

II.B. Runway Incursion Avoidance

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| Objectives | The student should develop knowledge of the elements related to proper incursion avoidance. |
| Key Elements | <ul style="list-style-type: none">✈ Read back all clearances✈ Head down activities only while stopped✈ Always have a current airport diagram |
| Elements | <ul style="list-style-type: none">✈ Challenges unique to taxiing✈ Appropriate cockpit activities✈ Steering, maneuvering, maintaining taxiway/runway position, situational awareness✈ Hold lines✈ Landing and rollout✈ Airports with a control tower✈ Airports without a control tower✈ Exterior lighting and night operations |
| Schedule | <ol style="list-style-type: none">1. Discuss objectives2. Review material3. Development4. Conclusion |
| Equipment | <ul style="list-style-type: none">✈ White board✈ Markers✈ References |
| Instructor's Actions | <ol style="list-style-type: none">1. Discuss lesson objectives2. Present lecture3. Questions4. Homework |
| Student's Actions | Participate in discussion Take notes |
| Completion Standards | The student can safely and competently navigate towered and non-towered airports while effectively avoiding runway incursions. |

References

FAA-H-8083-25B, *Pilot's Handbook of Aeronautical Knowledge* (Chapter 8, **Appendix I**)

FAA-H-8083-3B, *Airplane Flying Handbook* (Chapter 2, Chapter 10)

AC 91-73B, *Parts 91 and 135 Single Pilot, Flight School Procedures During Taxi Operations*

https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2091-73B.pdf

Instructor Notes

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| Introduction | Overview—review objectives and key ideas. Why—runway incursions have led to serious accidents. While not a new problem, increasing air traffic increases runway incursions. |
| Challenges unique to taxiing | Surface movement accidents—one of the biggest safety concerns in aviation. Increased traffic/expansion at airports can create complex runway and taxiway layouts—makes surface operation more difficult, creates a more hazardous potential for incursions. |
| Appropriate cockpit activities | Minimize pilot’s workload during taxi operations. ✦ SOPs direct attention to essential tasks while taxiing. ✦ Complete pre-taxi checklists and data entry prior to taxiing. ✦ Only do heads down activities when the aircraft is stopped. |
| Sterile cockpit | Implemented from taxi through climb—keep focus on taxiing and ATC Don’t use cell phones or have conversations with others—avoid anything unnecessary to the duties of flight. |
| Planning, review, and briefing | Route planning: have a current copy of the airport diagram, review pre-designated taxi routes for familiarity at large airports. Review expected/possible routes based on runway in use and usable taxiways if no pre-designated taxi routes. Review: Write down ATC taxi instructions to prevent mistakes and ensure you are following the given instructions, not the expected/planned instructions. Ask ATC for help if confused, or ask for progressive taxi. Briefing: Review and brief hot spots, and stay alert in those areas, as they are the most common accident areas. Brief the route. |
| Taxiing near other aircraft | “Continuous loop” process to monitor and update progress/location. Know your present location and mentally calculate the next location on the route that will require increased attention (e.g. crossing traffic, hot spot, etc.) Understand clearances issued to pilots, other aircraft, vehicles. Be especially vigilant with aircraft with similar call signs—avoid inadvertently executing clearance for another aircraft. |
| Steering and maneuvering | Use rudder to maintain centerline—keep centerline aligned between your legs. |
| Maintaining position | Always have current airport diagram on hand—monitor location and route. |

Hold lines

If uncertain of location, stop and ask for help. Don't stop on a runway. Low visibility conditions—use everything available (airport diagram, heading indicator, airport signs, markings and lighting). Brief requirements and special considerations before taxi, and be alert if ATC states to hold short of the ILS critical area line.

Indicate where aircraft should stop when approaching a runway. Unauthorized crossing may result in an incursion with landing/departing traffic (higher speed = more hazardous incursion). Approaching hold lines from solid side—do not cross without clearance. Approaching hold lines from dashed side—cross and stop once fully past solid lines.

Landing/ Rollout

When landing on runway that crosses/approaches another runway”

- ✦ Brief the situation.
- ✦ Understand where you will stop, what taxiways are appropriate, any hotspots.
- ✦ Taxi slow, don't exit at high speeds.

If stopped between parallel runways, only cross after clearance. Don't cross the solid side of hold short lines without clearance. After landing, ensure that the entire aircraft (including tail section) has crossed over the hold short line—entire aircraft is clear of the runway safety area. If unable because of adjacent parallel runway's hold short line, stop and advise ATC.

After landing, nonessential communications/pilot actions should not be initiated until clear of the runway.

Airports with control towers

Use standard ATC phraseology at all times to facilitate clear and concise communication. State who you are, where you are, and what you want, when making initial contact with any controller. Focus on ATC clearance—don't perform any nonessential tasks while communicating with ATC. Read back all clearances.

Airports without a control tower

Planning: be familiar with local traffic pattern direction and pattern altitude. During calm wind conditions, flight ops may occur at more than one runway. Aircraft may be using an IAP to runways other than the VFR ops runway. Be alert, communicate intentions on CTAF, listen for other aircraft ops.

Maintain situational awareness—be aware of the route, know where you are at all times.

Not all aircraft are radio-equipped—before entering/crossing a runway, listen on CTAF for inbound traffic, scan the full length of the runway,

Exterior lighting and night ops

including the final approach/departure paths of runways that you will enter/cross.

Monitor/communicate on CTAF from engine start, taxi, and until 10 miles from airport.

Exterior lights—used to make aircraft more conspicuous on airport surface.

- ✦ Engines running—turn on rotating beacon any time an engine is running.
- ✦ Taxiing—prior to commencing taxi, turn on navigation, position, anti-collision lights. Turn on taxi light when moving/intending to move on ground, turn it off when stopped or yielding or as a consideration to others. Don't use strobe lights if they will adversely affect the vision of others.
- ✦ Crossing a runway—use all exterior lights.
- ✦ Entering departure runway for takeoff or LUAW—turn on all lights except landing lights.
- ✦ Takeoff—turn landing lights on when receiving takeoff clearance, or when commencing takeoff roll at an airport without an operating control tower.

At night, and when cleared to LUAW, line up slightly off the centerline to enable a landing aircraft to differentiate you from the runway lights.

Be cautious at night—reduced visibility makes taxiing more difficult. Ensure you remain on assigned taxi route (easier to get confused/miss a turn). Taxi slower, give yourself time to stop if something suddenly appears in range of sight (animal, debris, etc.), look closely for taxiway markings (especially hold short lines). Use taxiway edge lights/signs to maintain position.

Conclusion

Review of main points.

Surface movement accident—one of the biggest safety concerns in aviation. FAA hopes to reduce and eventually eliminate surface movement accidents by focusing resources to attack this problem head on.

CFI PTS

Objective: To determine that the applicant exhibits instructional knowledge of the elements of runway incursion avoidance by describing:

1. Distinct challenges and requirements during taxi operations not found in other phases of flight operations.
2. Procedures for appropriate cockpit activities during taxiing including taxi route planning, briefing the location of hot spots, communicating and coordinating with ATC.
3. Procedures for steering, maneuvering, maintaining taxiway, runway position, and situational awareness.
4. The relevance/importance of hold lines.
5. Procedures for ensuring the pilot maintains strict focus on the movement of the aircraft and ATC communications, including the elimination of all distractive activities (i.e. cell phone, texting, conversations with passengers) during aircraft taxi, takeoff and climb out to cruise altitude.
6. Procedures for holding the pilot's workload to a minimum during taxi operations which should increase the pilot's awareness while taxiing.
7. Taxi operation planning procedures, such as recording taxi instructions, reading back taxi clearances, and reviewing taxi routes on the airport diagram,
8. Procedures for ensuring that clearance or instructions that are actually received are adhered to rather than the ones expected to be received.
9. Procedures for maintaining/enhancing situational awareness when conducting taxi operations in relation to other aircraft operations in the vicinity as well as to other vehicles moving on the airport.
10. Procedures for briefing if a landing rollout to a taxiway exit will place the pilot in close proximity to another runway which can result in a runway incursion.
11. Appropriate after landing/taxi procedures in the event the aircraft is on a taxiway that is between parallel runways.
12. Specific procedures for operations at an airport with an operating air traffic control tower, with emphasis on ATC communications and runway entry/crossing authorizations.
13. ATC communications and pilot actions before takeoff, before landing, and after landing at towered and nontowered airports.
14. Procedures unique to night operations.
15. Operations at non-towered airports.
16. Use of aircraft exterior lighting.
17. Low visibility operations.