

FAASTeam CFI Workshop, Module 8, Core Topic 15 – Pilot Deviations Including Runway Incursions – Slide by Slide Narrative

- The following slide narratives or “Talking Points” are intended to be used by CFI Workshop Facilitators with modifications as appropriate to the audience. The speaker’s notes are repeated here with additional thoughts and information so that it’s not necessary to read the slides. **This presentation should take about 1 hour, longer if desired.**
- The slides of this presentation are intended to provide a backdrop while you make use of these talking points which will allow you to share the information and hopefully, stimulate attendee interaction. Each slide has a correspondingly numbered narrative.
- It is our goal to initiate conversation and interaction among the attendees as a process to determine and initiate best practices that are intended to mitigate the occurrences of Pilot Deviations.
- This subject is difficult at best since, although knowledge of Rules, airport signage and markings, acceptable ATC procedures, and VPR/IFR clearances is essentialbut frequently circumstances result in the lack of appropriate action based on that knowledge.
- Let’s encourage our Workshop attendees to explore ways to teach aviators how to identify and deal with the common and not so common distractions. Good Situational Awareness habits and Single pilot Resource Management are essential for PD mitigation.

Slide 1 – Cover Page:

This is CFI Workshop 8, Core Topic 15 – Pilot Deviations Including Runway Incursions. Completion of Workshop 8 finishes this Workshop Series and will result in the award of a Completion Certificate for all those who have attended all 8 Workshops.

Slide 2

This topic is and has been one of the most difficult training challenges all aviation instructors face because none of us really accept the fact that we might be involved in a Pilot Deviation or a Runway Incursion. What are Pilot Deviations? It’s a broad term used to identify an occurrence when an aircraft is not where it’s supposed to be. This is generally the result of the Pilot or Crew not adhering to ATC instructions and/or Regulations. Primarily, causes are distractions and lack of knowledge, especially in the case of Temporary Flight Restrictions (TFRs). When it comes to ATC instructions and clearances as well as airport surface markings and signage the most common reason for deviations is distraction. In some cases, airports especially older, larger, and busy airports can be very confusing compounded by many visual and audio distractions.

- **As the source of information and education on the subject, CFIs first must ensure that the knowledge of all aspects of operations that are subject to “deviations” is firmly in place. Then, as in every instance where risk exists, we must ensure that the chance of risk is recognized. What risks are possible during operation at any airport? What are the potential risk possibilities during airborne operations?**
- **Simulated situations or “Scenarios” could be helpful to demonstrate to students how easily distraction can limit our ability to perform even simple tasks. If you use scenarios, how do you create them and is this method effective? Examples**
- **How can we effectively teach our students to attain the level of “Situational Awareness” that is required to mitigate the risks that always exist within an aircraft cockpit?**

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Slide 3:

Mention any appropriate statistics, local or otherwise if you wish and/or move on.

Slide 4:

From the Office of Runway Safety, at the address below, this information as well as videos, animations, along with a host of resources and training aids can be found. Notice that the trend is slightly down for FY 2010.

http://www.faa.gov/airports/runway_safety/

Slide 5:

While we are identifying the proper procedures and the importance of compliance with ATC instructions and the Regulations, let's also remember to teach and demonstrate the importance of strict vigilance in the application of all this good knowledge. Doesn't do any good to achieve 100% on a written test of the rules and procedures if our students then go out and don't know how to apply the knowledge combined with where and when situations arise that are dangerous. It's at those potentials for danger that our students must be prepared to mitigate their exposure to mishaps."

List some situations for possible distraction during the taxi phase there are many:

- **Check lists**
- **Program GPS or FMS**
- **Passengers**
- **An interesting aircraft**
- **Drop something**

Distractions in flight, again could be a very long list depending on type of flight, equipment etc:

- **Looking for traffic**
- **Heads down working with navigation**
- **Check lists**
- **Automated systems**

The lists are almost endless; complacency and fatigue are always factors. What our students need are the methods you've learned from experience to avoid these distractions.

Slide 6:

- I'm a professional!
- I've trained long and hard for this!
- I've done it a thousand times!
- I'm current and very proficient!
- What could possibly go wrong!

If you think this way yourself it will be very difficult for you to present a strategy of mitigation for Pilot Deviation to your students. Read on

Some of the information you must emphasize is pretty basic – how to talk with tower, taxi instructions and signs and markings.

Your audience has probably heard all of this before – and often runway safety hears from pilots the statements listed on the slide and above...

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Remind the audience that even though they are highly trained and competent pilots – even if they are born to do something – mistakes can happen! (NEXT SLIDE)

Slide 7:

Any type of error, deviation, incursion, or mishap **can happen to even the most skilled and proficient at their trade!** These things occur because we just don't see it coming otherwise we'd take the action necessary to avoid the event.

Slide 8:

Do you educate your students as to the meaning of taxiway location signs? Of course, you do and you train and test your students to assure their understanding. **Do you teach them about distractions that may cause them to ignore or not respond to the information provided by airport surface signage?**

- **Statistics show that most runway incursions result from pilots who have acknowledged a clearance to hold short of a runway and then cross the hold short marking.**
- **The above statistical reference is only for those occasions that are reported. And, at towered airports when the tower is in operation.**
- **Consider operations at non-towered airports. What unique situations should your students be prepared for. What surprises can they expect?**
- **All the markings, signs, flashing lights, and instructions are not a substitute for situational awareness. Can you teach situational awareness? If so – How!**

Slide 9:

We've all seen photos of such mishaps. And, we truly think that this is an example of that "someone else" we're always speaking about. The pilot of this aircraft most likely had the same thoughts prior to the occasion for this picture. And, if you are thinking that this doesn't count because it is not a US registered aircraft you are fooling yourself.

- **It's very difficult to convince a person that he/she is not immune to a mishap.**
- **Scenarios may help us prove our point if we can create circumstances similar to those which lead to a mishap.**
 - **Simulated "hold short lines" or taxi limits at non-towered airports**
 - **Clearances to specific altitudes or headings**
 - **It's important to be fair with such scenarios; if they are not realistic your point will not be made.**

Slide 10:

Pilots and vehicle operators should be constantly aware that during certain low visibility conditions the movement of aircraft and vehicles on airports may not be visible to the tower controller. This may prevent visual confirmation of an aircraft's adherence to taxi instructions.

- **Again, is this a revelation to any of you? Do you think that your students would be surprised if you tell them that fog will restrict visibility?**
- **No, of course not however, this is a situation that can come as a surprise.**

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- **You, land and find that the surface visibility is not that great, you are unfamiliar with the airport, you didn't bother to get the taxi chart out and the risk potential increases dramatically.**
- **It can happen, how many of you have experienced something like this and realize that you were lucky not to have had an incident?**

Slide 11:

The most attentive attendee in front of you right now will be thinking:

“Yes, but I don't fly an aircraft like either of those!” “Of, course forward visibility is restricted from the cockpit of a heavy military conventional gear aircraft, too bad but it doesn't apply to me.” **“ So I'll think about something else until the next slide.**

- **We've all seen photos like this one. It doesn't necessarily depict a runway incursion however; it certainly is a situation the occurred because both pilots were unaware of the presence of another aircraft.**
- **What might have mitigated the risk in this situation?**

Slide 12:

This one speaks for itself! It's always some other turkey in the wrong place!

- There is a point to consider however, the possibility of animals or birds at rural and even towered airports.
- These potentials for mishaps really don't pay attention to signage or clearances – what precautions are appropriate?

Slide 13:

Think about this picture. **Classic isn't it? Do you think the pilot of the Cessna can see the Bonanza? If the pilot in the Beech is alone do you think he knows that the Cessna is there?** Well again, it's someone else Do your students think that way, maybe you should find out?

- **What procedures do you teach to mitigate risks in a situation like this one?**
- **Where should they look, what radio communication is appropriate?**
- **How many times have each of you looked, seen an airplane, and been surprised and thankful? Share that experience with every pilot you fly with. If you've not had the experience keep looking and you will.**

Slide 14:

The Office of Runway Safety statistics are shown as of June 15, 2010. The fourth quarter will tell the story for FY 2010 but, at this point in time it would appear that our efforts have begun to pay off.

Slide 15:

The first two subjects – Planning your operations on the surface and Employing Cockpit Discipline will help you maintain situational awareness. Loss of SA happens to pilots, controllers and drivers – and is a major factor in many if not most runway incursions.

- Understanding signs and markings is also a key in maintaining situational awareness.

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- When you examine many of the most serious runway incursions, you will find two things:
 1. If someone had looked both ways before entering the runway – they might have seen the runway was occupied and preventing the incursion.
 2. Sometimes – someone does look and takes evasive action based on seeing what could happen and saves the day!

Slide 16:

Airport Diagrams are now available for all towered airports online, free of charge from FAA

- Checking NOTAMs and ATIS for changes to the airport environment is very important. The number of runway incursions tends to go up when taxi routes have changed temporarily.
- A hot spot is defined as an area on an airport where the risk of a runway incursion or incident is high. Jeppesen has charted hot spots for years and Runway Safety has produced many hot spot brochures over the years.

Slide 17:

Who wouldn't do that? What a waste of time to tell anyone to "Verify Compass heading to confirm the proper runway or taxiway selection".

- **Could an accident really happen because a pilot didn't verify the assigned runway?**
- **Preliminary flight data from Comair Flight 5191's black box recorders and the damage at the scene indicate the plane, a CRJ-100 regional jet, took off from the shortest runway at Lexington's Blue Grass Airport, National Transportation Safety Board member Debbie Hersman.**

Slide 18:

DISTRACTIONS are a major factor – you need to be paying attention when taxiing the aircraft, when the aircraft is moving

- The majority of incursions happen during taxi out for takeoff
- Heads UP: Some air carriers are now color coding taxi charts to tell the crew where it is less risky to have heads down programming the FMS, etc. Difficult intersections may be coded red.
- RIIEP: Runway Incursion Incident Evaluation Program – this program, now defunct, had pilots who caused an incursion fill out a questionnaire about what happened. The percentage shown are from the 2007 results and mean
- Of pilots that had an incursion and participated in the program
72 percent of those pilots did not write down taxi routes and clearances
47 percent did not use the airport diagram during taxi

Slide 19:

The airspace is becoming increasingly more complex and congested. As a result there are more opportunities for Deviations and Incursions.

- New pilots must be made aware of this and experienced pilots must be kept up to date as to the changes and increased risks.

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- Distraction or being unaware can be deadly, **it is not necessarily a lack of knowledge; more often it's a lack of the application of knowledge** that causes Pilot Deviations on the surface and in flight.
- The knowledge must include that of risk mitigation as well as the rules and procedures. That's the complete package we must deliver to our students.

Slide 20:

Don't forget to check your student's knowledge of operational requirements of the various airspaces.

- Do not assume that more experienced pilots have the knowledge and understanding needed to operate safely.
- You could make a point by asking some airspace related questions during a flight review or training when it might be **DISTRACTING**.

Slide 21:

TFR – SFAR – MOA – ADIZ – PROHIBITED – ALERT – WARNING

- Discuss these airspace designations and others that might found in the area you are located
- Many opportunities for Pilot Deviations in and around Special Use and Restricted Airspace due to a lack of knowledge or awareness.
- The DC SFRA is a perfect example, who doesn't know that it exists? But, the airspace continues to be violated.

Slide 22:

Situational awareness, Single Pilot Resource Management (SRM), knowledge, and common sense will all serve the G/A pilot well. **How do we teach these important elements?** We can share knowledge and procedures, can we teach Situational Awareness and common sense? That is the challenge we face in our attempt to mitigate the danger of Pilot Deviations.

Some final thoughts and topics for discussion before the quiz, suggest how these might apply to training, evaluation, and the construction of Remedial Training Contacts:

- In 1973 a new “flight test guide” was developed which emphasized that one of the main skills instructors need to teach students is *how* to think, and how to keep up with the changes in the flying domain.
- The use of scenarios. Air Carriers call them LOFT (Line Oriented Flight Training), the military call them sorties.
- There are at least two requirements for a scenario. The mission must have a purpose (reason to go) and consequences if the mission is not completed.
- Scenarios, as typically used in flight training, is setting up a set of circumstances that can be used to teach a specific (canned) response to a in-flight event.
 - For example, an engine failure – pitch for best glide, etc. The method may be effective in teaching a critical response to the single-engine engine failure but it does not promote the development of critical thinking skills and would not be useful in evaluating them.

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- This example may be effective in evaluating a response to an emergency situation but it would not allow an examiner to observe the SRM skills of an applicant.
- For a practical test, a scenario is a single mission that is planned and carried out. That mission, plus trigger events that the examiner implements during the flight, should allow the applicant to demonstrate most of the Areas of Operations and Tasks required in the practical tests with minimum disruptions.

The “New Instrument Rating Practical Test Standards makes use of a Judgment Assessment Matrix and provides useful guidance to be considered during all training:

- The Judgment Assessment Matrix is to be used as a checklist where the examiner circles or marks one of three courses of action an applicant may take for each of the six SRM tenets within each of the Areas of Operation.
- Each Area of Operation has three courses of action for each of the six SRM tenets; hence, a matrix.
- The possible courses of action are “worst”, “okay”, and “best”. “Worst course of action” is defined as the action of the applicant is the worst decision given the dynamics of the flight environment. “Okay and best” are defined as the action of the applicant is satisfactory and best given the dynamics of the flight environment, respectively.
- The six SRM tenets are task management (TM), risk management (RM), automation management (AM), aeronautical decision-making (ADM), controlled flight into terrain awareness (CFIT), and situational awareness (SA).
- Directions for using the matrix and the definitions of the SRM tenets are provided on the Judgment Assessment Matrix.
- The applicant’s decisions in all Areas of Operation must be assessed at “okay” (satisfactory) or “best” to pass.
- Finally, for each wrong course of action, a discussion about which course of action would have been more appropriate is required on the backside of the form (matrix).
- All appropriate Areas of Operation and subtasks, and space for the written discussion of the more appropriate course of action are provided on backside.

Finish up discussions, administer and correct the quiz. The required CFI Workshop Core Topic training for CFI renewal is complete for all who have attended all 8 Workshops. Congratulations to anyone who is now eligible for a CFI Workshop Completion Certificate! Take a break.