

Ground Lesson: Airport Environment

Objectives:

1. to understand the airport environment including signage, procedures, and lighting

Justification:

1. all flights will be conducted within airport environments
2. an understanding of proper procedures will allow safe operations within airports
3. familiarity with airport environments are required for the private pilot checkride

Schedule:

Activity	Est. Time
Ground	1.5
Total	1.5

Recommended Readings:

PHAK	Chapter 12
AIM	Ch 2, Ch 4 Sec 3
AOPA	http://flash.aopa.org/asf/runway_safety/

Elements Ground:

- Airport Basics
 - runway orientation
 - segmented circle
 - noise abatement
- runway markings
- taxiway markings
- airport signs
- Operations
 - runway incursion avoidance
 - land and hold short (LAHSO)

Completion Standards:

1. when the student exhibits knowledge relating to the airport environment

Presentation Ground:

Airport Basics

1. Runway Orientation

- (1) runways are numbered based on their *magnetic* orientation to the closest 10°
 - i. runway pointing 123° magnetic would be runway 12
 - ii. runway pointing 002° magnetic would be runway 36
- (2) each “landing surface” actually has 2 runways...one for each direction you can land
 - i. a given landing surface will have reciprocal runway designations (rwy 12 and rwy 30)
- (3) if there are parallel runways, they will be designated L (left) or R (right)
 - i. if there are 3 parallel runways, the center would be designated with C (center)

2. segmented circle

- (1) :circle located on airport where wind and runway pattern information are located.
- (2) wind indicators
 - i. wind sock - points in the direction the wind is traveling
 - ii. tetrahedron - points into the wind
 - iii. wind tee - pretend it's a plane, pointing into the wind
- (3) pattern indicators define the standard patterns for each of the available runways
 - i. if there are more than one runway, there may be multiple pattern indicators

3. noise abatement

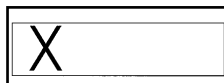
- (1) :procedures developed by the FAA and community to reduce the level of noise generated by aircraft departing over populated areas
- (2) each airport is different, and specific noise abatement procedures can be found in the AFD.
- (3) PAO - “recommend aircraft landing at Palo Alto airport fly at or above 1500’ until crossing the Bayshore Freeway. Recommend aircraft depart Rwy 31 turn 10° right after takeoff until reaching Dumbarton Bridge”
- (4) SQL - “Noise sensitive areas south through northeast of airport. For noise abatement procedures contact airport manager 650-573-3700”

runway markings

1. for VFR the important marks are simply the runway designation and the runway centerline

2. markings

- (1) closed runway - marked with “x”s at ends and possibly along runway



- (2) blast pad/ stopway - yellow chevrons indicate that area is unsuitable for taxi, takeoff or landing

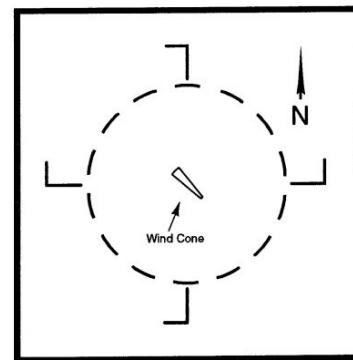
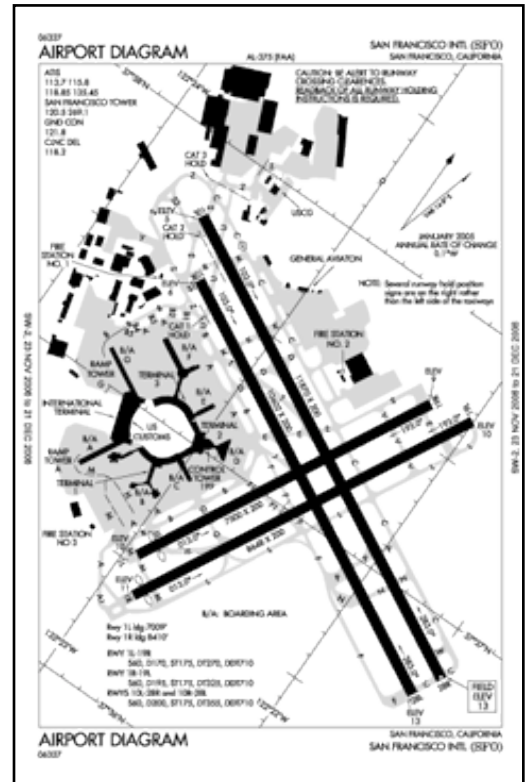
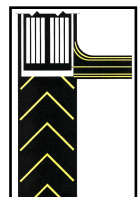
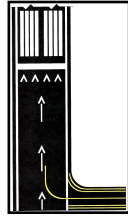


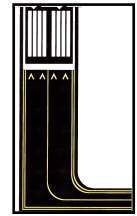
FIGURE 51.—Airport Landing Indicator.

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- (3) displaced threshold - area before runway threshold is available for takeoff in either direction, and landing from opposite direction



- (4) relocation of threshold - usually temporary relocation of threshold for construction, maintenance, etc. Markings can vary significantly

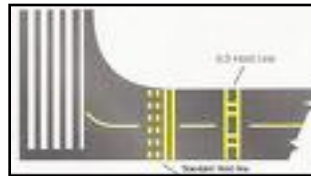


taxiway markings

- 1. taxiway centerline is defined by a continuous yellow centerline stripe.
 - (1) there may or may not be edge markings.
- 2. hold lines are used to define locations where the taxiway intersects a runway, and should not be crossed (in one direction) without a proper clearance
 - (1) remember, do not cross solid line, DO cross dashed lines (like passing lanes)

3. markings

- (1) standard hold line - hold short during normal operations
- (2) ILS hold line - hold short during ILS operations



airport signs

- 1. airport signs are critical to the proper safety and orientation when moving around the airport

- 2. there are 6 basic types of signs

- (1) mandatory signs - denotes critical information, i.e. runways, prohibited, etc
 - i. red with white inscriptions
- (2) location signs - identified taxiway or runway which you are located on
 - i. black with yellow inscription and yellow border
- (3) direction signs - indicate directions of taxiways leading out of an intersection
 - i. yellow with black inscription, and always contain an arrow
- (4) destination sign - indicate general direction to a location on the airport (FBO, military area, etc)
 - i. yellow with black inscription, and always contain an arrow
- (5) information signs - advise of such things as areas that cannot be seen, radio frequencies, etc
 - i. yellow with black inscription
- (6) runway distance remaining sign - provides distance remaining information to pilots during takeoff and landing operations (in thousands of feet)
 - i. black with white inscriptions



Operations

1. runway incursion avoidance

- (1) runway incursions are primarily caused by errors associated with clearances, communication, surface movement, and positional awareness
- (2) to help avoid incursions:
 - i. know airport diagram and taxi routs
 - ii. avoid distractions during taxiing
 - iii. read back (and understand) full instructions from controller

- iv. if unsure of location, ask for assistance
- v. during run-up, when possible, position aircraft to see landing aircraft
- vi. monitor appropriate radio frequencies
- vii. use lights to help others see you

2. land and hold short operations (LAHSO)

- (1) to increase airport capacity, efficiency, and safety, LAHSO clearances usually instruct an aircraft to land, and then hold short of an intersecting runway, taxiway, or predetermined point
- (2) *you may decline a LAHSO clearance at any time*, and as a student pilot, are required to decline LAHSOs. If you accept, you must fully understand the implications of the clearance.
 - i. LAHSO's usually shorten available landing distance (ALD). AFD can give you information on ALDs
- (3) typical clearance: "Cessna 12345, cleared to land 27 hold short 23"
 - i. response should be "cleared to land 27 hold short 23, Cessna 12345"