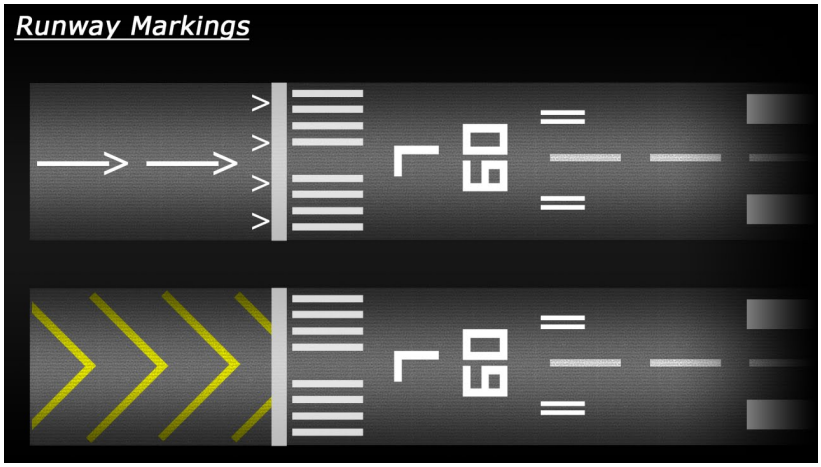
Unit 3 Airports, ATC, and Airspace

3.1 Runway Markings

- Runways are numbered by the direction in which they point. The number at the start of each runway indicates the magnetic alignment divided by 10
- A displaced threshold is a threshold [broad solid line across the runway] that is not at the beginning of the full strength runway pavement. The remainder of the runway, following the displaced threshold, is the landing portion of the runway.
- Area before displaced threshold (marked by arrows) can be used for taxi, takeoff, and landing rollout.
- Yellow chevrons = unusable runway, not even for taxiing.
- Closed runways are marked by Xs on each end of the closed runway
- Runway holding position markings - where a/c are supposed to stop. Have two solid and two dashed yellow lines; the a/c must hold short on the solid side.



3.2 Taxiway and Destination Signs

- Destination signs - black text on a yellow background with an arrow showing the direction of the taxi route to the destination. Outbound destinations commonly show directions to takeoff runways
- Taxiway location signs - black background, yellow letters, no arrows - the taxiway on which an aircraft is currently located.
- Taxiway directional signs - yellow background, black text, and arrows. Indicate the designation and direction of a taxiway.
    - When turning from one taxiway to another, a taxiway directional sign indicates the designation and direction of a taxiway leading out of the intersection.
- When approaching taxiway holding lines from the side with continuous lines, do not cross without ATC clearance.
- Runway holding position sign - mandatory instruction sign, white characters on red background. Located at the holding position on taxiways that intersect w/ runways or runways that intersect with other runways.

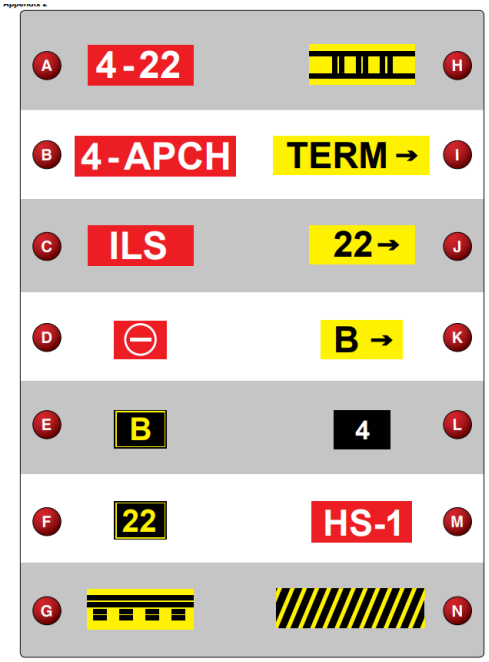


Figure 65. U.S. Airport Signs.

a. Runway holding position sign
b. Holding position sign for a runway approach area
c. Holding position sign for an ILS critical area
d. Sign prohibiting a/c entry into an area
e. Taxiway location sign
f. Runway location sign
g. Runway boundary sign
h. ILS critical area boundary sign
i. Direction sign for terminal
j. Direction sign for common taxiing route to runway
k. Direction sign for runway exit
l. Runway distance remaining sign
m. Hold short-1
n. Taxiway ending sign

- Vehicle roadway markings - pathways for vehicles to cross areas of the airport used by a/c.
    - Can be either solid white lines or a zipper pattern
    - Dashed line in the middle separates opposing traffic.

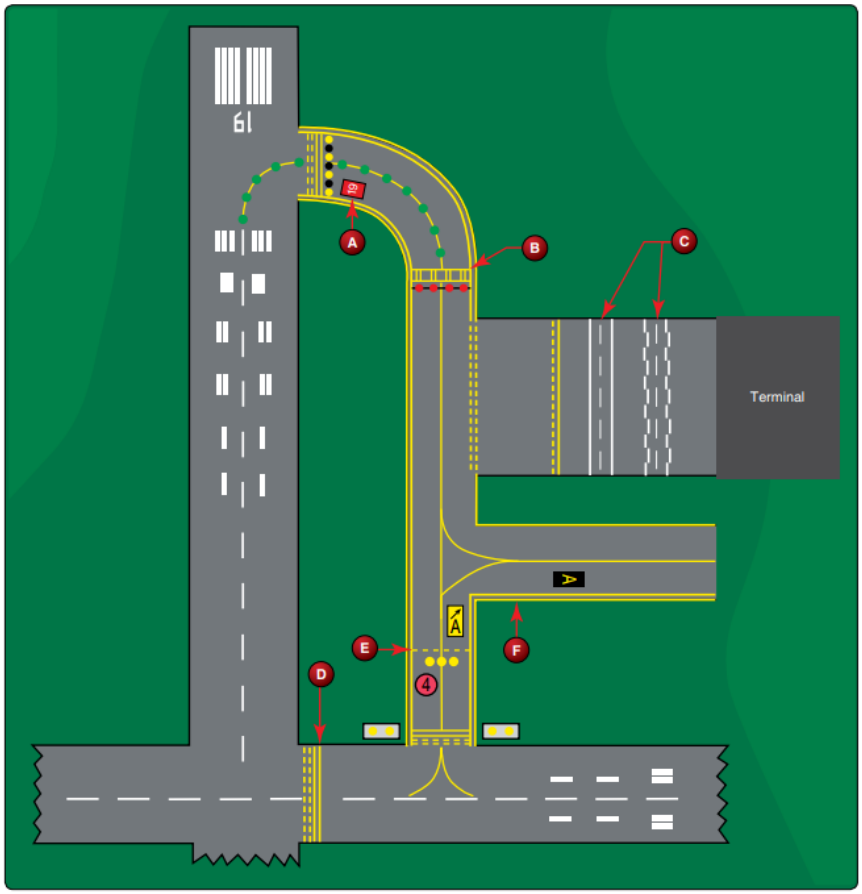


Figure 64. Airport Markings.

a. Holding position markings at beginning of takeoff runway 19
b. ILS critical area boundary marking
c. Roadway edge stripes
d. Runway holding position marking
e. Taxiway holding position marker
f. Taxiway boundary

- Yellow demarcation bar - 3' wide yellow painted bar separating a displaced threshold from a blast pad, stopway, or taxiway that precedes the runway. [yellow bar between chevron area and displaced threshold]

3.3 Beacons and Taxiway Lights

- Operation of the green/white rotating beacon at an airport in Class D airspace during the day indicates the weather is not VFR. [visibility less than 3 SM or ceiling less than 1,000 ft]
- A lighted airport may be identified by a green, yellow, and white rotating beacon.
- Military airports are indicated by beacons with two white flashes b/w each green flash
- Taxiway edge lights are blue
- Operating pilot controlled lighting (PCL): click the mic 7 times => turns everything on. Leave alone for high intensity. Medium-intensity: click 5 times. Low intensity: click 3 times.

3.4 Airport Traffic Patterns

- For non towered airports:
    - Left turns are standard unless otherwise specified
    - Must comply with any FAA traffic pattern for that airport when departing
- Recommended entry to the traffic pattern is 45 deg to the downwind leg, at the approximate midpoint, at pattern altitude (1,000 ft AGL)
- Remember, you land:
    - In the same direction as the tip of the tetrahedron is pointing,
    - As if you were flying out of the large (open) end of the wind cone, or
    - Toward the cross-bar end of a wind "T" (visualize the "T" as an airplane with no nose, with the top of the "T" being the wings)
- If there is no segmented circle, traffic pattern indicators may be installed on or near the end of the runway.
- The segmented circle provides traffic pattern info at airports without operating control towers.
    - Segmented circle is located in a position affording max visibility to pilots in the air and on the ground. Provides a centralized point for the other elements of the system.
    - Landing strip indicators - "L" shaped symbols that look like legs sticking out of the segmented circle. Always in pairs, with each pair representing one runway; always opposite to each other. The long leg of the L represents the runway direction.
    - Traffic pattern indicators - indicators at right angles to the landing strip indicator; the short leg of the L shows the direction of turns from base to final and upwind and crosswind.

    - Wind direction indicator - wind cone, wind sock, or wind tee. The large eng of the wind cone, wind sock, or wind tee points into the wind.
    - Landing direction indicator - a tetrahedron on a swivel installed when conditions at the airport warrant its use. Used to indicate direction of takeoffs and landings; located at the center of the segmented circle; can be lighted for night ops.
        - Small end points into the wind; the direction in which you should take off or land

3.5 Visual Approach Slope Indicators (VASI)

- VASI are a system of lights to provide visual descent info during an approach to landing.
- Standard VASI is a two-barred tier of lights.
    - If both bars are red, you are below glide path - "red is dead"
    - If the far bar is red, and the near bar is white, you are on glide path ("red above white, you're alright"). White over red is impossible.
    - Both bars are white, you're above glidepath
- VASI has no bearing on runway alignment; it only projects glidepath
- PAPI-precision approach path indicator
    - Low is four red lights (less than 2.5 deg)
    - Slightly low is 1 white and 3 reds (2.8 deg)
    - On glidepath is 2 white 2 red (3 deg)
    - Slightly high is 3 white and 1 red (3.2 deg)
    - High is 4 white (>3.5 deg)
- On a pulsating approach slope indicator,
    - Low is pulsating red; on glidepath is steady white or alternating red/white, and high is pulsating white.
- Each pilot of an airplane approaching to land on a runway served by a VASI shall maintain an altitude at or above the glide slope until a lower altitude is necessary for landing (14 CFR 91.129)

3.6 Wake Turbulence

- Wingtip vortices (wake turbulence) are only created when airplanes develop lift.
- The greatest vortex strength occurs when the generating aircraft is heavy, clean, and slow.
- The circulation of the vortex is outward, upward, and around each wingtip.
- Wingtip vortex turbulence tends to sink into the flight path of airplanes operating below the airplane generating the turbulence.
    - Thus, you should fly above the flight path of a large jet rather than below.
    - You should also fly upwind rather than downwind of the flight path, sing the vortices will drift with the wind.
- Most dangerous wind when taking off or landing behind a heavy aircraft is a light quartering tailwind. Will push vorties into your touchdown zone even if you are using proper procedures.

3.7 Collision Avoidance

- Nav lights: red light on the left wing; green light on the right wing; white light on the tail.
    - During night flight, when an a/c is crossing in front of you from your right to left, you see a red light.
    - When crossing in front of you right to left, you see a green light
    - When flying away from you, you see a white light. Wing nav lights cannot be seen from the rear.
    - When flying directly toward you, you see red and green but no white.
- A flashing red light on an a/c is a rotating beacon and can be seen from any angle.
- In daylight, scan for other a/c by using a series of short, regularly spaced eye movements that bring successive areas of the sky into your central visual field.
    - Each movement should not exceed 10 deg and each area should be observed for at least 1 sec
    - Only a very small area of the eye has the ability to send clear, sharply focused messages to the brain.
- At night, scan small sectors using your peripheral vision.
- Any a/c that appears to have no relative motion with respect to your a/c and stays in one scan quadrant is likely to be on a collision course. If it becomes larger, take immediate evasive action.
- Prior to each maneuver, clear the area with gentle turns left and right to facilitate scanning for a/c.
- All pilots are responsible for collision avoidance when operating in an alert area.
- Most midair collision accidents occur during clear days.
    - A near midair collision (near miss) is defined as:
        - When a possibility of collision occurs as a result of proximity of less than 500 ft to another a/c or
        - A report that is received from a pilot or flight crew member stating that a collision hazard existed between two or more a/c.
    - Reporting responsibility: it is the responsibility of the pilot and/or flight crew to determine whether a near midair collision actually occurred and, if so, to initiate a near midair collision report.
- Pilots are encouraged to turn on their landing lights when below 10,000, day or night, esp when visibility is reduced.
- ADS-B (automatic dependent surveillance-broadcast) is tech that allows atc and ADS-B equipped a/c to see traffic with more precision. Doesn't rely on radar and uses gps instead.
    - Works in remote areas like mountainous terrain
    - At low altitudes and even on the ground
    - Can be used to monitor traffic on taxiways and runways
    - Allows ATC as well as a/c with certain equipment to receive traffic info
    - Provides subscription-free weather info to all a/c flying over the US.

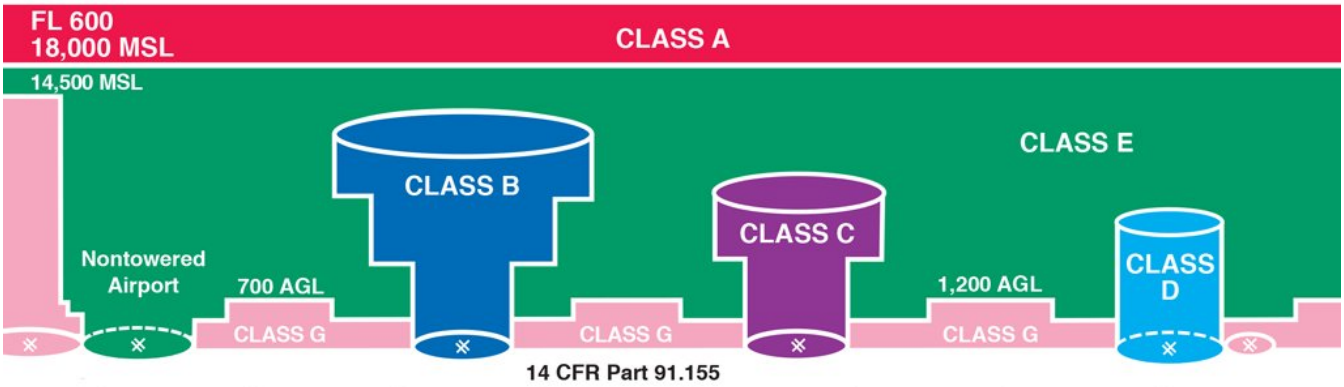
- ADS-B is req'd starting Jan 1, 2020

3.8 ATIS and ATC Communications

- ATIS - automatic terminal information service - continuous broadcast of recorded noncontrol info in selected high activity terminal areas (busy airports). Info is essential but routine.
- Includes latest weather, active runways, other remarks. Ceilings are usually not broadcast if abv 5,000 ft; visibility is usually not mentioned if it is >5 SM
- After landing, contact ground only when instructed by tower
- Clearance to taxi to the active runway is a clearance to taxi via taxiways to the active runway. You may not cross any runway along your taxi route unless specifically cleared by ATC to do so.
    - When cleared to a runway, you are cleared to that runway's runup area but not onto the runway itself.
    - "Line up and wait" means to taxi onto the runway and prepare for takeoff, but not to actually take off.
- When notifying the tower that you are ready for departure, you must inform ATC of your location so they can positively identify you before clearing you for takeoff.
    - When departing from a runway intersection, identify both the runway and the intersection in your request. ("rwy 24 at A3")

3.9 Airspace

U.S. Airspace Classes at a Glance



14 CFR Part 91.155

Airspace Class	Entry Requirement	Pilot Certificate or Rating	Two-Way Communication	Altitude Decoding Transponder	VFR Min. Visibility Below 10,000 MSL	VFR Min. Visibility 10,000 MSL and Above	VFR Cloud Clearance Below 10,000 MSL	VFR Cloud Clearance 10,000 MSL and Above
A	ATC Clearance	Instrument	Yes	Yes	N/A	N/A	N/A	N/A
B	ATC Clearance	Private Certificate or student with endorsement	Yes	Yes within 30 nm of the class B primary airport[1]	3 miles	3 miles	Clear of Clouds	Clear of Clouds
C	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	Yes within C space and above lateral limits of C space[1]	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
D	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	No unless required by other airspace	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
E	VFR: None IFR: Clearance	Student Certificate	IFR only	No unless required by other airspace	3 miles	5 miles	500 below 1,000 above 2,000 horizontal	1,000 below 1,000 above 1 mile horizontal
G	None	Student Certificate	No	No unless required by other airspace	Day: 1 mile Night: 3 miles	5 miles[2]	500 below 1,000 above 2,000 horizontal [2]	1,000 below 1,000 above 1 mile horizontal [2]

[1] An altitude decoding transponder is required above 10,000 MSL. 02/11

[2] When flying 1,200 AGL or below: DAY: 1 mile visibility clear of clouds; NIGHT: 3 miles visibility, 500 below, 1,000 above, 2,000 horizontal.

*** AGL = above ground level | FL = flight level | MSL = mean sea level *** www.FAASafety.gov

- Class A Airspace - airspace from 18,000 MSL up to and incl FL600; incl the airspace overlying 12 NM from the coasts of the 46 contiguous US states and Alaska.
    - IFR flight only. Must have an IFR clearance to enter and operate within Class A. PIC must be IR.
    - Must have 2-way radio; appropriate navigational capability, Mode C transponder w/ altitude reporting capability; ADS-B Out on the frequency of 1090 MHz
    - No VFR weather minimums b/c IFR only.
- Class B Airspace - generally the airspace from SFC to 10,000 MSL surrounding the nation's busiest airports.
    - Configuration of each B airspace is individually tailored; consists of a surface area and two or more layers. Think upside down wedding cake.
    - Operating Rules and Equipment Requirements
        - ATC clearance is req'd prior to operating in Class B airspace
        - 2-way radio
        - Operating transponder (4096 code or Mode S) and automatic altitude reporting equipment (mode C) are required within and above the lateral limits of B airspace and within 30 NM of the primary airport.
        - ADS-B Out on 1090 MHz or one that uses a universal access transceiver (UAT) on 978 MHz
        - The PIC must be at least a PPL. Student or Recreational may fly solo only if they meet the requirements in 61.95
        - For IFR operations, an operable VOR is required in addition to a 2-way radio and Mode C transponder
        - Max IAS when operating an airplane in the airspace underlying class B airspace is 200kt.
            - If the minimum safe airspeed for any particular operation is greater than the max airspeed prescribed in Part 91, the airplane may be operated at that speed.
            - In this case, pilots are expected to advise ATC of the airspeed that will be used.
    - Mode C Veil
        - The mode C veil is the airspace within 30 NM of a B primary airport from the surface up to 10,000 MSL
        - Unless otherwise authorized, a/c (with some exceptions) in this airspace must have a mode C transponder and ADS-B out equipment as req'd in B airspace
- Class C Airspace
    - Surrounds airports with an operational control tower, are serviced by radar approach control, and have a certain number of IFR operations or passenger enplanements.

        - Consists of a surface area with a 5-NM radius that extends from the surface to 4,000 AGL and a shelf area with a 10-NM raiduas that extends from 1200 to 4000 AGL.
    - The other area (airspace b/w 10 and 20 NM from the primary airport is not considered class C airspace. Radar services are available but not mandatory.
    - Operating rules and requirements.
        - 2-way radio
        - To operate within and above class C airspace, you must have: a 4096 code transponder with Mode C capability, 2-way radio, and ADS-B Out on 1090 MHz or a UAT on 978 MHz
        - When departing from a satellite airport without an operating control tower,pilots must contact ATC as soon as practicable after takeoff.
        - Unless otherwise authorized or required by ATC, the maximum IAS permitted when at or below 2500 AGL within 4 NM of a class C or D primary airport is 200kt
- Class D airspace
    - Class D airspace surrounds airports that have both an operating control tower and weather services available not associated with class B or C airspace
        - Airspace at an airport with a part-time control tower is classified as Class D only when the control tower is operating. When the tower is not in operation, the airspace at the surface becomes either E or G with an overlying class E area beginning at 700 ft AGL
        - Class D airspace normally extends from the surface up to and including 2500 AGL (charted on the sectional as MSL)
            - Lateral requirements of class D airspace are based on local needs
    - Operating rules and equipment requirements
        - 2-way radio prior to entering and while operating in class D airspace
            - When departing from a non-towered satellite airport within class D airspace, pilots must establish and maintain two-way radio comms with the primary airports' control tower.
                - The primary airport is the airport for which the class D is designated. Satellite airports are any other airports within the class D.
- Class E Airspace
    - Any controlled airspace that is not Class A, B, C, or D.
        - Except for FL180, class E airspace has no defined vertical limit but extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace

        - In most areas, the class E airspace base is 1200 AGL. In many other areas, starts at the surface or 700 AGL. Some class E airspace begins at an MSL altitude depicted on the charts instead of an AGL altitude.
    - Federal airways are class E airspace areas. Unless otherwise specified, they start from 1200 AGL up to but not including FL180
    - No minimum pilot certification requirements to operate under VFR in class E airspace.
        - ADS-B out on 1090 MHz or UAT at 978 MHz is required in Class E airspace when above 10,000 MSL over the 48 states and DC, excluding airspace at and below 2500 ft AL; and
        - Over the Gulf of Mexico at and above 3,000 MSL within 12 NM of the coastline of the US.
- Glass G Airspace - airspace that has not been designated as A, B, C, D or E; uncontrolled airspace
    - Exists beneath the floor of controlled airspace in areas where the controlled airspace does not extend down to the surface
    - No minimum pilot certification or airplane equipment is req'd in class G airspace
    - When approaching to land in an airport without an operating control tower in class G airspace, pilots should make all turns to the left unless otherwise indicated
- Basic VFR Weather minimums
    - Class A - none; VFR not allowed
    - Class B - below 10,000: 3 SM; clear of clouds; abv 10,000: same
    - Class C - below 10,000: 3 SM; 500 below, 1000 abv; 2000 horizontal; abv 10,000 MSL: same
    - Class D - below 10,000 MSL: 3SM; 500 below, 1000 abv, 2000 horizontal; same above 10,000 MSL
    - Class E - below 10,000 MSL: 3SM; 500 below, 1000 abv; 2000 horizontal; abv 10,000 MSL: 1,000 abv, 1000 below, 1 mi horizontal; 5 SM
    - Class G - below 10,000 MSL: Daytime: 1 SM, 500 below, 1000 abv, 2000 horizontal; night - 3SM; abv 10,000 MSL: 5SM; 1,000 abv, 1,000 below, 1 mile horizontal. When 1200 AGL or below: Day: 1SM clear of clouds; Night: 3SM 500 below, 1000 abv, 2000 horizontal
- Special VFR Weather Minimums (SVFR)
    - Except when operating under SVFR clearance, you may not operate your airplane beneath the ceiling under VFR within the lateral boundaries of the surface areas of class B, C, D, or E airspace designated for an airport when the ceiling is less than 1,000 ft.
        - You may not take off, land, or enter the pattern of an airport in B, C, D, or E airspace unless the ground visibility is at least 3SM. If the ground visibility is not reported, the flight visibility must be at least 3SM

    - With some expectations, SVFR clearance can be requested in B, C, D or E airspace. Must have vis >1SM and rmn clear of clouds
    - Flight under SVFR at night is only permitted if the pilot has an IR and the a/c is IFR equipped
    - SVFR is an ATC clearance obtained from the control tower. If there is no control tower, get your clearance from the appropriate ATC facility.

3.10 Terminal Radar Programs

- Terminal radar programs for VFR aircraft are classified as basic, TRSA, Class C, and Class B service
    - Basic radar service provides safety alerts, traffic advisories, and limited vectoring on a workload-permitting basis
    - TRSA service provides sequencing and separation for all participating VFR aircraft operating within a terminal radar service area.
- Terminal radar program participation is voluntary for VFR traffic
    - Contact approach control when inbound. When departing, you should request radar traffic information from ground control on initial contact, along with your direction of flight.

3.11 Transponders and Transponder Codes

- Three kinds of civilian transponders used in US airspace:
    - Mode A
        - A mode A transponder, when requested by the ATC radar beacon system (ATCRBS) transmits a 4-digit squawk code to ATC.
    - Mode C (automatic altitude reporting)
        - Converts the a/c's altitude in 100-ft increments to coded digital information, which is transmitted in the reply to the interrogating radar facility. A mode C transponder provides this information in addition to the squawk code.
        - If the a/c is mode c-equipped, you must set the transponder to reply Mode C (set function switch to ALT) unless ATC requests otherwise
        - Mode C is required when flying:
            - At or abv 10,000 MSL except in airspace below 2500 AGL
            - Within 30 NM of a class B primary airport
            - Within and above class C airspace
            - Into, within, or across the U.S. ADIZ (air defense identification zone)
    - Mode S (selective)
        - Designed to help ATC in busy areas and allow automatic collision avoidance. Allow TCAS (traffic alert and collision avoidance system) and TIS (traffic information system) to function.

        - Broadcast information about the equipped aircraft to the secondary surveillance radar system (SSR); TCAS receivers on board aircraft, and to the ADS-B system
            - Includes the callsign of the a/c and/or the transponder's permanent unit code (not the squawk code)
            - Also receive ground-based radar info through a datalink and can display that info to pilots to aid in collision avoidance.
- Military transponders: they have multiple; the military type that corresponds to civilian mode A and C is referred to as mode 3. Q's that refer to Mode A/3 or Mode C/3 can be thought of as Mode A and Mode C.
- 1200 is standard VFR squawk
- Do not IDENT unless requested by ATC
- Emergency codes: 7500 - hijacking; 7600 - lost radio; 7700 - general emergency; 7777 - military interceptor

3.12 Radio Phraseology

- When contacting a flight service station to open, close, or file a flight plan, the proper callsign is the name of the FSS followed by "radio" ("McAlester Radio")
- Civilian a/c should state their a/c callsign with the make or model aircraft ("Cessna 44WH or Baron 2DF")
    - When the make or model is used, drop the initial "N" from the callsign
- State each digit of the callsign individually; "6449U" is six four four niner uniform
- When calling out altitudes up to but not including 18000 ft, state the separate digits of the thousands, plus the hundreds ("4500 ft = four thousand five hundred). Unless otherwise noted, altitudes are in MSL.

3.13 ATC Traffic Advisories

- Radar traffic info services provide pilots with traffic advisories of nearby aircraft.
- Traffic advisories provide info based on the position of other aircraft from your airplane in terms of clock direction in a no-wind condition (based on ground track, not heading)
    - 12 o'clock - straight ahead; 6 o'clock - directly behind; 3 o'clock - directly to your right; 9 o'clock - directly to the left. Other positions are described accordingly.
- Usually also include distance away in miles; direction of flight of other a/c; altitude of other a/c.

3.14 ATC Light Signals

- Tower can communicate w/ you using light signals
- Meanings depend whether you're on the ground or in the air
- Acknowledge light signals in the air by rocking wings in daylight and blinking lights at night.
- If your radio fails and you wish to land at a towered airport, remain outside or above the traffic pattern until the direction and flow of traffic has been determined, then join the traffic pattern and maintain visual contact with the tower to receive light signals.

- Steady green - on the ground, cleared for takeoff; in the air, cleared to land
- Flashing green - on the ground; cleared to taxi; in the air; return for landing
- Steady red - on the ground; stop. In the air; give way to other a/c and continue circling
- Flashing red - on the ground, taxi clear of runway in use; in the air - airport unsafe, do not land.
- Flashing white - on the ground, return to starting point on airport; not used in air
- Alternating red and green - exercise extreme caution

3.15 ELTs and VHF/DF

- Older ELT's transmit simultaneously on 121.5 and 243.0 MHz, while newer ELTs transmit on 406 MHz
    - For older ELT's you can monitor either 121.5 or 243.0 MHz during flight and after landing to make sure it has not been activated.
    - Effective jan 11, 2019, 121.5 ELTs are prohibited, but ones that were installed before that date can continue to be used.
- The VHF/Direction Finder facility is a ground operation that displays the magnetic direction of the airplane from the station each time the airplane transmits a signal to it.
- In order to take advantage of VHF/DF radio reception for assistance in locating a position, an airplane must have both a VHF transmitter and receiver. The transmitter and receiver are necessary to converse with a ground station having VHF/DF facilities. The transmitter is also needed to send the signal that the DF identifies in terms of magnetic heading from the facility.

3.16 Emergency Radio Frequency

- Whenever a pilot encounters an emergency condition in an aircraft, they can contact the ATC facility or other agency in whose area of responsibility the a/c is operating for assistance by stating the nature of the emergency, the pilot's intentions, and the assistance desired.
    - If not in contact with ATC, broadcast on 121.5. Set the squawk to 7700 if an emergency landing is required.
- The message should consist of the following:
    - If in distress, "MAYDAY" x3. If urgency, begin with "PAN-PAN" x3
    - Station name or "any station"
    - A/c identification and type
    - Present position and heading (if lost, last known position, time, and heading since that position)
    - Nature of the emergency
    - Pilot's intentions and any requests
- Other information that may be broadcast include:
    - Weather if applicable
    - Altitude or FL
    - Fuel remaining in minutes

    - Number of people on board
    - Any other useful info

3.17 Land and Hold Short Operations (LAHSO)

- LAHSO takes place at some airports with a control tower in order to increase capacity and improve traffic flow.
    - Requires that you land and hold short of an intersecting runway, an intersecting taxiway, or some other designated point.
- Before accepting a LAHSO clearance, you must determine that you can safely land and stop within the available landing distance (ALD)
    - ALD data is published in the special notices section of the chart supplement
    - ATC will provide ALD data upon request
- Student pilots should not participate in LAHSO
- PIC has the final authority to accept or decline any LAHSO clearance
    - Decline LAHSO clearance if you determine it will compromise safety
- You should receive a LAHSO only in basic VFR conditions, i.e. >1000 ceiling; 3SM. Allows pilots to maintain visual contact with other a/c and ground vehicle ops.

Unit 3 Quiz 144/162
Missed Questions: 18
13. Runway/runway hold position signs denote intersecting runways.
20. A lighted heliport may be identified by a green, yellow, and white rotating beacon.
60. If another aircraft is on a collision course with your aircraft, there will be no apparent relative motion between your aircraft and the other aircraft. The aircraft doesn't always appear to get larger and closer.
70. ADS-B Out is always required whenever a flight is above 10,000 MSL and above 2500 AGL
86. The radius of the procedural outer area of class C airspace is normally 20 NM. It is not charted and typically doesn't require action from pilots.
88. All operations in class C airspace must be in an aircraft with a transponder w/ automatic altitude reporting capability. Clearances are not required to operate in class C airspace areas.
98. The minimum flight visibility required for VFR flights above 10,000 MSL and more than 1200 AGL in controlled airspace is 5 SM. Controlled airspace includes A, B, C, D, and E. Minimum in class E is 5 SM.
102. The minimum distance from clouds required for VFR ops on an airway below 10,000 MSL is 500 below, 1000 abv, and 2000 horiz.
104. During operations outside controlled airspace at altitudes of more than 1200 ft AGL and less than 10,000 feet MSL, the minimum flight visibility for nighttime VFR is 3 SM.
105. During operations outside controlled airspace at altitudes of more than 1200 AGL but less than 10000 MSL, the minimum visibility for daytime VFR is 1SM.
106. In controlled airspace, when abv 1200 AGL and less than 10,000 MSL, must remain 1,000 ft abv clouds.

107. ADS-B equipment is required when overflying class C airspace below 10,000 ft MSL. ADS-B is not necessarily required when operating under the shelf of class C airspace.
108. ADS-B Out is required within 30 NM of a primary B airport, even though it is not necessarily required for operations within class G airspace.
111. In class G airspace, minimum visibility for daytime VFR when abv 1200 AGL and less than 10,000 MSL is 1 SM.
113. In class G airspace, when abv 1200 AGL and less than 10,000 MSL, the minimum nighttime below cloud clearance is 500 ft.
120. SVFR has no minimum ceiling requirement, but the aircraft must maintain 1SM visibility and remain clear of clouds.
124. TSRA service provides sequencing and separation for participating VFR aircraft, not obstruction clearance.
141. An a/c flying on hdg 090 is advised of traffic at 3 o'clock, 2 miles, westbound. The pilot should look south (to their right) for traffic.