

maneuver. During instruction, the pilot should be asked to verbalize the clearing procedures (call out “clear left, right, above, and below”).

High-wing and low-wing aircraft have their respective blind spots. The pilot of a high-wing aircraft should momentarily raise the wing in the direction of the intended turn and look for traffic prior to commencing the turn. The pilot of a low-wing aircraft should momentarily lower the wing and look for traffic prior to commencing the turn.

### **Pilot Deviations (PDs)**

A pilot deviation (PD) is an action of a pilot that violates any Federal Aviation Regulation. While PDs should be avoided, the regulations do authorize deviations from a clearance in response to a traffic alert and collision avoidance system resolution advisory. You must notify ATC as soon as possible following a deviation.

Pilot deviations can occur in several different ways. Airborne deviations result when a pilot strays from an assigned heading or altitude or from an instrument procedure, or if the pilot penetrates controlled or restricted airspace without ATC clearance.

To prevent airborne deviations, follow these steps:

- Plan each flight—you may have flown the flight many times before but conditions and situations can change rapidly, such as in the case of a pop-up temporary flight restriction (TFR). Take a few minutes prior to each flight to plan accordingly.
- Talk and squawk—Proper communication with ATC has its benefits. Flight following often makes the controller’s job easier because they can better integrate VFR and IFR traffic.
- Give yourself some room—GPS is usually more precise than ATC radar. Using your GPS to fly up to and along the line of the airspace you are trying to avoid could result in a pilot deviation because ATC radar may show you within the restricted airspace.

Ground deviations (also called surface deviations) include taxiing, taking off, or landing without clearance, deviating from an assigned taxi route, or failing to hold short of an assigned clearance limit. To prevent ground deviations, stay alert during ground operations. Pilot deviations can and frequently do occur on the ground. Many strategies and tactics pilots use to avoid airborne deviations also work on the ground.

Pilots should also remain vigilant about vehicle/pedestrian deviations (V/PDs). A vehicle or pedestrian deviation includes pedestrians, vehicles or other objects interfering

with aircraft operations by entering or moving on the runway movement area without authorization from air traffic control. In serious instances, any ground deviation (PD or VPD) can result in a runway incursion. Best practices in preventing ground deviations can be found in the following section under runway incursion avoidance.

### **Runway Incursion Avoidance**

A runway incursion is “any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land.” It is important to give the same attention to operating on the surface as in other phases of flights. Proper planning can prevent runway incursions and the possibility of a ground collision. A pilot should always be aware of the aircraft’s position on the surface at all times and be aware of other aircraft and vehicle operations on the airport. At times, towered airports can be busy and taxi instructions complex. In this situation, it may be advisable to write down taxi instructions. The following are some practices to help prevent a runway incursion:

- 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 NOTAM 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.

Approximately three runway incursions occur each day at towered airports within the United States. The potential that these numbers present for a catastrophic accident is unacceptable. The following are examples of pilot deviations, operational incidents (OI), and vehicle (driver) deviations that may lead to runway incursions.