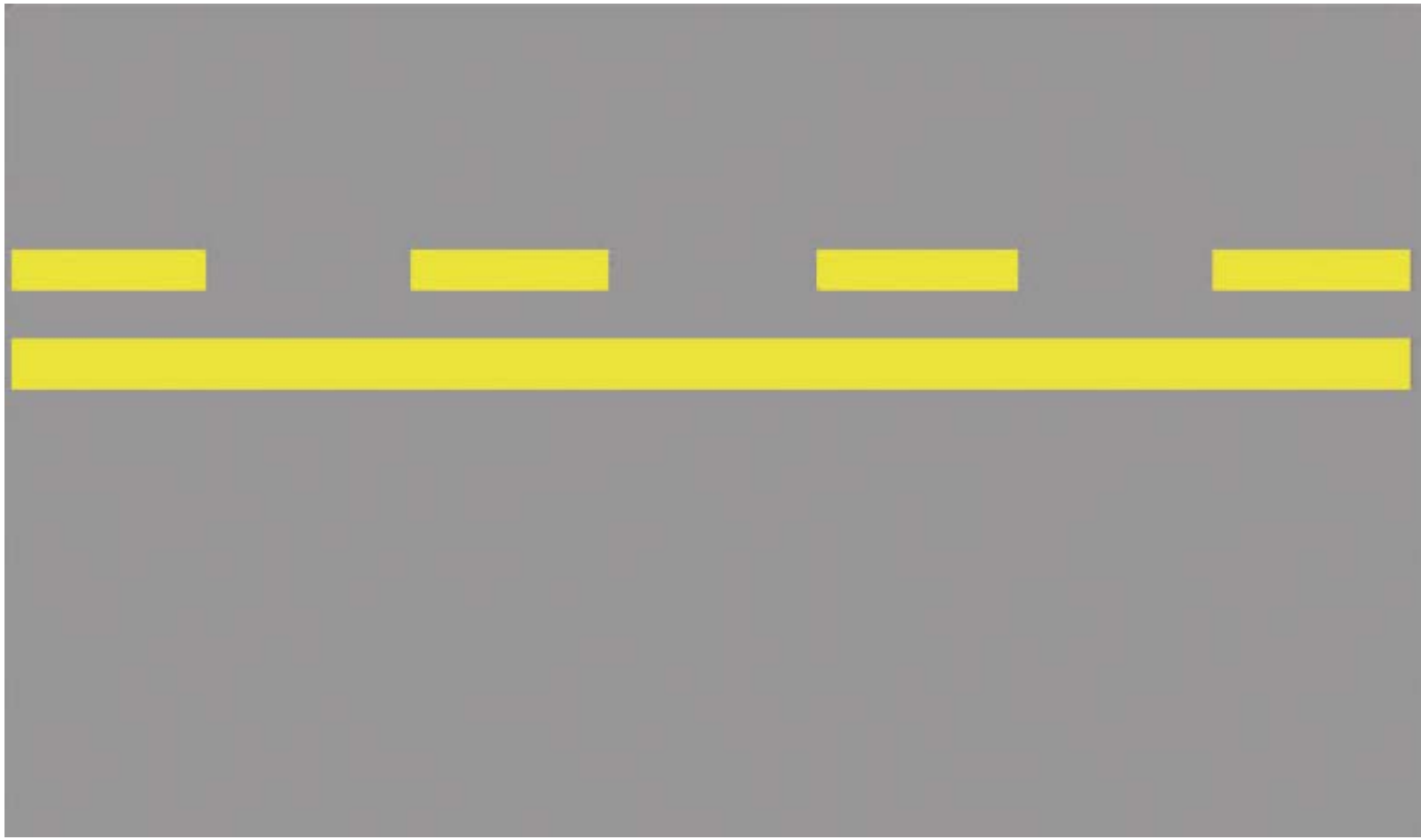
Runway Approach Area Holding Position Sign

Located next to the yellow holding position surface marking on taxiwaysor runway intersections. In this example, the threshold for Runway 15 is to the left and the threshold for Runway 33 is to the right. Aircraft may not move beyond this sign/marking unless instructed by ATC at towered airports, or by ensuring adequate separation of aircraft at non-towered airports.

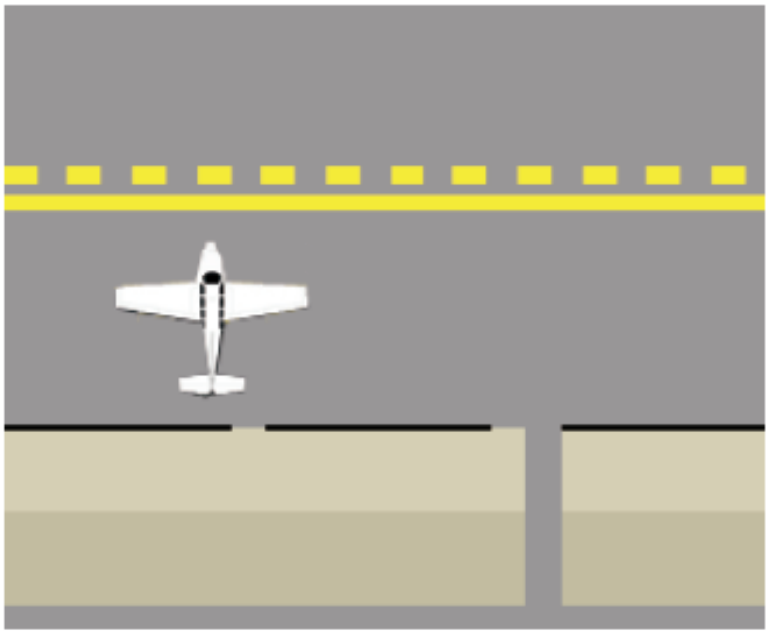
Ref. AIM Para. 2-3-8-b-1

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?



Runway Safety Quiz - Answer



Movement Area Boundary Markings

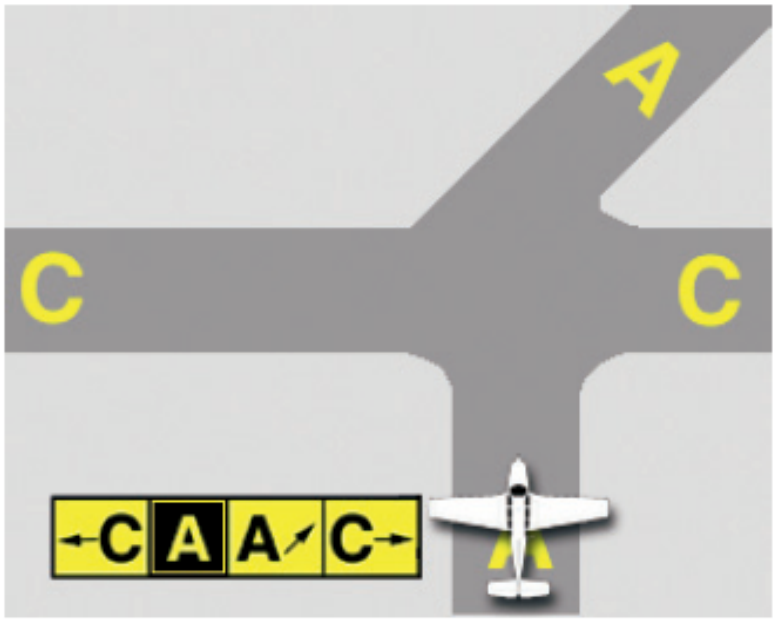
These markings can be seen at tower-controlled airports where hangar or apron areas are located adjacent to a taxiway. The solid side of the line indicates the non-movement area, which is not under ATC control, and the dashed side indicates the movement area, which is under ATC control.

Ref. AIM Para. 2-3-6-c

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?

Runway Safety Quiz - Answer



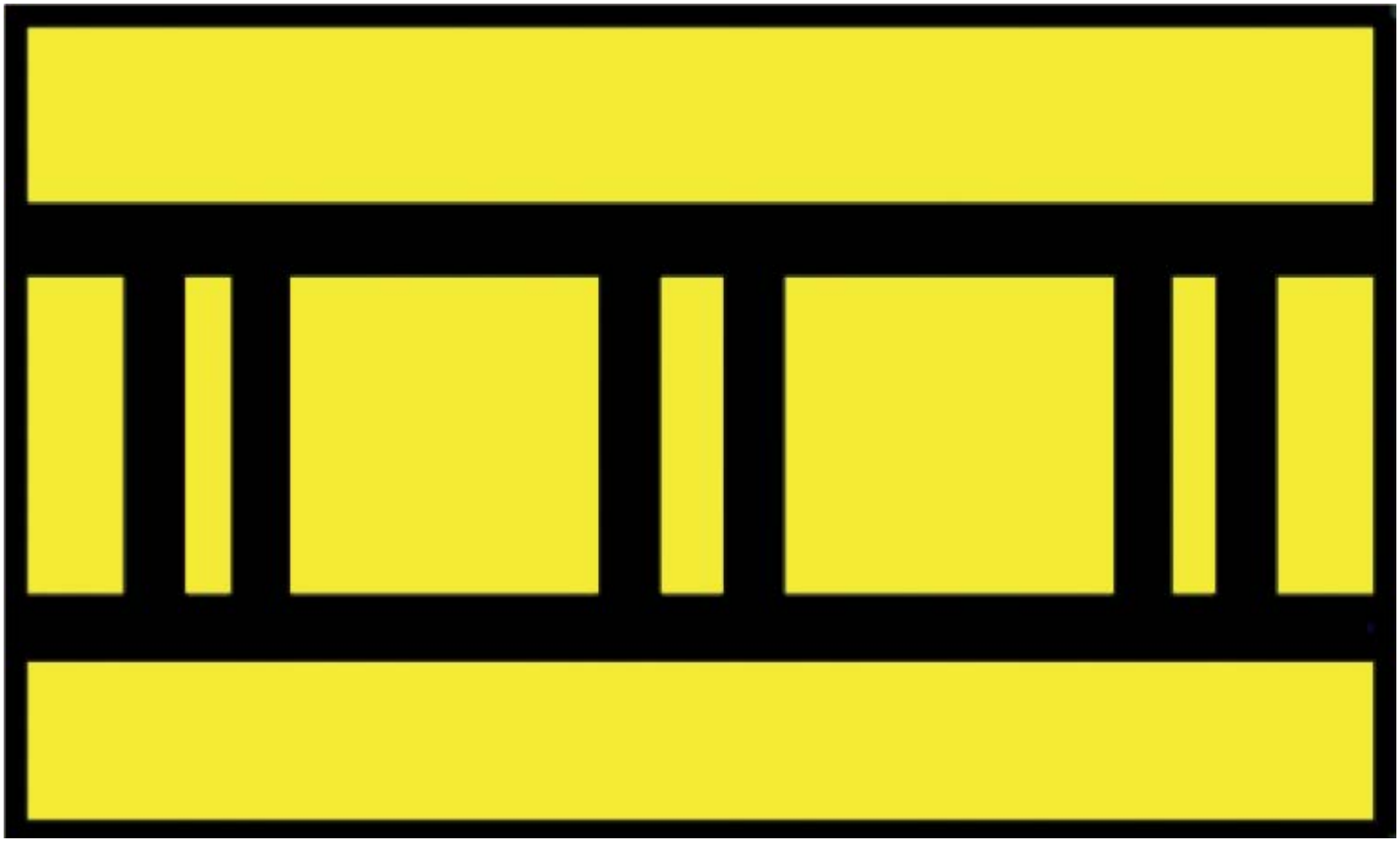
Taxiway Direction Sign

Usually located next to or in an array with a taxiway location sign, these yellow signs indicate the name and direction of intersecting taxiways. In this example, taxiway Charlie is to the left and right, and Alpha is ahead and to the right.

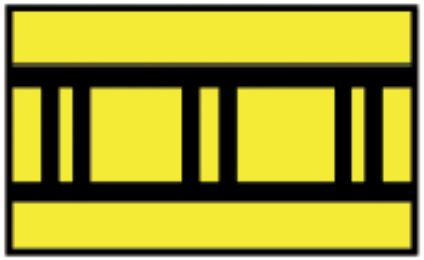
Ref. AIM Para. 2-3-10/11

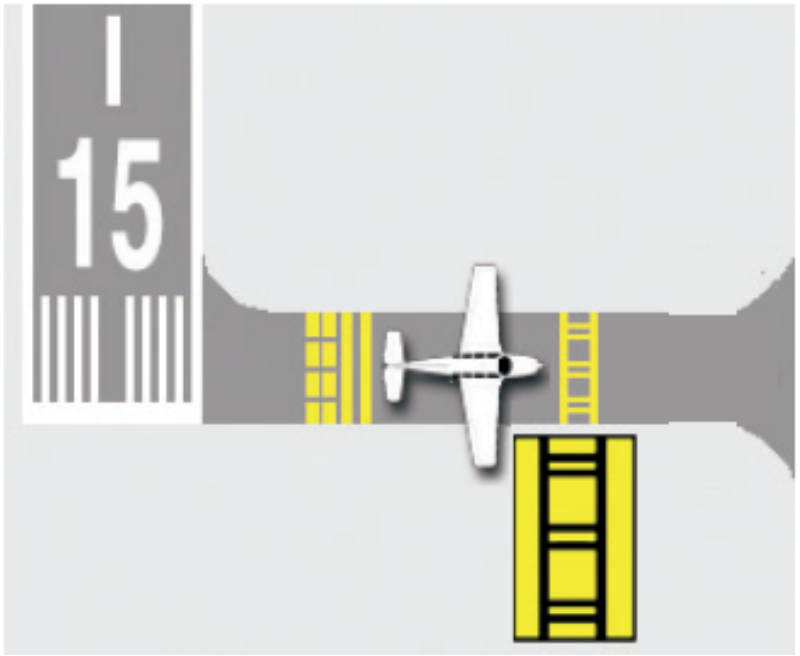
Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer





ILS Critical Area Boundary Sign

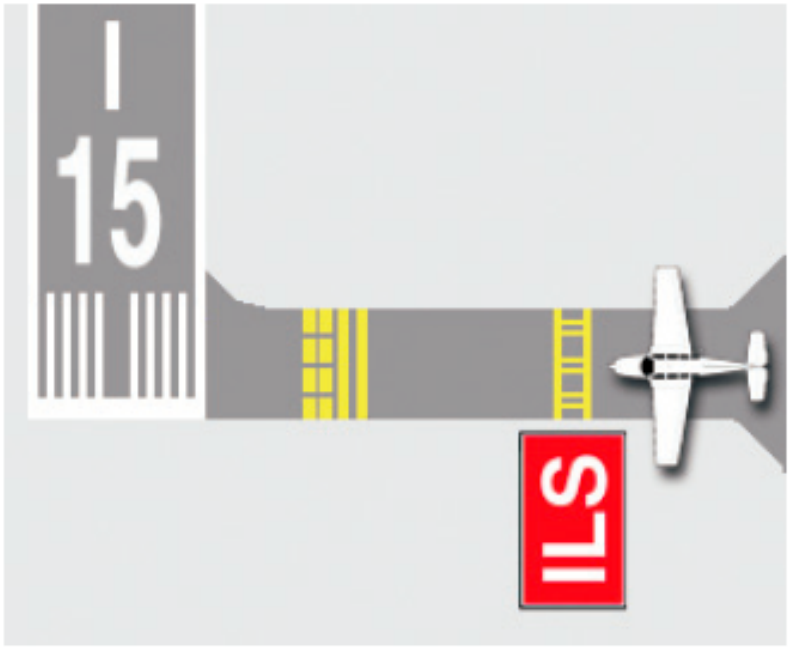
Positioned in conjunction with the ILS holding position markings, but seen only when taxiing or driving away from the runway. Aircraft or vehicles exiting the runway are clear of the ILS critical area when they move beyond the holding position marking.

Ref. AIM Para. 2-3-9-a-4

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



ILS Critical Area Holding Position Sign

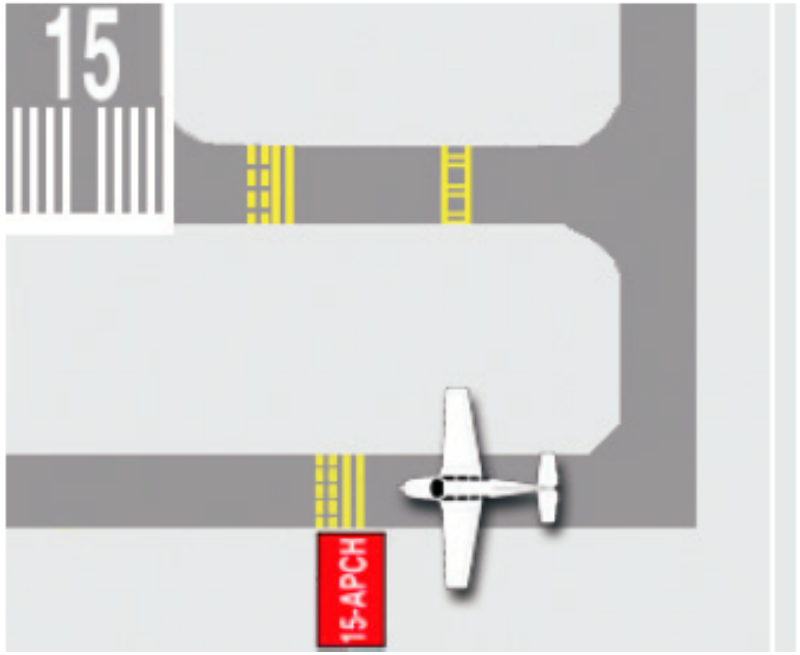
Located next to the yellow surface-painted ILS critical area marking. Aircraft taxiing beyond this point may interfere with the ILS signal. Hold short of this location when instructed by ATC.

Ref. AIM Para. 2-3-8-b-3; 4-3-18-a-8

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



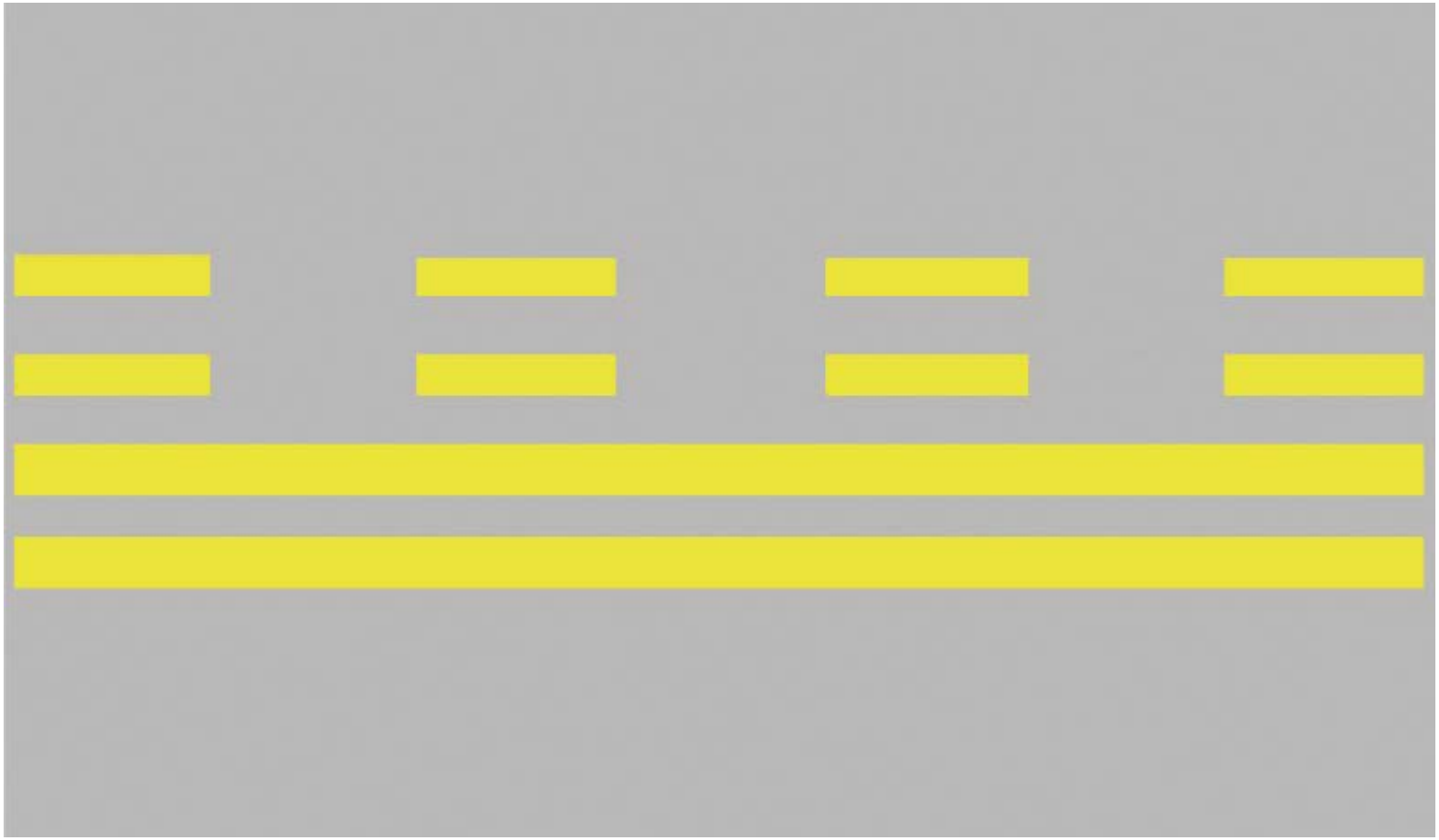
Runway Approach Area Holding Position Sign

Located next to the yellow holding position surface markings. Taxiing past this sign may interfere with arriving or departing aircraft. Hold short of this location when instructed by ATC.

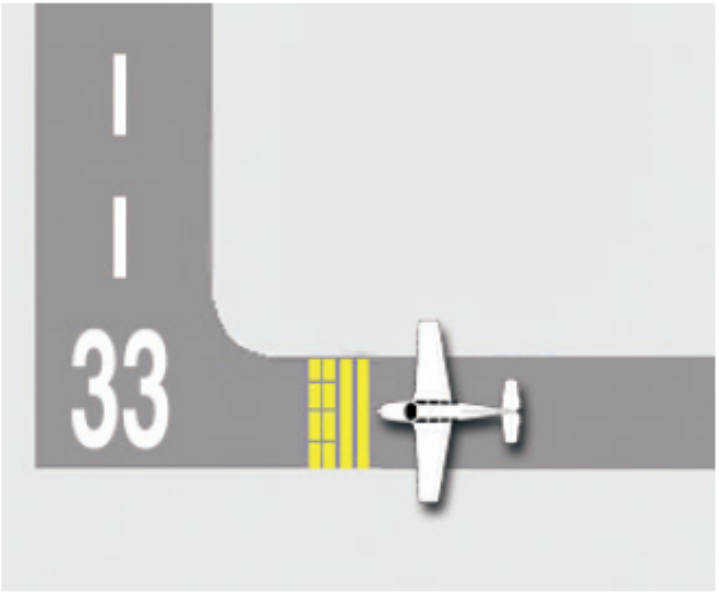
Ref. AIM Para. 2-3-8-b-2; 4-3-18-a-8

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?



Runway Safety Quiz - Answer



Runway Holding Position Markings

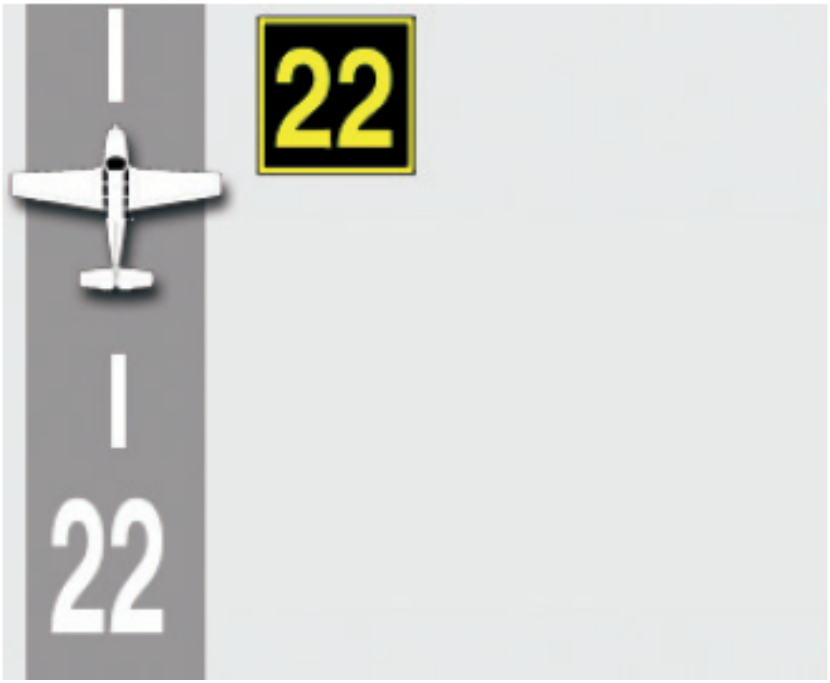
A yellow surface-painted marking on a taxiway, typically collocated with a red and white runway holding position sign, indicates that an aircraft or vehicle must stop at the double solid lines until cleared to cross by ATC. This marking may also be seen on a runway, or with a taxiway approach hold sign, in which case ATC will provide appropriate hold short instructions.

Ref. AIM Para. 2-3-5

Runway Safety Quiz - Question

- What does this sign mean?
- Where are you?

Runway Safety Quiz - Answer



Runway Location Sign

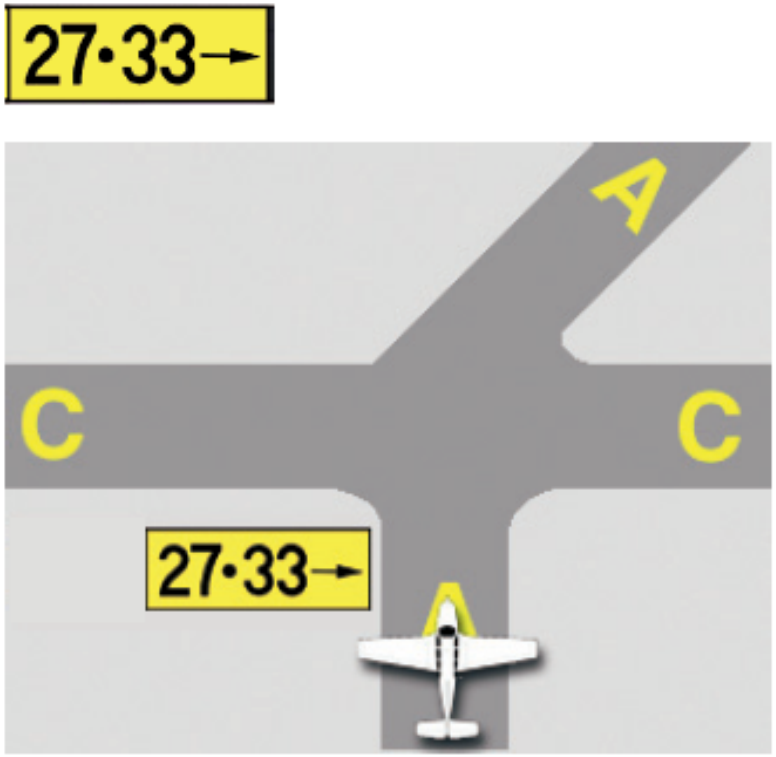
Identifies the runway on which the aircraft is located.

Ref. AIM Para. 2-3-a-2

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



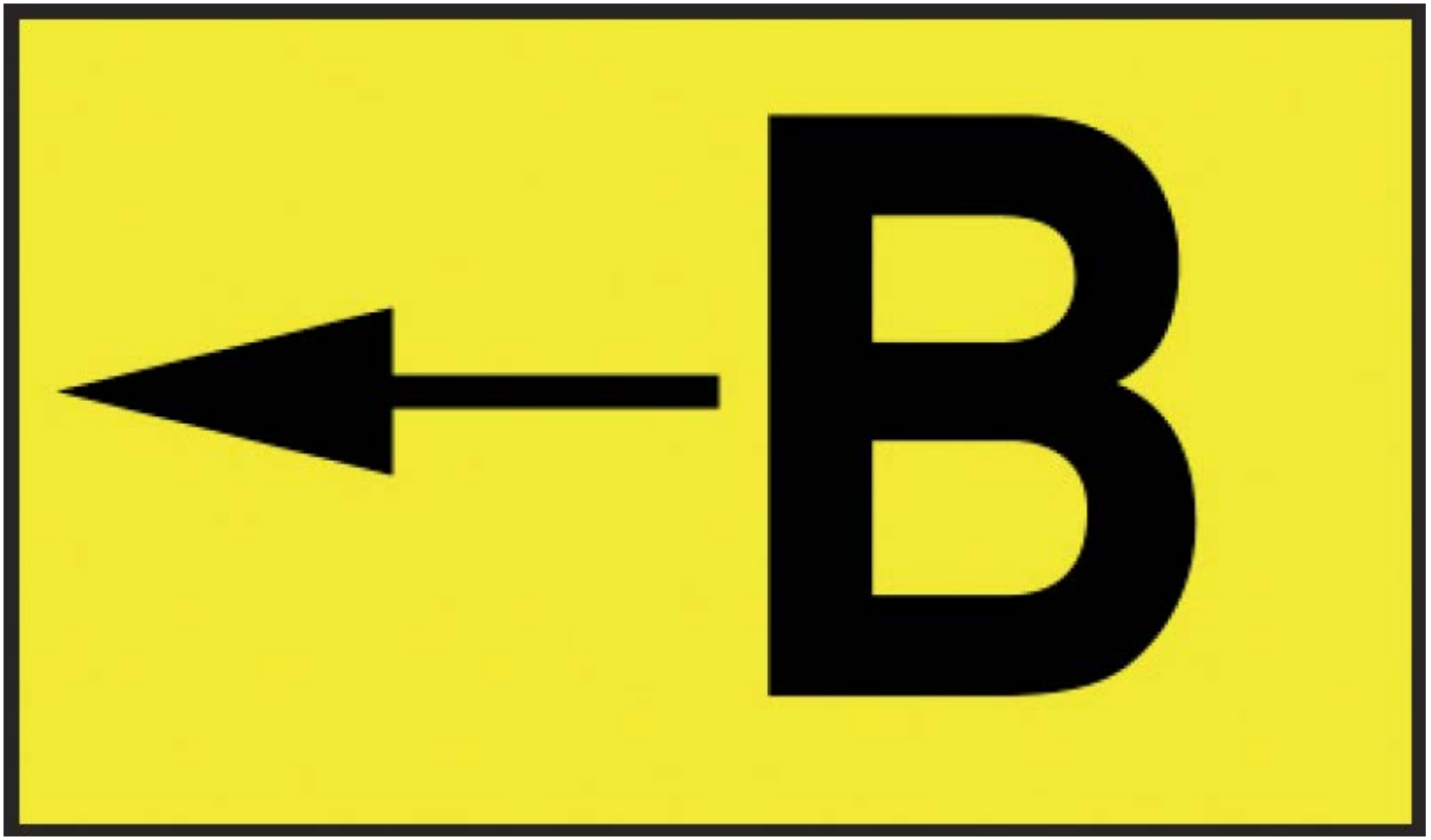
Destination Sign

Indicates the direction of a taxi route to a runway(s) or other location. In this example, Runways 27 and 33 are to the immediate right.

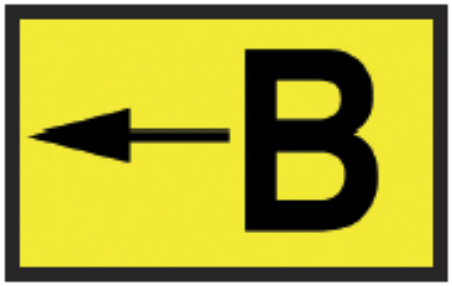
Ref. AIM Para. 2-3-10/11

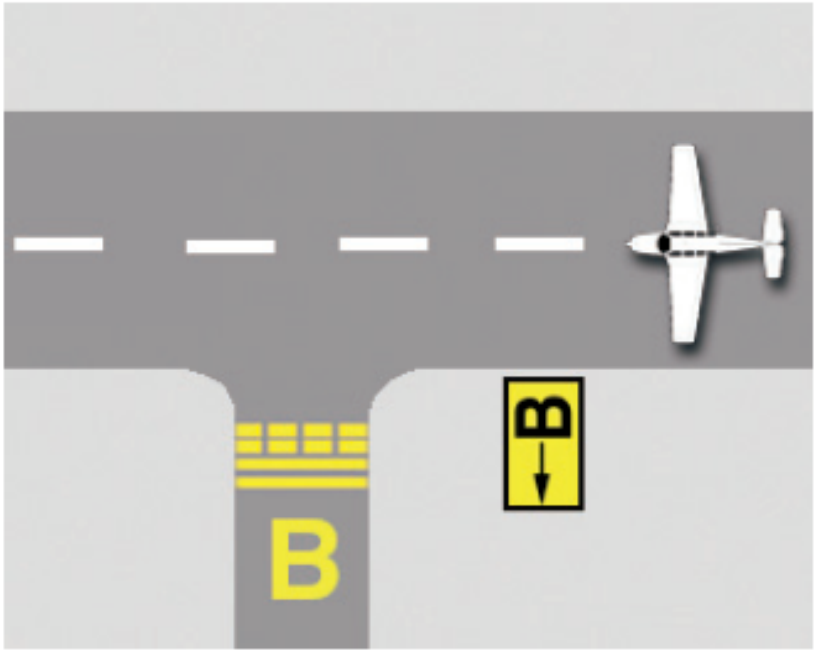
Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer





Direction Sign for Runway Exit

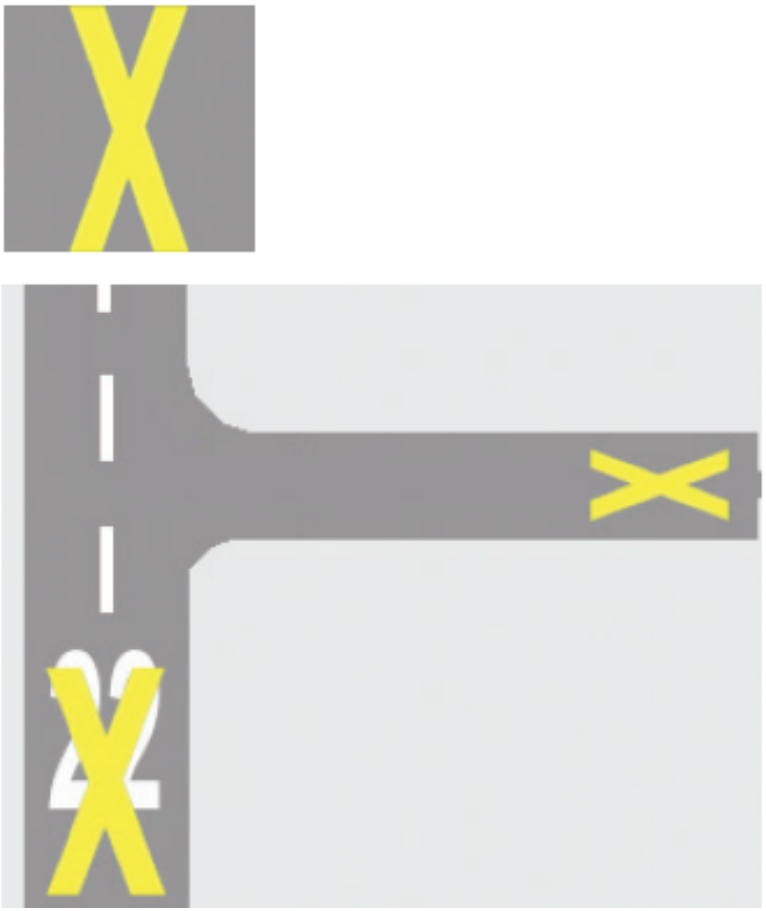
Indicates a taxiway exit from a runway. Located just prior to the intersection on the same side of the runway as the taxiway exit.

Ref. AIM Para. 2-3-10/11

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



Closed Runway and Taxiway Marking

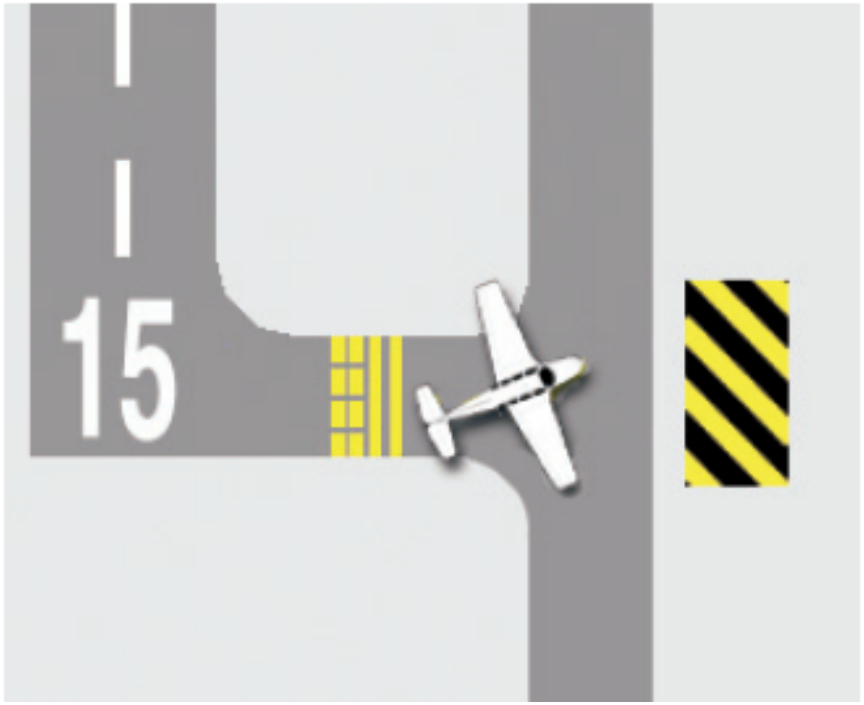
Indicates a closed runway or taxiway. It will also be placed at each entrance to a permanently closed runway or taxiway. A raised-lighted **X** may be used in lieu of, or in addition to, a pavement marking.

Ref. AIM Para. 2-3-6-d/e

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



Taxiway Ending Marker

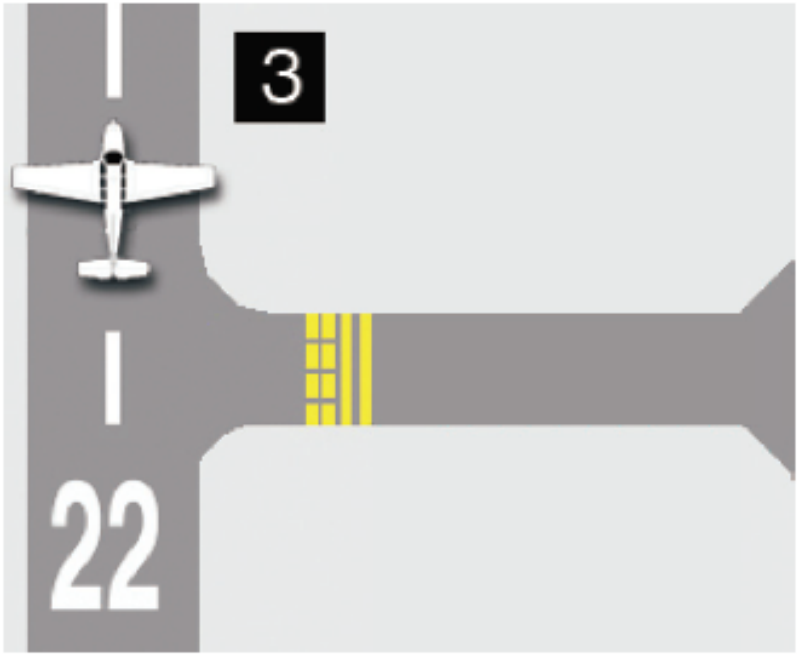
Indicates the taxiway does not continue. Located on the far side of the intersection.

Ref. AC 150-5340-18F, Chapter 1-9

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



Runway Distance Remaining Sign

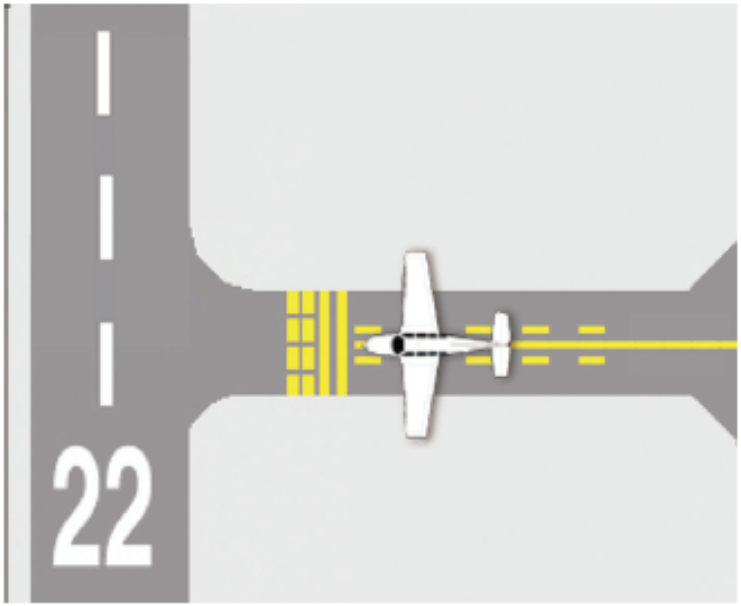
Indicates the distance of runway remaining in thousands of feet. In this example, 3,000 feet remain on the landing runway.

Ref. AIM Para. 2-3-13

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



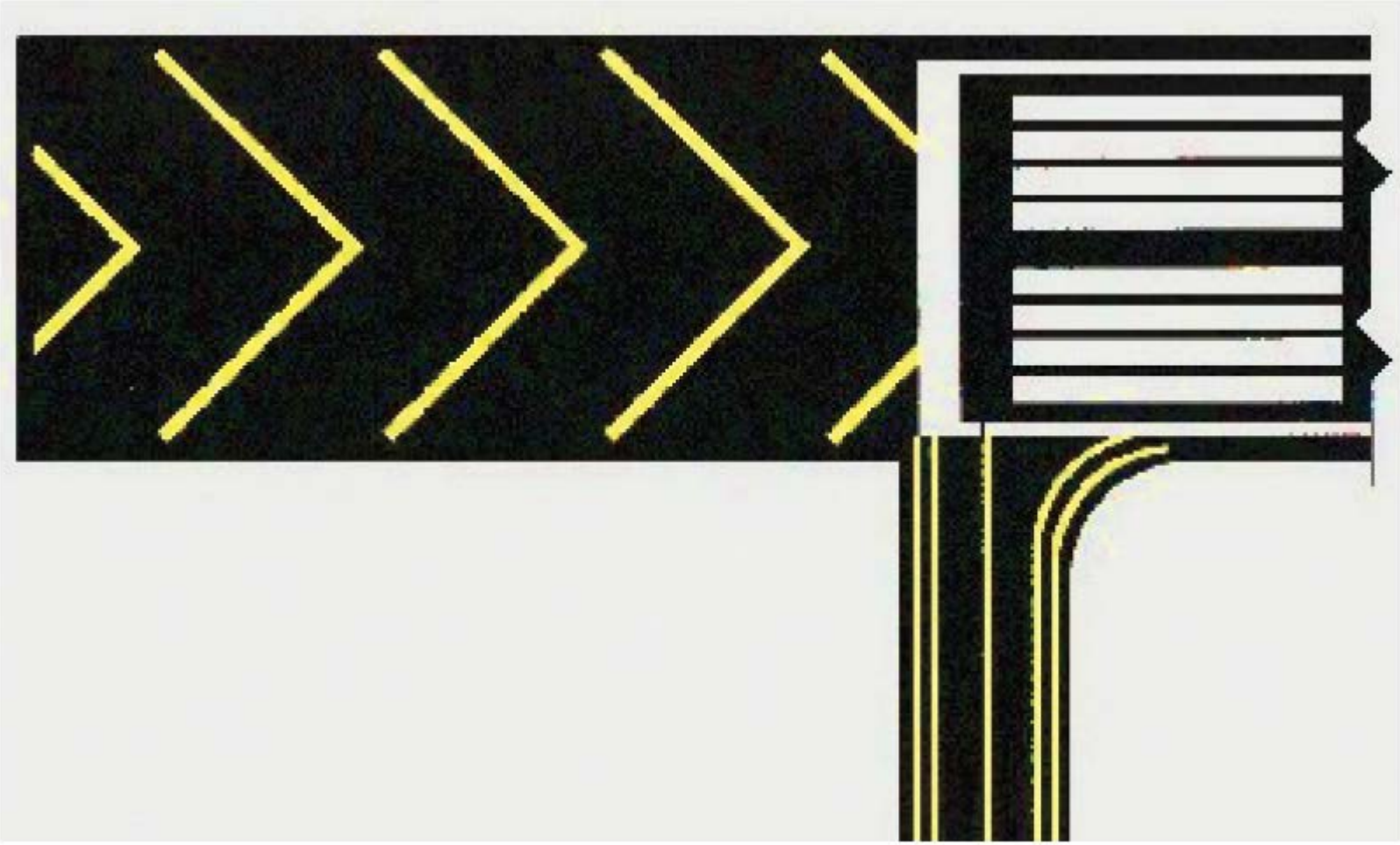
Enhanced Taxiway Centerline Markings

Used mostly at larger airports, these markings indicate that the aircraft is approaching a runway. Prior to a runway holding position marking, the taxiway centerline will be "enhanced" to include a set of yellow dashed lines. Installed at more than 500 airports throughout the U.S., these dashed yellow markings extend 150 feet from the runway holding position on either side of taxiway centerlines.

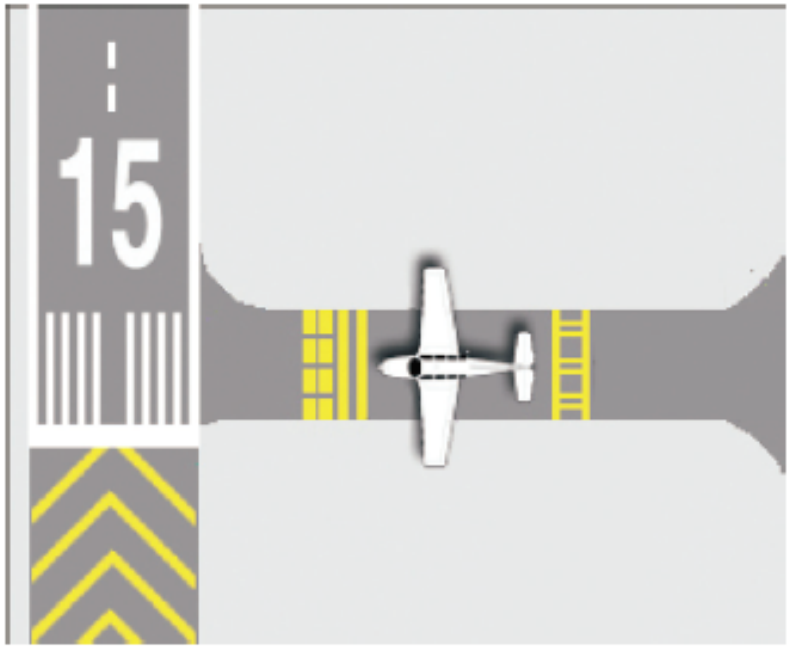
Ref. AIM Para. 2-3-4-b-2

Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer



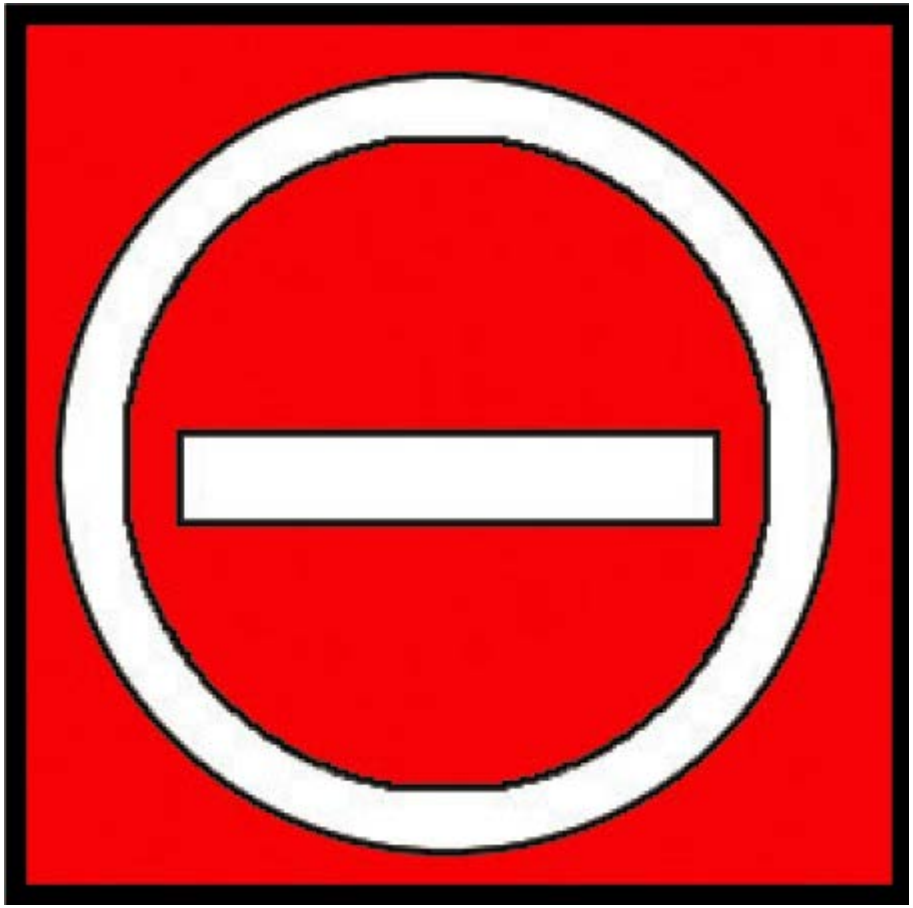
Chevron Markings

Indicate areas of pavement aligned with the runway that are unusable for taxi, takeoff, or landing. Chevrons cover blast pads or stopways, which are constructed to protect areas from erosion caused by jet blast and to provide extra stopping distance for aircraft (stopways).

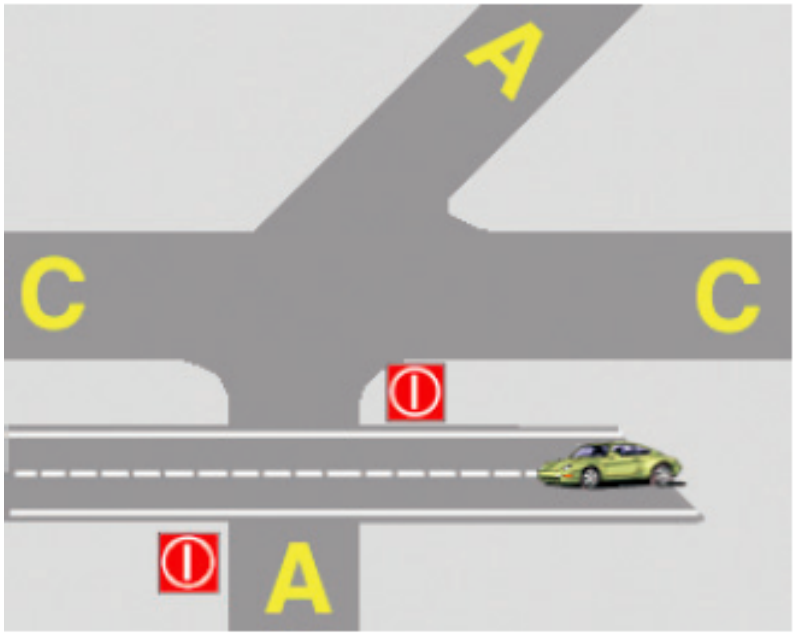
Ref. AIM Para. 2-3-3-i-1

Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer



No Entry Sign

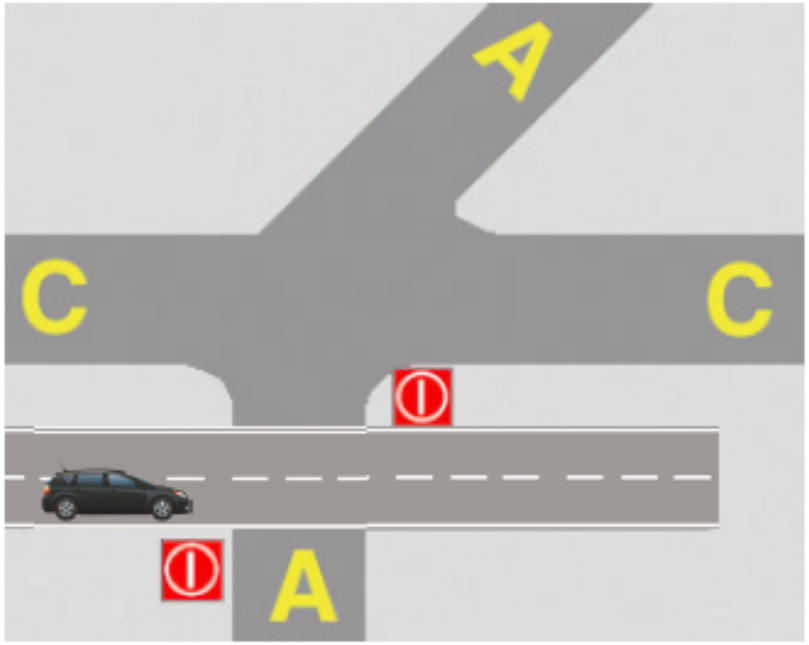
Prohibits an aircraft from entering an area, such as a one-way taxiway or the intersection of a road intended for vehicles.

Ref. AIM Para. 2-3-8-b-4

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



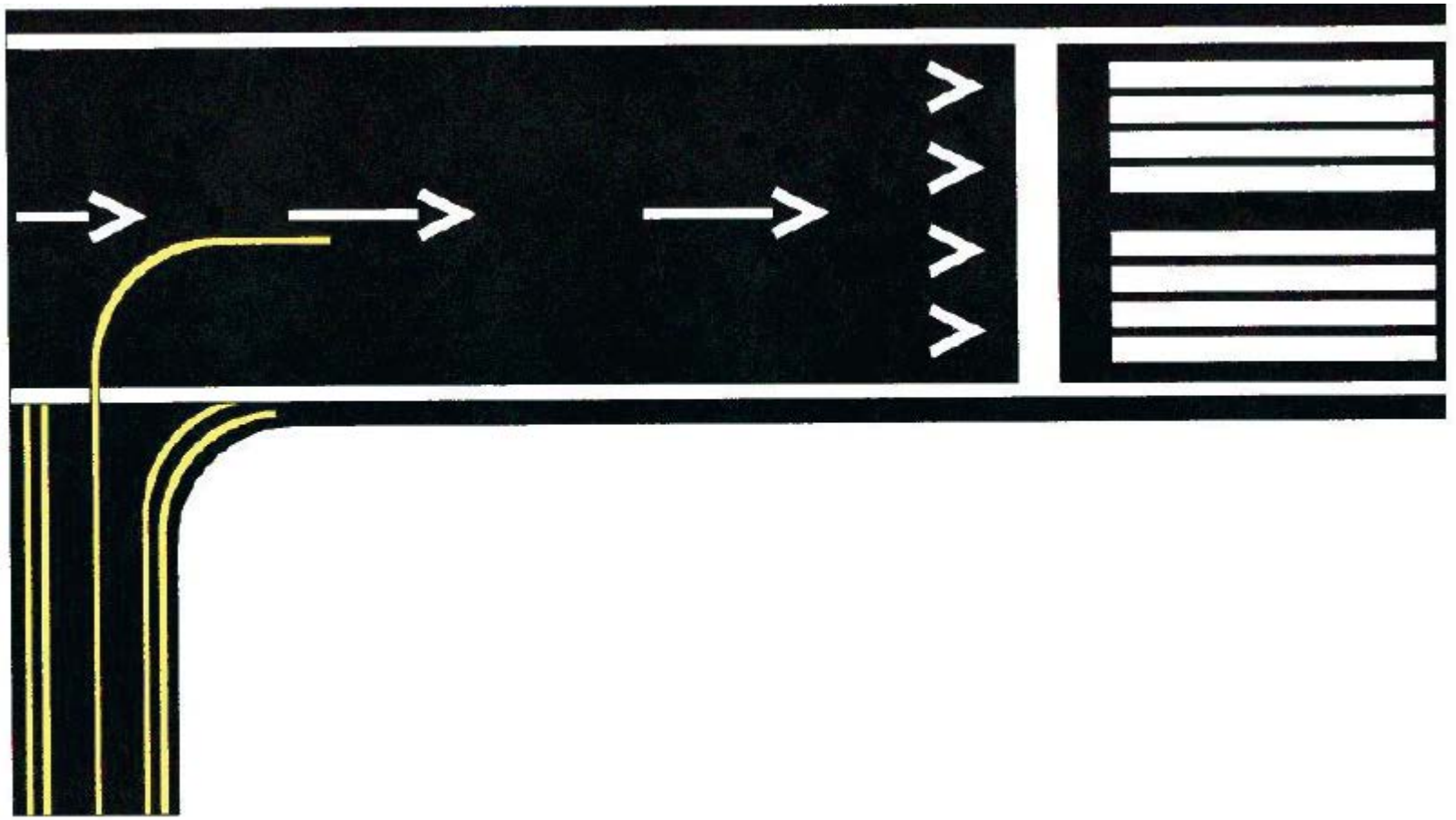
Vehicle Roadway Markings

Used to define a vehicle pathway (non-aircraft) that is on, or crossing, an area also used by aircraft. The outer boundaries will consist of either a single solid white line or white and black "zippered" lines.

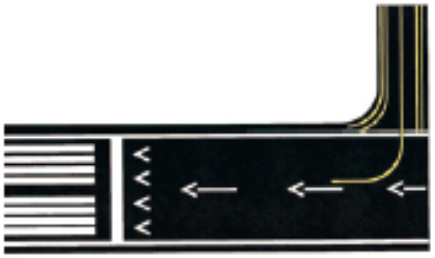
Ref. AIM Para. 2-3-6-a

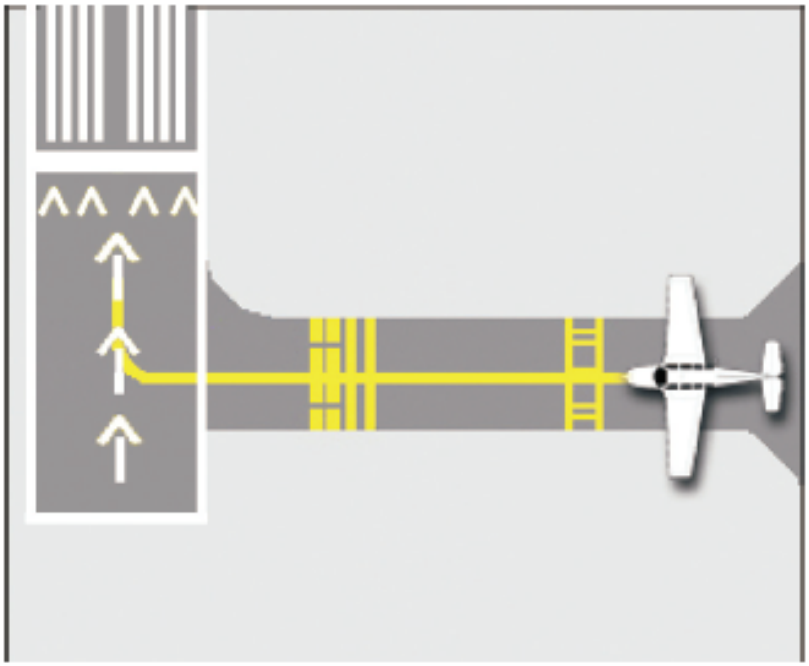
Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer





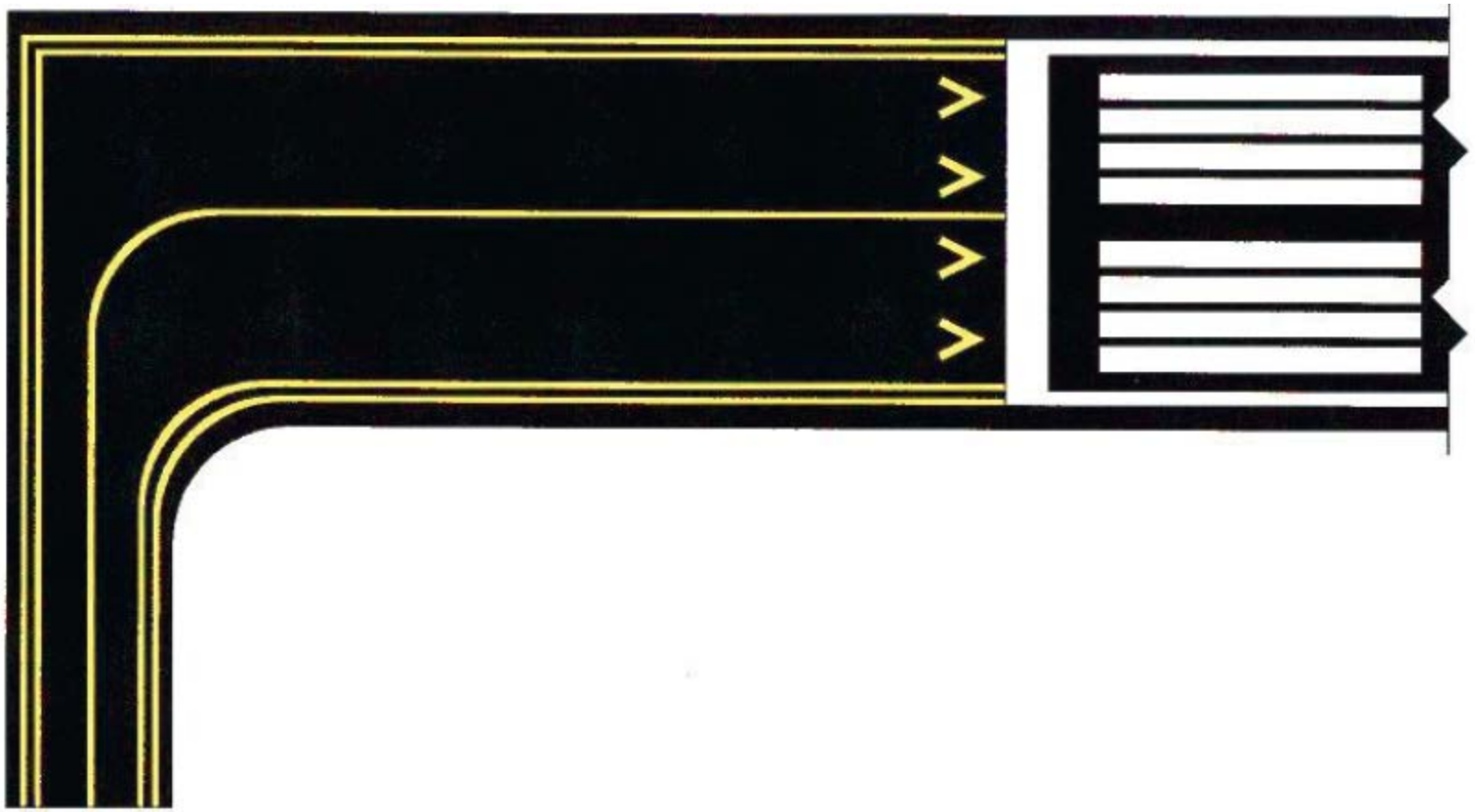
Displaced Threshold

A displaced threshold designates where the runway's landing area starts. White arrows along the centerline of the runway indicate the portion between the beginning of the runway and the displaced threshold. This portion is available for takeoffs in both directions and landings from the opposite direction.

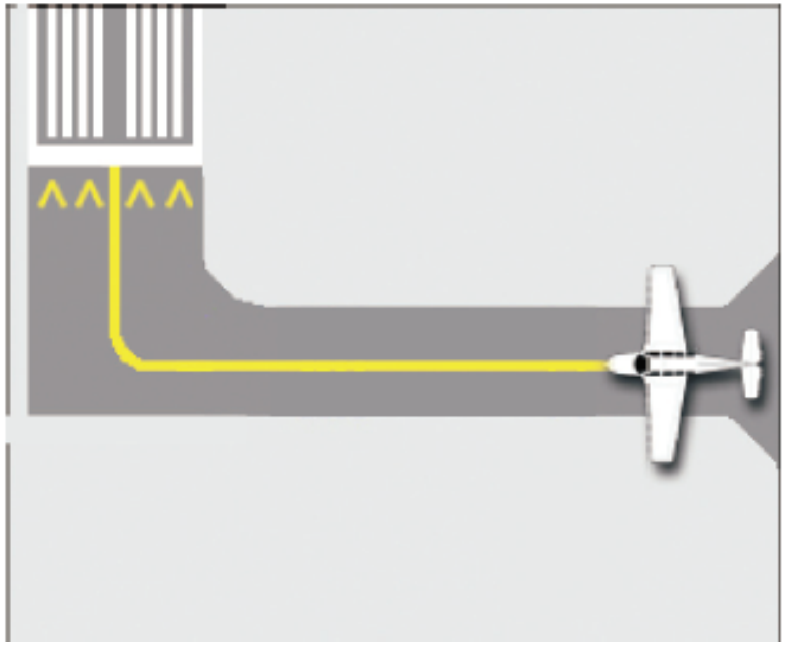
Ref. AIM Para. 2-3-3-h-2

Runway Safety Quiz - Question

- What does this sign mean?



Runway Safety Quiz - Answer



Relocation of a Threshold

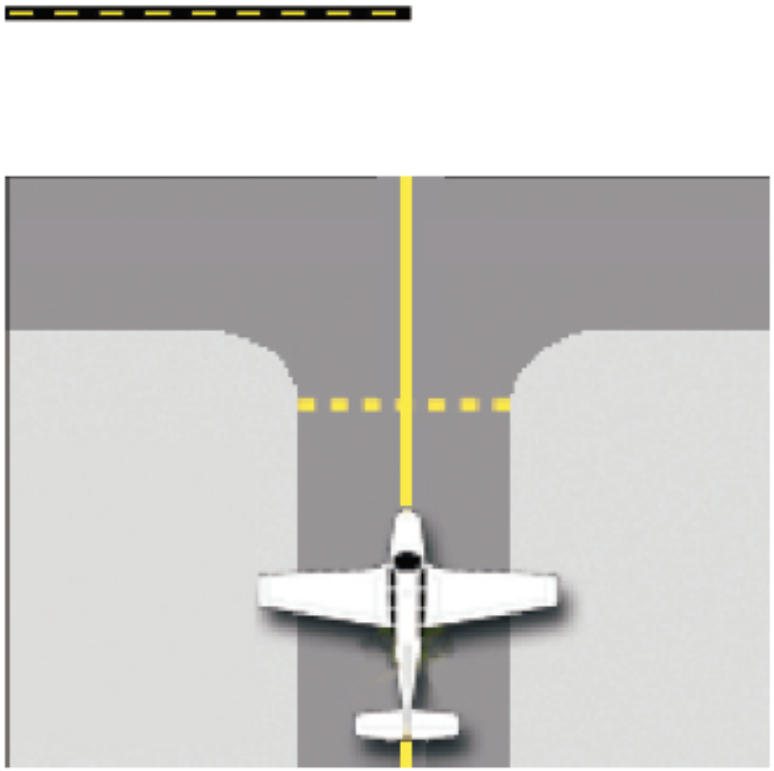
Yellow line and arrowhead surface markings indicate that a portion of the runway has been closed and that the threshold has been moved. Possible causes for the relocation include construction or other airport maintenance. The closed area is not available for takeoffs or landings.

Ref. AIM Para. 2-3-3-h-1

Runway Safety Quiz - Question

- What does this sign mean?

Runway Safety Quiz - Answer



Holding Position Markings for Taxiway/Taxiway Intersections

Extending across the width of a taxiway, this yellow dashed line indicates where an aircraft should stop if instructed to do so by ATC. When the marking is not present, stop the aircraft to provide adequate clearance from an aircraft on the intersecting taxiway.

Ref. AIM Para. 2-3-5-c

Runway Incursion Avoidance

-

Pilot's Handbook of Aeronautical Knowledge

Chapter 14 – Airport Operations

Runway Incursion Avoidance Summary

- **Ways to Avoid Runway Incursions**
  - Read back all runway crossing and/or hold instructions.
  - Review airport layouts as part of preflight planning, before descending to land and while taxiing, as needed.
  - Know airport signage.
  - Review NOTAMs for information on runway/taxiway closures and construction areas.
  - Request progressive taxi instructions from ATC when unsure of the taxi route.
  - Check for traffic before crossing any runway hold line and before entering a taxiway.
  - Turn on aircraft lights and the rotating beacon or strobe lights while taxing.
  - When landing, clear the active runway as soon as possible, then wait for taxi instructions before further movement.
  - Study and use proper phraseology in order to understand and respond to ground control instructions.
  - Write down complex taxi instructions at unfamiliar airports.

Runway Incursion Avoidance

-

Land and Hold Short Operations (LAHSO)

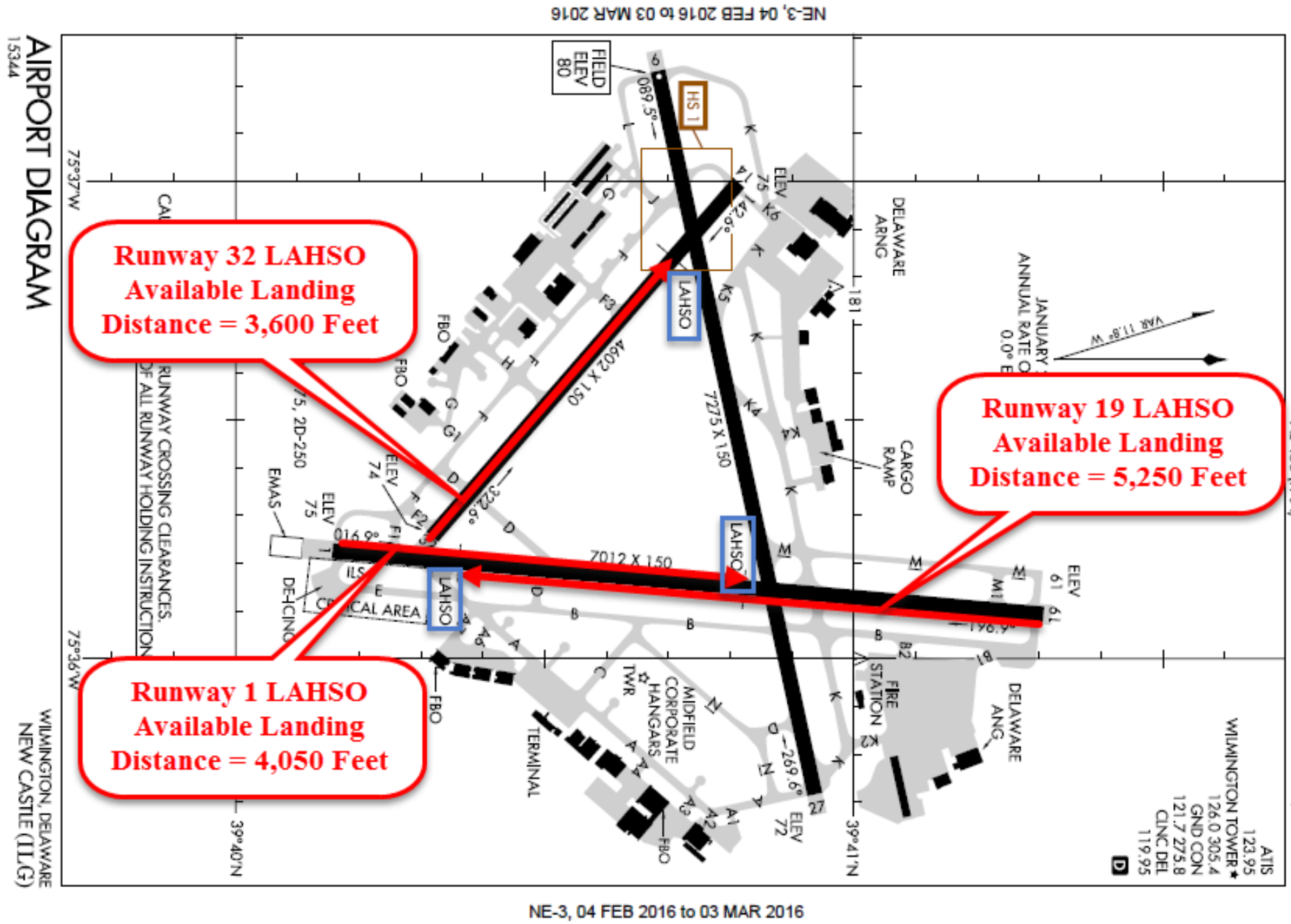
Land And Hold Short Operations (LAHSO)

- **What is LAHSO?**
  - **L**and **A**nd **H**old **S**hort **O**perations are an air traffic control procedure intended to increase airport capacity without compromising safety.
  - Saves fuel and Hobbs time for individual pilots during every LAHSO landing and taxi-in
  - Pilots need to have a clear understanding of what's expected of them.
  - Pilots should review airport layouts as part of preflight planning, before descending to land and while taxiing, as needed.
  - In a LAHSO clearance, pilots are cleared to land but to hold short of the intersecting runway
    - Pilots must read back this clearance.
    - Pilots can decline this clearance, if they think it is beyond their capabilities or their airplane’s capabilities.

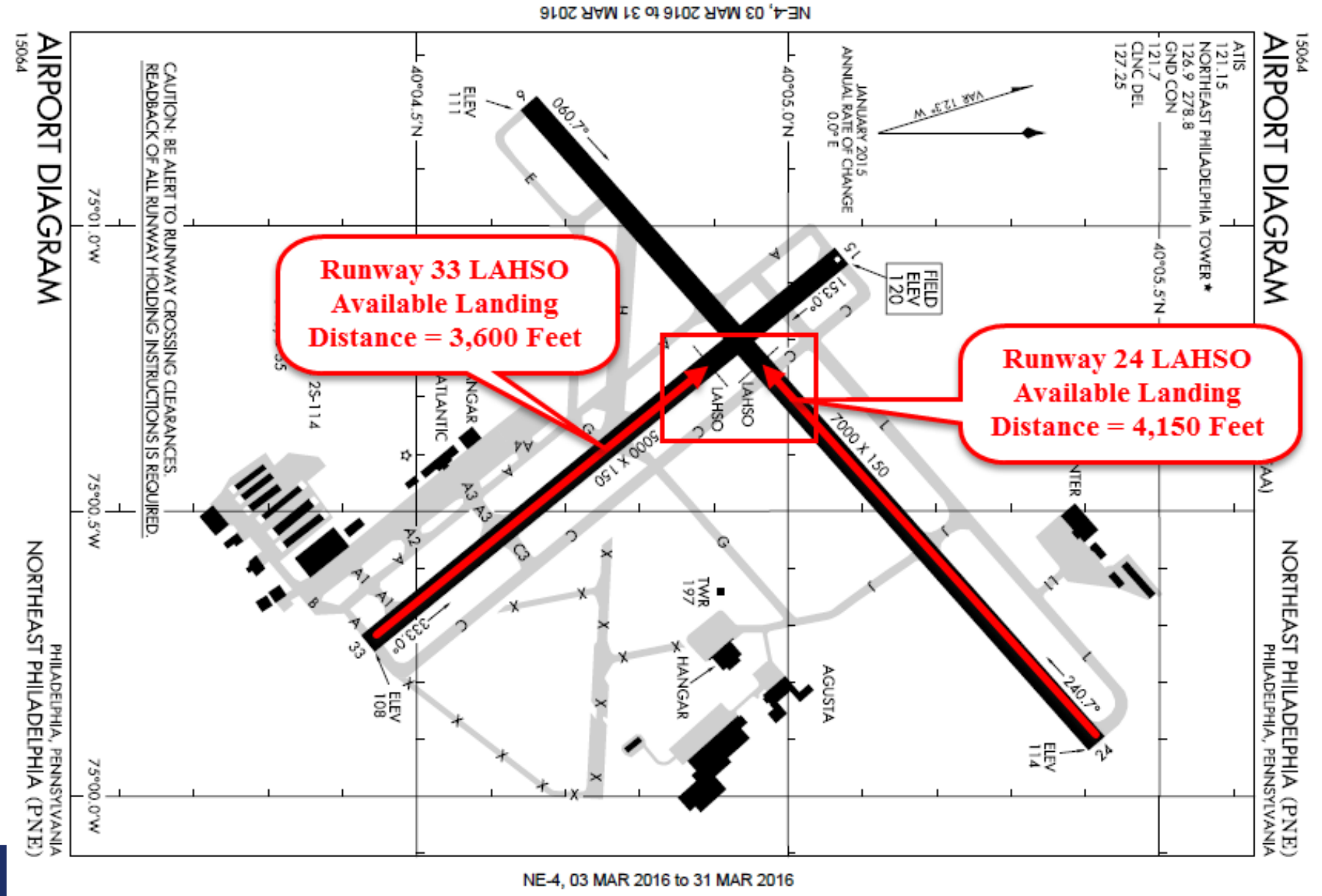
- **How to Handle a LAHSO Clearance**
  - Before accepting a LAHSO clearance, do the following
    - Ask ATC for the Available Landing Distance (ALD)
    - Ask yourself if the distance is within the capabilities of both you and your airplane
      - If not, decline the LAHSO clearance
  - Perform your airplane's pre-landing checklist (GUMP check)
  - Make sure that
    - Gear is down, if flying a retractable gear airplane
      - Know $\mathbf{V_{LE}}$ for your airplane
    - Airspeed is in the white arc and flaps are down
      - Know $\mathbf{V_{FE}}$ for your airplane
    - Power is set properly
      - Consider whether you should configure for a short field landing

- **A LAHSO Scenario (2002)**
  - Day VFR, Pilot is flying a practice ILS 1 approach into New Castle County Airport (KILG) in a Mooney M20J
    - ATC instructs pilot to keep speed at or above 120 KIAS
    - ATC then instructs pilot to land and hold short of Runway 27
  - What would you do?
  - Pilot did the following
    - Asked ATC for the Available Landing Distance (ALD)
    - Reduced power, performed GUMP check
    - Extended landing gear ($\mathbf{V_{LE}}$ = 132 KIAS)
    - Later extended flaps ($\mathbf{V_{FE}}$ = 115 KIAS)
    - Asked ATC if speed restriction still applied
  - ATC responded with following
    - Speed restriction no longer necessary
    - Full length of runway is available

Land And Hold Short Operations (LAHSO) – KILG Airport Diagram

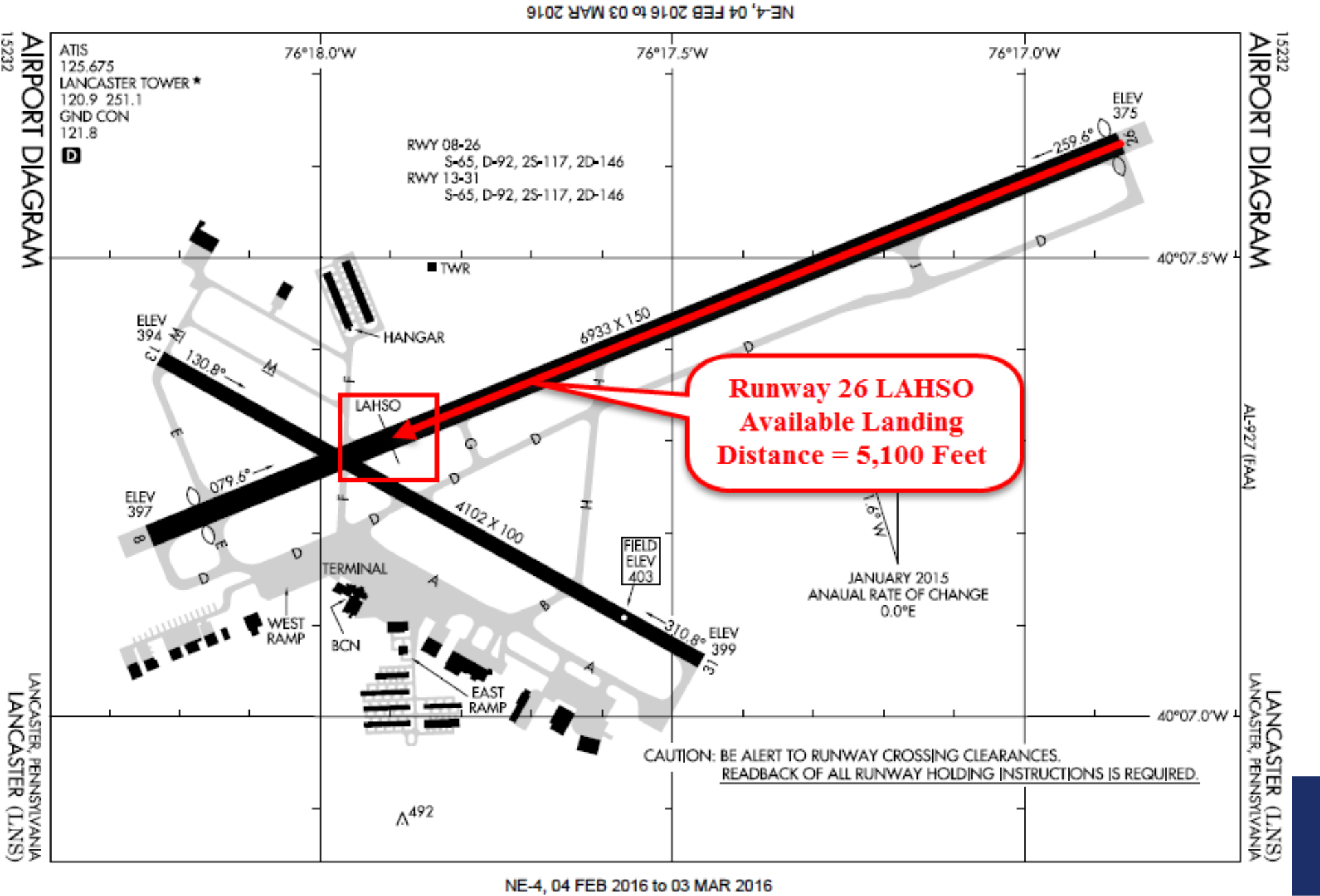


Land And Hold Short Operations (LAHSO) – KPNE Airport Diagram



NE-4, 03 MAR 2016 to 31 MAR 2016

Land And Hold Short Operations (LAHSO) – KLNS Airport Diagram



A FAR You Really Need to Understand

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14 CFR 91.103 – Preflight Action

14 CFR 91.103 – Preflight Action

- Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

  a) For a flight under IFR or a flight not in the vicinity of an airport, **weather reports and forecasts**, fuel requirements, **alternatives available if the planned flight cannot be completed**, and any known traffic delays of which the pilot in command has been advised by ATC;

  b) For any flight, **runway lengths at airports of intended use**, and the following takeoff and landing distance information:

     1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

     2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Runway Incursion Avoidance

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Operations at Non-Towered Airports

Operations at Non-Towered Airports

- Determining the Active Runway
  - Done via any or all of the following:
    - By observing arriving and departing traffic
    - By listening to arriving and departing traffic on the CTAF
    - By listening to ASOS/AWOS
    - By looking at the direction the wind sock is pointing
- Cautions
  - Occasionally pilots will land downwind or takeoff downwind. This may be done for any number of reasons. Examples include:
    - Minimizing the taxi distance from the hangar or tie-down to the runway to save fuel and/or Hobbs time
    - Minimizing the taxi distance from the runway to the hangar or tie-down to save fuel and/or Hobbs time
    - Did not know the ASOS/AWOS frequency
    - Complacency

Operations at Non-Towered Airports

- **Best Practices**
  - On the ground, pilots need to
    - **Listen to** what is being said on the **CTAF**
    - **Exercise vigilance** and **situational awareness**.
    - Together these efforts will help to avoid traffic conflicts.
  - On approach to an airport, pilots need to
    - **Monitor the CTAF from at least ten miles out**
    - Get a sense of the traffic volume at the airport and the runway in use for arrivals and departures.
    - This will build a mental image of the airport and result in very good situational awareness.

Radio Communications

- **Call Sign Usage**
  - Self-announcing with your N-number as a Call Sign on the CTAF (Common Traffic Advisory Frequency) at non-towered airports can cause confusion to other pilots.
    - Pilots will care less about the call sign than they will about the type of airplane entering the pattern or turning crosswind, base, or final.
    - Consider broadcasting
      - "Cessna 182" or "Red-white-and-blue Cessna 182" instead of Cessna 12345.
      - "Cessna 172" or "Red-white-and-blue Cessna 172" instead of Cessna 34567.

Radio Communications Best Practice

- **Best Practice**
  - Do not broadcast “Cessna 172, departing runway 3-0” unless you are sure you will be taking off.
    - If something happens to change your departure, you should broadcast “Cessna 172, holding short runway 3-0.”
    - This lets arriving traffic, especially if it is opposite direction traffic, know that the Cessna 172 will not be a factor for them.
  - Do not make the broadcast until you are ready to execute whatever you are broadcasting.
    - For example, do not broadcast “Cessna 172, departing runway 3-0” while you are still taxiing to runway 30.
    - Wait until you get to the hold short line and have completed your pre-takeoff run-up and then broadcast “Cessna 172, departing runway 3-0.”

Runway Incursion Avoidance

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Situational Awareness

Situational Awareness

- Maintain situational awareness
  - Be attentive for radio advisories: ATC and pilots on CTAF
  - Conduct a thorough and constant scan – see subsequent slides
    - Outside scan, looking for traffic
    - Inside scan of all instruments
  - Be aware of
    - Airport environment
    - Weather conditions: enroute & at destination
    - Fuel: burn rate, fuel remaining & fuel needed to complete trip
  - Practice sterile cockpit
    - During ATC communications
    - Taxiing
    - Takeoff
    - Landing
    - Taxiing

Situational Awareness – Visual Scanning – Piper PA-28

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning – Cessna 172

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning – Cessna 182T

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning – Cirrus SR20

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning – Beech A36

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning – Twin Comanche

- **A technique for instrument scan and outside scan**

Situational Awareness – Visual Scanning - Stearman

- **A technique for instrument scan and outside scan**

Runway Incursion Avoidance

-

Pre-Flight Planning What Can You Do?

Pre-Flight Planning

- **First Steps**
  - Determine departure, destination, and route of flight
  - Get a weather briefing for the route of flight
  - **Determine whether there are any TFRs along route of flight**
  - Perform a risk assessment for the flight
- **What's Next?**
  - Create a NavLog, either manually or electronically, for each flight leg
  - Print an airport diagram for departure airport
  - Print an airport diagram for destination airport
  - Determine fuel requirements and whether to land and refuel enroute
  - **Determine safe altitude for each leg, recognizing airspace and TFRs**
  - Determine how to get in-flight advisories
  - Determine CTAF, Tower, Ground, Clearance Delivery, ATIS, and ASOS frequencies for route of flight

Pre-Flight Planning Tools

- **Ground-based pre-flight planning**
  - DUATS - http://www.duats.com/
  - AOPA website under development, use http://www.aopa.org then click on “Go Fly” on menu bar then “Flight Planning Suite” on drop-down menu.
  - In the Flight Planning Suite, you can scroll down and select
    - AOPA Flight Planner
    - Airport Directory
    - Flight Risk Evaluator

Pre-Flight Planning Tools

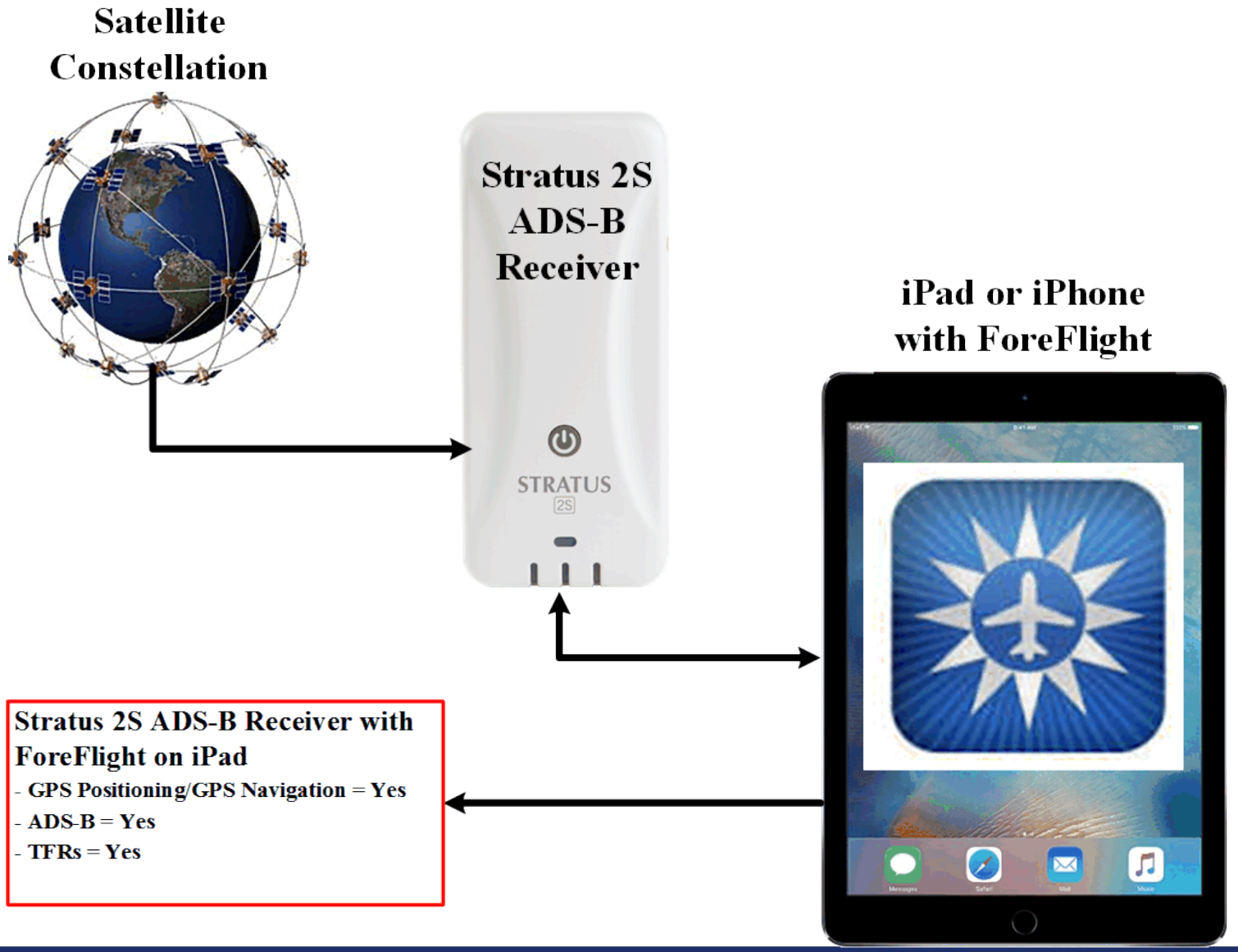
- **Ground-based pre-flight planning (continued)**
  - ForeFlight (iPad or iPhone)
    - Call up airport diagram.
    - ForeFlight will show you where you are as well as your taxi progress
    - Monitor while you taxi (scan, do not fixate)

Flight Management Tools

- **Air-based Flight Monitoring & Navigation and Taxiing**
  - Know fuel on board and burn rate in GPH
  - ForeFlight (iPad or iPhone)
    - Is your OS/IOS current?
    - Are your Apps current?
    - Have you downloaded the most current charts and approach plates?
    - Is your battery at full charge?
    - Did you pre-flight your EFB the night before your flight?
    - Are you displaying the airport diagram?
    - Do you connect to a Stratus in flight?
      - If not, do you know the limitations of your iPhone or iPad
  - Sectional Charts (paper) – Are they open and current?
  - Airport Diagrams (paper) – On your kneeboard and current?

In-Flight Gotchas with Avionics and Electronic Flight Bags (EFBs)

In-Flight Gotchas – ForeFlight & Stratus ADS-B



In-Flight Gotchas – ForeFlight & iPad or iPhone

Satellite Constellation

iPad or iPhone with ForeFlight

ForeFlight on iPad or iPhone

- **GPS Positioning/GPS Navigation = Yes**
- **ADS-B = No**
- **TFRs = No**

Runway Incursions

-

FAA

Baseline Remedial Training Lesson Plan

Runway Incursion Baseline Remedial Training Lesson Plan

- Pilots who experience a runway incursion may be required to receive remedial training using this lesson plan.
- This lesson plan can be accessed at the link below
  - https://www.faasafety.gov/files/gslac/library/documents/2015/Dec/109405/Runway%20Incursion%20Remedial%20Training%20Program%20RIRTP.pdf
- The FAA has a runway safety group website with best practices. This material can be accessed at the link below
  - http://www.faa.gov/airports/runway_safety/pilots/best_practices/

Parting Thoughts

The Three Most Useless Things to a Pilot

- **The runway behind you**
  - **Moral: know your aircraft's take-off minimums and calculate the weight and balance for your flight, your airport's runway length, density altitude, any obstacles to be cleared**
- **The altitude above you**
  - **Moral: know your aircraft's power settings for climb, cruise, and descent**
- **The fuel on the ground below you**
  - **Moral: know your aircraft's fuel capacity, fuel system, GPH burn rate, and winds aloft for the route of flight.**
- **Utilize superior judgment to avoid needing to use superior skill**
  - **Moral: know your aircraft's systems and how to use them**

FAASTeam
on
Don’t Cross The Line!
Runway Incursions:
Awareness & Avoidance

Questions?
Comments?
Ideas?

This Completes
Don't Cross The Line!
Runway Incursions:
Awareness & Avoidance

Be sure to sign in so your attendance is record validated!

FAA Customer Feedback Website

http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/qms/

ABE FSDO FAAST Program Manager – William Vanartsdalen
william.vanartsdalen@faa.gov

PHL FSDO FAAST Program Manager – Eric Sieracki
Eric.Sieracki@faa.gov

Credits and Information

FAA References and Information

- **FAA Private Pilot Airplane Airman Certification Standards – FAA-S-ACS-6**
  - https://www.faa.gov/training_testing/testing/acs/media/private_airplane_acs.pdf
- **FAA Pilots Handbook of Aeronautical Knowledge, Chapter 2 Aeronautical Decision-Making**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/04_phak_ch2.pdf
- **FAA Pilots Handbook of Aeronautical Knowledge, Chapter 14 Airport Operations**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/16_phak_ch14.pdf
- **FAA Pilots Handbook of Aeronautical Knowledge, Chapter 15 Airspace**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/17_phak_ch15.pdf
- **FAA Pilots Handbook of Aeronautical Knowledge, Appendix**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/20_phak_appendices.pdf

FAA Handbooks

- **Airplane Flying Handbook (FAA-H-8083-3B)**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aircraft/airplane_handbook/
- **Pilots Handbook of Aeronautical Knowledge (FAA-H-8083-25B)**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/
- **Risk Management Handbook – Change 1 (FAA-H-8083-2)**
  - http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/risk_management_hb_change_1.pdf
- **Runway Safety Pilot Best Practices**
  - http://www.faa.gov/airports/runway_safety/pilots/best_practices/

FAA References and Information

- **NTSB Accident Database**
  - http://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx
- **Electronic Code of Federal Regulations – Title 14 Aeronautics and Space**
  - http://www.ecfr.gov/cgi-bin/text-idx?SID=c709ce7f1eaf0f1b557578c87c378358&mc=true&tpl=/ecfrbrowse/Title14/14chapterI.tpl
- **Runway Safety Pilot Best Practices**
  - http://www.faa.gov/airports/runway_safety/pilots/best_practices/
- **Runway Incursion Baseline Remedial Training Lesson Plan**
  - https://www.faasafety.gov/files/gslac/library/documents/2015/Dec/109405/Runway%20Incursion%20Remedial%20Training%20Program%20RIRTP.pdf

AOPA References and Information

- **AOPA Safety Advisor – Airspace for Everyone**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Pilot-Resources/ASI/Safety-Advisors/sa02.pdf
- **AOPA Safety Advisor – Operations at Non-Towered Airports**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Pilot-Resources/ASI/Safety-Advisors/sa08.pdf
- **AOPA Safety Advisor – Operations at Towered Airports**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Pilot-Resources/ASI/Safety-Advisors/sa07.pdf
- **AOPA Safety Advisor – Do the Right Thing – Decision Making for Pilots**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Pilot-Resources/ASI/Safety-Advisors/sa24.pdf
- **Tips for Temporary Flight Restrictions and Special Use Airspace**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Flight-Planning/TipsForTempFlightRestrictions.pdf

AOPA References and Information

- **ASI Runway Safety Flash Cards**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Online-Education/Flash-Cards/RWcards_lo.pdf
- **Airspace Flash Cards**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Online-Education/Flash-Cards/airspace.pdf
- **Aircraft Flash Cards**
  - http://www.aopa.org/-/media/Files/AOPA/Home/Online-Education/Flash-Cards/13FN0022_Aircraft_flashcards_PDF_UPDATE.pdf

FAA FAAST Team Safety Seminars

- **Safety Seminars that may be of interest.**
- **Downloading these presentations – They use PowerPoint 2003 and Later.**
  - Some presentations are password-protected. If prompted for a password, click on the Read Only button.
  - TFR Awareness - http://williamjdoylejr.net/FAAST/TFRs/TFRs.ppt
  - Loss of Control - http://williamjdoylejr.net/FAAST/Loss_of_Control/Loss_of_Control_AOA.ppt
  - Airplane Performance - http://williamjdoylejr.net/FAAST/What_IF/Airplane_Performance/What_If_Airplane_Performance_ADM.ppt
  - VFR into IMC http://williamjdoylejr.net/FAAST/What_IF/What_If_VFR_into_IMC.ppt
  - Weight & Balance http://williamjdoylejr.net/FAAST/W&B/Weight_and_Balance.ppt
  - Cessna 172, 182, and 206 Accident Trends http://williamjdoylejr.net/FAAST/Cessna/Cessna_172_182_and_206.ppt
  - Cirrus SR20 and SR22 Accident Trends http://williamjdoylejr.net/FAAST/Cirrus/Cirrus_SR20_and_SR22.ppt

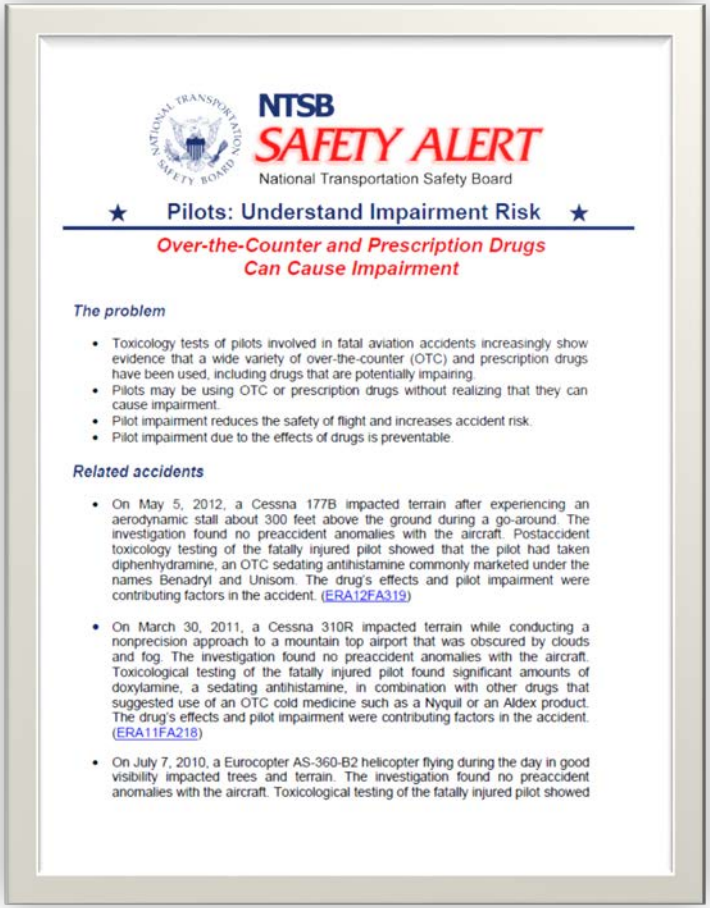
Appendix Understanding Impairment Risk (What Meds Can Do to You)

Overview

- National Transportation Safety Board (NTSB) & FAA Accident Study Findings
- Flying and Medications
- Drug Combinations
- Tips

NTSB Findings

- **Increased use**
  - Wide variety of Prescription & OTC drugs
  - Pilots may not realize they're impaired.
- **Extent of Impairment – Undetermined**
  - Difficult to determine in post mortem toxicology testing.



NTSB
SAFETY ALERT
National Transportation Safety Board

★ Pilots: Understand Impairment Risk ★

Over-the-Counter and Prescription Drugs Can Cause Impairment

The problem

- Toxicology tests of pilots involved in fatal aviation accidents increasingly show evidence that a wide variety of over-the-counter (OTC) and prescription drugs have been used, including drugs that are potentially impairing.
- Pilots may be using OTC or prescription drugs without realizing that they can cause impairment.
- Pilot impairment reduces the safety of flight and increases accident risk.
- Pilot impairment due to the effects of drugs is preventable.

Related accidents

- On May 5, 2012, a Cessna 177B impacted terrain after experiencing an aerodynamic stall about 300 feet above the ground during a go-around. The investigation found no preaccident anomalies with the aircraft. Postaccident toxicology testing of the fatally injured pilot showed that the pilot had taken diphenhydramine, an OTC sedating antihistamine commonly marketed under the names Benadryl and Unisom. The drug's effects and pilot impairment were contributing factors in the accident. (ERA12FA319)
- On March 30, 2011, a Cessna 310R impacted terrain while conducting a nonprecision approach to a mountain top airport that was obscured by clouds and fog. The investigation found no preaccident anomalies with the aircraft. Toxicological testing of the fatally injured pilot found significant amounts of doxylamine, a sedating antihistamine, in combination with other drugs that suggested use of an OTC cold medicine such as a Nyquil or an Aldex product. The drug's effects and pilot impairment were contributing factors in the accident. (ERA11FA218)
- On July 7, 2010, a Eurocopter AS-360-B2 helicopter flying during the day in good visibility impacted trees and terrain. The investigation found no preaccident anomalies with the aircraft. Toxicological testing of the fatally injured pilot showed

What's the Problem

- **Not easy to determine extent of impairment**
  - Different medication effects for different people
  - Post-mortem redistribution and sample type
- **Don't know about pilot's condition**
  - Pre-existing medical condition requiring medication
- **AME not consulted?**
- **Drug interactions**

Federal Drug Labeling Standards

Provide information for patients

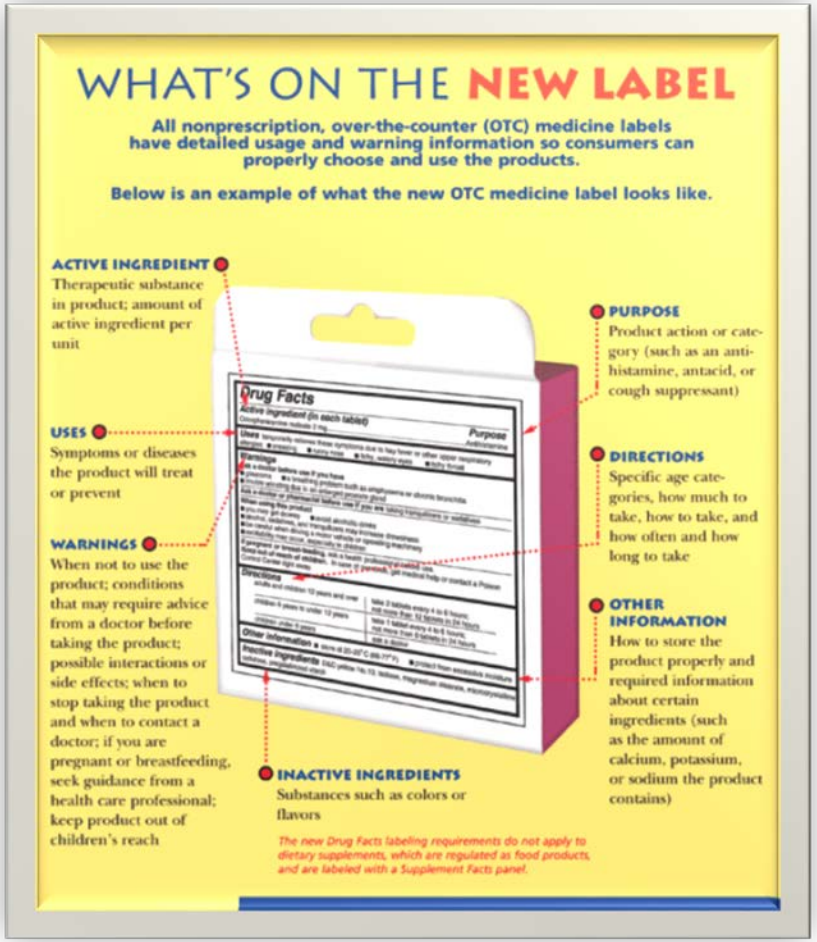
Provide information for healthcare professionals

It Depends

Both

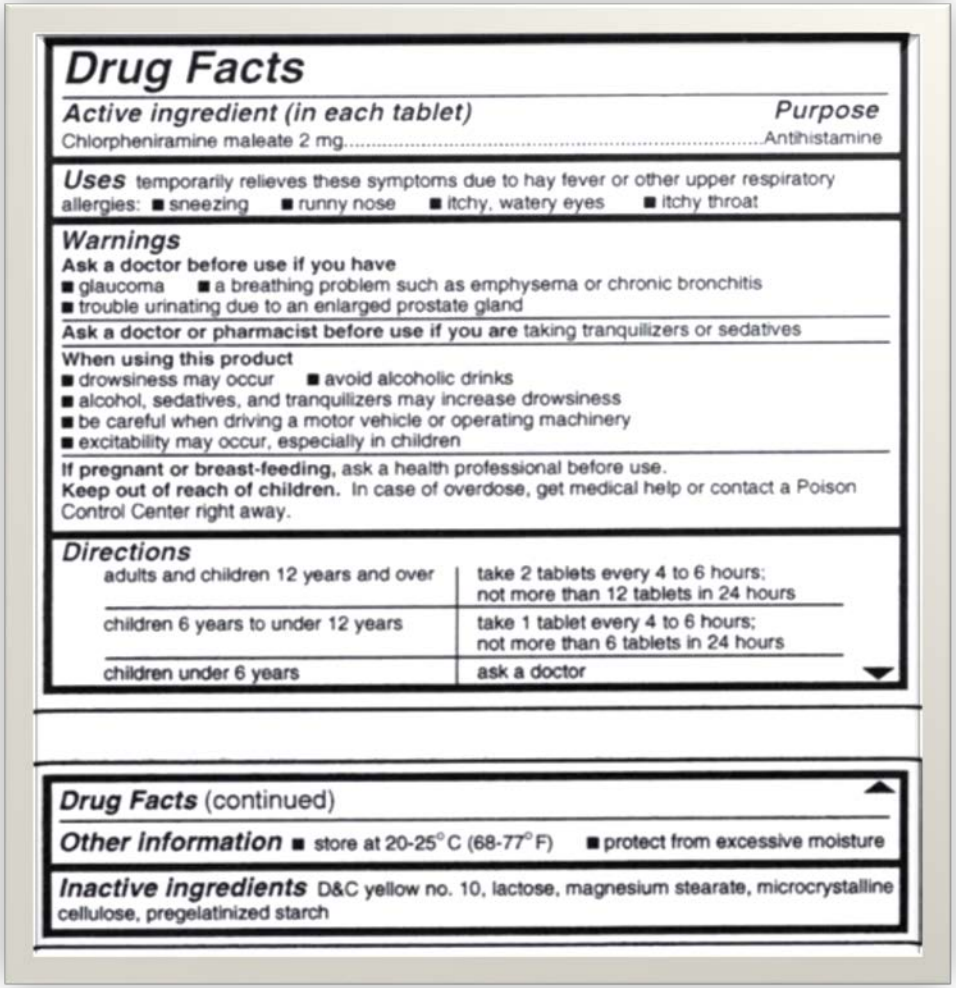
OTC Medication Labeling

- **Read the label**
- **Labeling Standards**
  - Directed to medication users
  - In non-technical language



OTC Medication Labeling

- **Read the label**
  - Active Ingredient(s)
  - Purpose
  - Uses
  - Warnings
  - Directions



Drug Facts

Active ingredient (in each tablet) — **Purpose**

Chlorpheniramine maleate 2 mg — Antihistamine

Uses temporarily relieves these symptoms due to hay fever or other upper respiratory allergies: ■ sneezing ■ runny nose ■ itchy, watery eyes ■ itchy throat

Warnings

Ask a doctor before use if you have
■ glaucoma ■ a breathing problem such as emphysema or chronic bronchitis
■ trouble urinating due to an enlarged prostate gland

Ask a doctor or pharmacist before use if you are taking tranquilizers or sedatives

When using this product
■ drowsiness may occur ■ avoid alcoholic drinks
■ alcohol, sedatives, and tranquilizers may increase drowsiness
■ be careful when driving a motor vehicle or operating machinery
■ excitability may occur, especially in children

If pregnant or breast-feeding, ask a health professional before use.
Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away.

Directions

adults and children 12 years and over	take 2 tablets every 4 to 6 hours; not more than 12 tablets in 24 hours
children 6 years to under 12 years	take 1 tablet every 4 to 6 hours; not more than 6 tablets in 24 hours
children under 6 years	ask a doctor

Drug Facts (continued)

Other information ■ store at 20-25°C (68-77°F) ■ protect from excessive moisture

Inactive ingredients D&C yellow no. 10, lactose, magnesium stearate, microcrystalline cellulose, pregelatinized starch

Sleep Aids & Cough Medications

- **Both likely to contain antihistamines which may cause drowsiness or sedation**
  - "Hang Over" effect
  - Side effects may last several days
- **Short term use only**

How long must I wait?

- **FAA recommends waiting five times the dosage interval.**
  - Particularly true for any medication causing drowsiness.
- **Four times per day = 6-hour intervals**
  - 5 x 6 = 30 hours

Prescription Medications

- **May recommend not operating a motor vehicle**
  - Includes cars, airplanes, boats, etc.
- **May be prescribed individually**
  - Perhaps by different Healthcare Providers
  - Interactions may not be addressed or unknown
- **Prescription drug labeling**
  - Directed to Healthcare Provider

Prescription Drug Labeling

- **Known by several names including *prescribing information* or *package insert***
- **Intended for Healthcare providers, but available to anyone.**
  - May be several pages long in very small print
  - Very technical language

Do not issue - Do not fly

Combining Medications

- **Prescriptions with Prescriptions**
  - Does the prescribing provider know you fly?
  - Does your AME know about all the medications you take and conditions you have?
- **Prescriptions with OTC**
  - Consult your AME and/or Regional Flight Surgeon
  - and/or consult your Pharmacist

Tips

- **Consult your AME before flying while using prescription and/or OTC Drugs.**
- **Make sure your AME knows about <u>all</u> the drugs you take and the medical conditions requiring their use.**
- **Let your prescribing doctor know that you are a pilot.**
- **Ask whether it's safe to fly with prescribed drugs and about adverse effects associated with drug combinations.**
- **In between doctor visits you're self assessing your condition before each flight. Ground yourself when you're not fit to fly.**

Want to learn more?

Medications and Flying

http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/Meds_brochure.pdf

NTSB Safety Alerts

http://www.ntsb.gov/safety/safety-alerts/Pages/default.aspx

Questions?

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