

Chapter 13

THE AVIATION ENVIRONMENT



In this section, we will discuss the aviation environment. For the sake of those who may not be aviators, we will review the aviation environment from a layman's point of view. As a member of the Civil Air Patrol, you may already meet at an airport. If not, you will most likely be working on an airport and around aircraft at some point in your CAP career. So familiarity with terms and hazards will be important to your success.

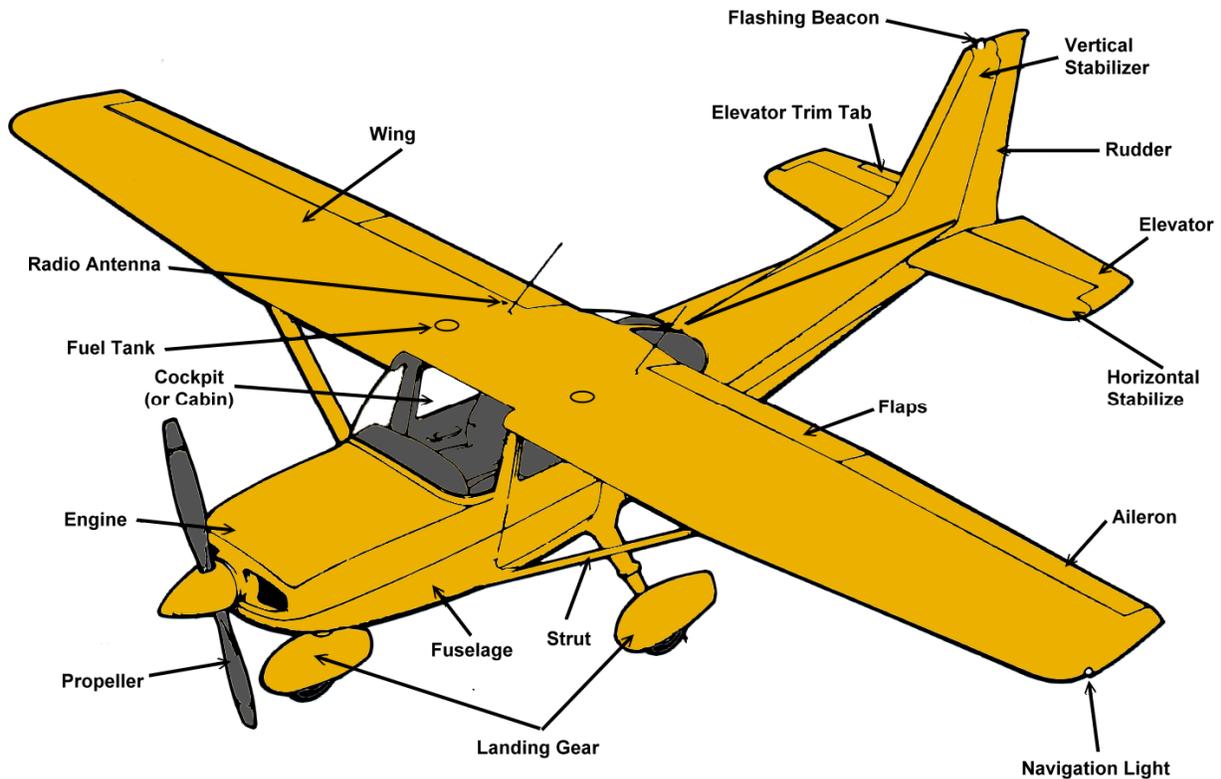
Terms



Someone visiting a hospital listening to two doctors talk, might as well be listening to a foreign movie. They have a vocabulary that is filled with terms and phrases that are primarily unique to the medical profession. Not unlike medicine and other professions, aviation has a unique set of terms. Many aviation terms come from French words, such as aileron and empennage. However most are English making them easy to remember.

Although the aviation vocabulary is very lengthy, we will focus on key terms. Overtime you will pick up new terms increasing your vocabulary.

Airplanes



Wing – The main lifting surface of an airplane.

Fuselage – The body of an airplane.

Horizontal Stabilizer – The horizontal tail surface of an aircraft that produces pitch (nose up and down) stability.

Vertical Stabilizer – The Vertical tail surface of an aircraft that produce yaw (nose side to side) stability.

Aileron – Hinged control surfaces that produces roll movement.

Flaps – Hinged control surface that produce more aerodynamic lift, allowing slower takeoff and landing speed.

Elevator – Hinged control surface which produces pitch (nose up and down) movement.

Elevator Trim – Hinged control surface on the elevator that assist the pilot in controlling undesired pitch.

Rudder – Hinged control surface on the vertical stabilizer that produces yaw (nose side to side) movement.

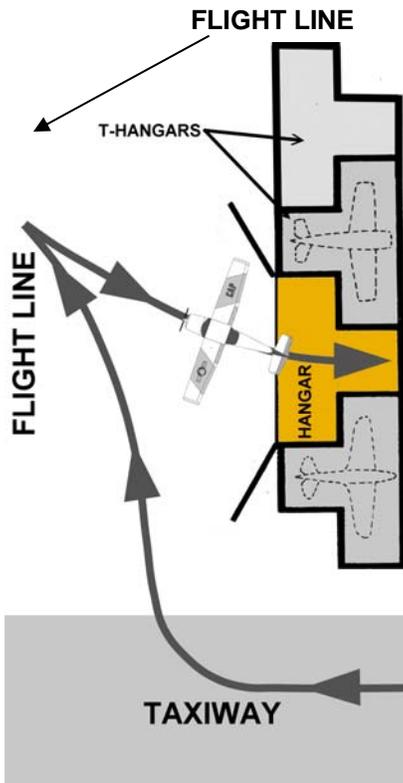
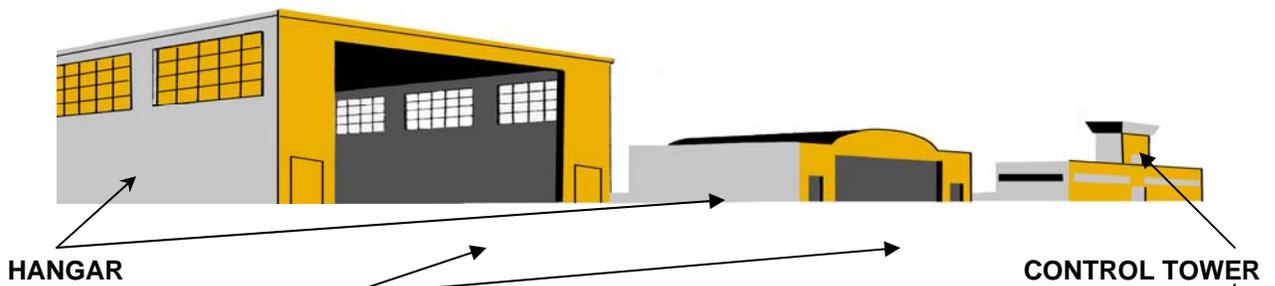
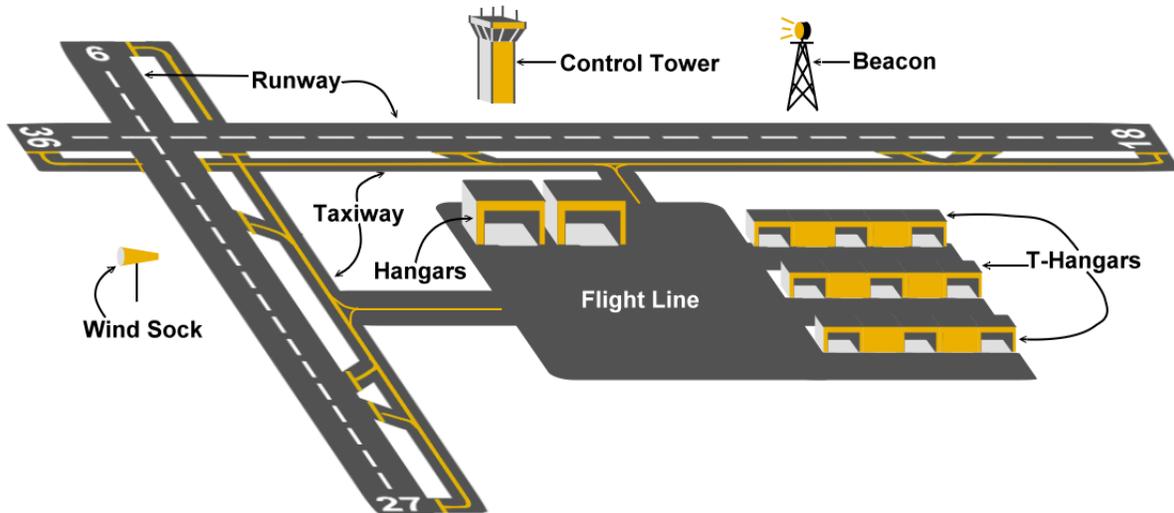
Propeller – Blades on an engine-driven shaft that, when rotated, produces forward thrust.

Cockpit (or Cabin) – Interior of an aircraft where the pilot and co-pilot sit to operate the aircraft.

Flashing Beacon – Red light on the top of the vertical stabilizer that is activated any time the aircraft is operational.

Navigation Lights – Red and green lights on the wing tips that are used to assist others to know the direction the aircraft is traveling in low light to dark condition (just like a boat).

Strut – Supporting member that supports the wing.



Hangar – A garage for aircraft.

Control Tower – Room on a high platform used by personnel who control air traffic.

Beacon – Rotating lights on a tower used to assist pilots in finding an airport, just like a lighthouse is used for ships.

Wind Sock – Device on an airfield used to visually measure airspeed and direction.

Flight Line – Outside area where aircraft park. A.K.A. a ramp.

Taxiway – A road leading from the aircraft parking area (flight line or ramp) to the runway; always marked with yellow lines.

Runway – Surface area used for takeoff and landings

Safely Operating Around Aircraft

We can only be successful as a team if we keep safety in mind at all times. Accidents tend to come out of no where. However when reviewed we typically find out it was a series of errors that lead to the accident. Working around aircraft can be exciting, but it can be horrifying if someone gets seriously injured. Here are some safety tips to keep in mind when working around aircraft:

- Always know your surroundings. Look for flashing beacon lights on aircraft to see if they are about to be or are in operation. Listen for the word "CLEAR". If you here this, someone is about to turn on an airplane.
- Always give way to airplanes. Never assume the pilot sees you. In many cases, the pilot may not even know you are there. It's easier for you to see them, then them to see you.
- Always remove any headgear when on an active flight line. It's been found that it's natural to chase after a hat that may have blown off. In the focus to catch the hat accidents such as running into spinning propellers can happen.
- Never horseplay around aircraft. Conduct yourself as a professional. Others who see you horse playing will quickly lose respect for you.
- Never run around aircraft. You lessen your chances of stopping before an accident takes place.
- If you have a need to walk underneath an airplane wing, place your hand in front and above your head. This will allow your hand to hit the wing before your head. Many pilots have learned this lesson the hard way by cutting their forehead on the training edge of a wing.
- Never touch any part of an aircraft unless instructed to do so by a trained aircrew member or flight line personnel. Remember an airplane is a machine with moving parts.
- Never under any circumstance touch a propeller. Only trained pilot and highly trained ground personnel should do this. There is always enough fuel in the lines to turn the propeller a half revolution (if the magneto is on) which is enough to kill someone.
- If you are given instruction by an aircrew or ground personnel, follow them!
- If you see a rock, screw, bolt or any other object on the ground that should not be there, pick it up. This is called foreign object debris or FOD. Many flight lines will have a designated container marked FOD were you can put the items you picked up. FOD can damage airplanes, so show your professionalism and courtesy by picking it up and throwing it away.
- Watch where you are walking. The flight line has metal rings protruding from the ground called tie-downs. These are used by aircrews to tie an airplane down to the ground.

Preparing for Flight

The little things you do before a flight can make your experience more pleasant or even may save your life in an emergency. Get into the habit of thinking ahead and thinking SAFETY.

Food

Never fly on an empty stomach. airsickness can be attributed to under eating, as much as to overeating, prior to flying. Avoid foods that make gases in the stomach and intestines. With increasing altitude, as the outside pressure decreases, these gases tend to increase and cause pain. You may obtain relief by belching or passing wind.

Always drink plenty of water prior to flying. The body can absorb tremendous amounts of water and it may help prevent air fatigue on long flights.

If the flight is to be lengthy, you should take along fruit or candy bars. Chewing gum is considered relaxing by many fliers, and aids in easing painful pressure in the inner ear.

If you do carry food, fruit, or candy, remember your manners when it comes to disposing of wrappers and peelings. You can't expect the pilot or aircrew to clean up after you.

Clothing

Dress properly for the season of the year and the terrain over which you are to fly. The body should always be covered, even in the tropics. In case of flash fires, exposed skin receives the worst burns. Nomex flight suits (either AF green or CAP blue) are highly recommended to for wear since they are designed not to catch on fire when properly taken care of. Refer to CAPM 39-1, *Civil Air Patrol Uniform Manual* for proper wear of the flight suite.

Emergency Exits

All CAP aircraft provide a means of quick exit in the air, on the ground, or in the water. Before takeoff be sure that you know which exit that you are to use. This may be a door or even a window. Ask a member of the flight crew if you have any questions.

Life Vest

Life vest are not normally used unless the flight will be beyond gliding distance to shoreline. If you are on a flight where life vest will be worn, make sure you are given complete instructions on how to use. Most importantly, make sure you understand the instruction. Life vest must be worn over all articles of clothing and equipment. A CO₂ cartridge is used to quickly inflate the vest. Should the vest leak or fail to inflate completely from the CO₂ cartridge, you can fill by blowing into the mouth tube.

Safety Belt

Safety belts can vary, however the most common is an over the shoulder and lap belt similar to those found in most cars. The locking connection is also similar to cars using a button to release. In some cases the locking connection is a flip up latch like those used on commercial airlines. In either case, the releases are designed to allow you to free yourself quickly. The safety belt is designed for two purposes: One, to keep you in the airplane; and two, to protect you in case of a forced landing. Turbulence has a tendency to throw a person from their seat. So you must always keep your safety belt on at all times during the flight. Do not release your safety belt until given to the O.K. by a member of the aircrew.

Forced Landing

If something happens to the airplane in which you are riding, do not panic. The pilot is the commander of the aircraft and you must carry out their instructions at all times. The most important consideration in a forced landing is to assume the best position for bracing yourself for any impact. A member of the aircrew can explain the best bracing position for the type of aircraft and seat location. After the aircraft has completely stopped, grab any first-aid kits or other equipment (i.e. life raft, fire extinguisher) and get out fast. If you can not grab these items quickly enough, then just get out. The preservation of life exceeds all else. Get at least 500 feet away from the aircraft. There may be danger of fire or explosion. Stay away from the plane until you are absolutely sure that there is no danger of fire.

SUMMARY EXERCISE

1. The flight line and a taxiway serve the same purpose.
 - a. True
 - b. False

2. The aileron is a control surface located on the wings that when manipulated make the aircraft pitch up and down.
 - a. True
 - b. False

3. This is a garage for airplanes.

4. Rotating lights on a tower used to assist pilots in finding an airport, just like a lighthouse is used for ships is called a _____.

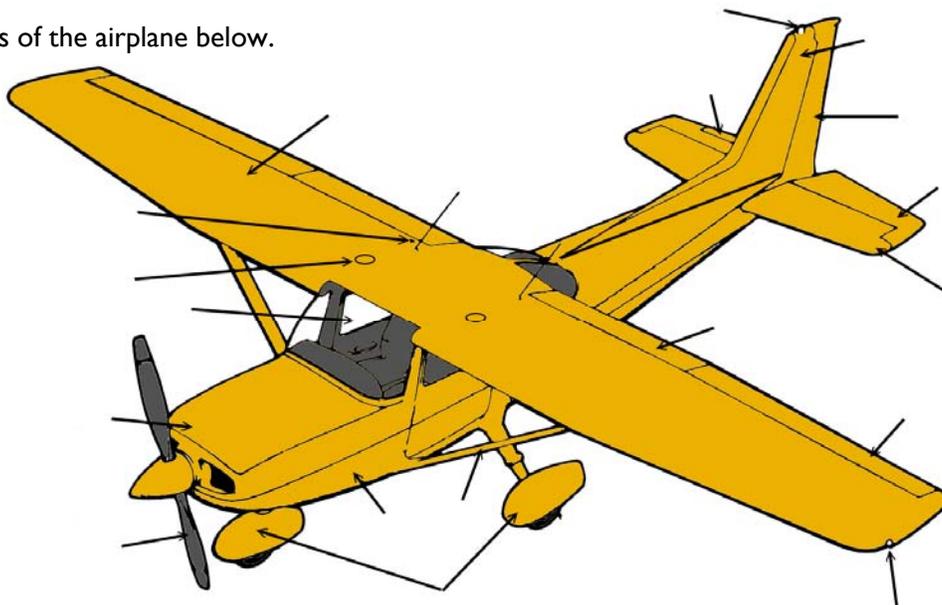
5. If you see a flashing red beacon or hear the word "CLEAR" yelled, what should you expect?

6. Rocks or bolts found on a flight line are called _____ and should be picked up to prevent damage to aircraft or persons.

7. Pilots can clearly see you and will gladly move out of your way when you are walking in front of them.
 - a. True
 - b. False

8. Touching a propeller when the engine is off poses no danger and should be done if you notice a propeller isn't straightened by the aircrew.
 - a. True
 - b. False

9. Identify the parts of the airplane below.



NOTES
