



PART 107 TEST CRAM SHEET

Drone Rules and FAA Regulations

- Must be at least 16 years old to get a Remote Pilot Certificate.
- Must report an accident to the FAA within 10 calendar days of any operation that results in serious injury or property damage over \$500.
- Must successfully complete an online recurrent training course (ALC-677) every 24 calendar months to maintain certification currency.
- A "small" unmanned aircraft weighs less than 55 pounds.
- Part 107 applies to civil / commercial operations, NOT public aircraft operated under a COA, model aircraft or hobby operations.
- You have 30 days to notify the FAA of your change of address.
- The Remote PIC is directly responsible for and is the final authority on the operation of the sUAS conducted under Part 107.
- Non-certificated operators can fly an sUAS, but only if they're being directly supervised by a certificated Remote PIC who has the ability to immediately take direct control of the sUAS. One way to do this is via a "buddy box" training system with one cord that connects two different control stations / remote controls / transmitters.
- Even though Visual Observers and other crew members aren't required to be certificated, they still can't participate in the operation if they're not in a physical or mental state to do so. This includes being too hungover, fatigued, and the other health and wellness considerations a Remote PIC would factor in prior to operating an sUAS.
- Aircraft registered under Part 107 costs \$5 per aircraft and is valid for 3 years.
- If your UAS is destroyed, sold, lost, or transferred to another operator, you should cancel your registration through the FAA's online registration system.
- If your UAS weighs 55 lbs or more, it must be registered using the FAA's paper-based registration process.
- Your UAS registration marking must be legible and durable. Sample methods include engraving, permanent marker, or self-adhesive label. It must also be visible on the exterior surface of the aircraft (i.e., you cannot put the registration number in a battery compartment)

- You must have your FAA registration certificate in your possession when operating an unmanned aircraft. The certificate can be available either on paper or accessible electronically.
- If the owner of the UAS is less than 13 years old, then the UAS must be registered by a person who is at least 13 years old.
- If your UAS is registered in a foreign country, it must be registered using the FAA's online registration system before it can be flown in the US.
- In case of an in-flight emergency, you are permitted to deviate from any rule of Part 107 to the extent necessary to respond to that emergency. You only need to report the incident only if details are requested by the FAA. The actual rule states that you would send a written report "upon request of the Administrator," so just a heads up that a deviation report isn't required, but if you're asked to put one together, you'll need to do so.
- Your UAS may not be flown faster than a groundspeed of 87 knots, which is equivalent to 100 miles per hour.
- Minimum visibility, as observed from where you're operating the sUAS / where your transmitter is, must be at least 3 statute miles (SM).
- If there are clouds, the aircraft must be at least 500 feet below the clouds and at least 2,000 feet horizontally from the clouds.
- You cannot fly an unmanned aircraft higher than 400 feet above ground level (AGL), unless it's flown within a 400-foot radius of a structure and does not fly higher than 400 feet above the structure's immediate uppermost limit.
- Scheduled maintenance should be performed in accordance with the manufacturer's suggested procedures.
- Visual Line of Sight (VLOS) must be accomplished and maintained by unaided vision. You can wear eyeglasses or contact lenses, but you cannot use binoculars. Looking through a first-person-view (FPV) screen doesn't count as VLOS.
- Your blood alcohol level needs to be less than .04 percent.
- At least 8 hours need to pass between drinking alcohol and piloting an unmanned aircraft (or taking part as another crewmember).
- It takes 3 hours for just one mixed drink to get through the body.
- If there is any doubt regarding the effects of any medication, contact your local Aviation Medical Examiner (AME).
- Want more information on the possible effects on flying or using over-the-counter medications? Look in the Aeromedical Factors chapter of the Pilot Handbook of Aeronautical Knowledge.



- You can actually lose your remote pilot certificate and/or not be allowed to apply for a certificate in the first place for up to one year if there's been any recent federal or state alcohol or drug violations. That includes refusing to submit to a blood alcohol test.
- In any sUAS flight emergency, rule #1 is to maintain control of your aircraft.
- Mitigate risk before flying by using the IMSAFE acronym.

Operations Over People & Moving Vehicles

- Do not operate your drone from a moving vehicle or aircraft *unless* you are flying your drone over a sparsely populated area
- Unless you're flying an unmanned aircraft that has been approved for operations in Category 1 - 4, flights over a human being is prohibited unless that human being is: (a) Directly participating in the operation of the small unmanned aircraft; or (b) Located under a covered structure or inside a stationary vehicle that can provide reasonable protection from a falling small unmanned aircraft.
- There are four categories of unmanned aircraft for routine operations over people and moving vehicles:

Category 1

- Unmanned aircraft must weigh less than 0.55 lbs, including everything on board or attached;
- Does not require labeling and must not have exposed rotating parts that would lacerate human skin;
- Does not require an FAA-accepted Means of Compliance (MOC) or Declaration of Compliance (DOC)
- Sustained flight over open-air assemblies is prohibited unless the aircraft is equipped with standard remote ID or a remote ID broadcast module

Category 2

- Unmanned aircraft weigh over 0.55 lbs; must not have exposed rotating parts that would lacerate human skin and must be labeled as Category 2
- Does not contain any safety defects and it must not cause injury to a human being with an impact greater than 11 foot-pounds of kinetic energy
- Requires FAA-accepted means of compliance and declaration of compliance.

- Sustained flight over open-air assemblies are prohibited unless the aircraft meets the requirements for standard remote ID or is equipped with remote identification broadcast module

Category 3

- Unmanned aircraft weigh over 0.55 lbs; must not have exposed rotating parts that would lacerate human skin and must be labeled as Category 3
- Does not contain any safety defects and it must not cause injury to a human being with an impact greater than 25 foot-pounds of kinetic energy.
- Requires an FAA-accepted means of compliance and declaration of compliance.
- Must not operate the unmanned aircraft over open-air assemblies
- Operations must be within or over a closed or restricted access site and all people within the site must be on notice that a small unmanned aircraft may fly over them.
- May only maintain sustained flight over people directly participating in flight operations or located under a covered structure or inside a stationary vehicle

Category 4

- Unmanned aircraft must have an airworthiness certificate issued under Part 21 and the operating limitations must not prohibit operations over human beings.
- Must be operated in accordance with the operating limitations specified in the approved Flight Manual and must maintain documentation of maintenance, preventive maintenance, alterations, and inspections performed for a period of 1 year.
- Sustained flight over open-air assemblies are prohibited unless the aircraft meets the requirements for standard remote ID or is equipped with remote identification broadcast module
- Category Labeling - The FAA allows the small unmanned aircraft to be labeled by any means as long as the label is in English, legible, prominent, and permanently affixed to the aircraft. If a label degrades and is no longer legible or attached to the aircraft, the remote pilot is responsible for providing a new label before operating over people.
- Means of Compliance (MOC) - a method to show that a small unmanned aircraft does not exceed the applicable injury severity limit upon impact with a human being, does not contain any exposed rotating parts that would lacerate human skin, and does not contain any safety defects.

- A MOC is required for aircraft eligible for operations over people in Category 2, Category 3, or both.
- An FAA-accepted MOC is subject to an ongoing review, and may be rescinded by the FAA if determined the MOC no longer demonstrates compliance with Part 107. If the FAA elects to rescind a MOC, it will publish a notice of rescission in the Federal Register.
- Declaration of Compliance (DOC) - the person who designs, produces, or modifies an unmanned aircraft must declare compliance with the appropriate performance-based safety requirements.
 - Category 1 operations do not require a Declaration of Compliance (DOC).
 - Records related to DOC must be maintained for a minimum of 2 years after ceasing the manufacturing of the aircraft.
- Category 3 operations may take place over or within closed or restricted-access sites where everyone within the site is on notice that a small unmanned aircraft may fly over them. The operational area cannot be considered an open-air assembly.
- Operations over moving vehicles must be Category 1, Category 2, & Category 3. Aircraft must not sustain flight over vehicles; transit operations only.
- Remote pilots are prohibited from operating a small unmanned aircraft as a Category 1, 2, or 4 operation in sustained flight over open-air assemblies unless the operation is compliant with Remote ID.
- Part 107 does not impose a specific distance when flying near people but you'll need to consider the aircraft's speed, trajectory, and environmental conditions such as wind, precipitation, the location and movement of people, vehicles, as well as terrain features. The remote pilot should evaluate and make adjustments to this minimum distance as conditions change.
- The categories of operations and their restrictions for operations over people do not change due to conditions of night; risk mitigation measures apply equally to day and night operations.
- The manufacturer's operating instruction should include a list of allowed modifications for the unmanned aircraft to remain eligible for its designated Category.
- If you intend to make modifications to your aircraft and conduct operations over people in accordance with the declared Category, you can only use parts from an approved list provided by the manufacturer's operating instruction.

- A small UA system may be eligible for one or more categories of operation over people as long as a Remote Pilot in Command cannot inadvertently switch between modes or configurations.

Night Operations

- Civil twilight is encountered two times each day. Evening civil twilight is the period of sunset until 30 minutes after sunset and morning civil twilight is the period of 30 minutes prior to sunrise until official sunrise.
- Unmanned aircraft flown during civil twilight are required to be equipped with anti-collision lights that are visible for 3 statute miles.
- The intensity of anti-collision lights can only be lowered if for safety reasons.
- Your eyes take approximately 30 minutes to fully adapt to darkness
- Exposure to bright lights can completely destroy dark adaptation and restarts the adaptation process.
- Consider using a red filtered light when setting up your drone or running preflight checklists. Red light is much less harmful to your night vision.
- If you need light when setting up your drone and running through your pre-flight checklist, consider using a red filtered light source.
- Identifying objects at night is done by scanning from left to right in 30 degree increments and pausing no longer than 2 to 3 seconds to focus on an object.
- Off-center viewing is a technique that requires an object be viewed by looking 10° above, below, or to either side of the object which allows the peripheral vision to be used to see the object.
- Objects viewed with off-center vision will disappear if viewed longer than 2 to 3 seconds.
- Fatigue, colds, vitamin deficiency, alcohol, stimulants, smoking, or medication can seriously impair vision.
- Cigarette smoking is the most common self-imposed stressor and greatly decreases visual sensitivity at night.
- Navigation lights help determine the direction of travel of an aircraft
 - A red light is on the left wing.
 - On the right wing, you'll see a green light.
 - A white light is visible on the rear of the aircraft.
- If you see both a Red and Green Light -- The aircraft is coming toward you.
- If you see just a White Light -- The aircraft is flying away from you.
- If you see both Red and White Lights -- The aircraft is moving from right to left

- The eye has light-sensitive nerves called “cones” and “rods”
 - Cones are used to detect color, details, and faraway objects and works best in bright lighted conditions.
 - Rods are unable to discern color but are very sensitive in low-light levels and much better at detecting movement and providing vision in dim light.
 - In the absence of normal light, night vision relies almost entirely on the rods and off-center viewing for night vision.
 - During daylight, an object can be seen best by looking directly at it.
 - At night, there is a blind spot in the center of the field of vision. The size of this blind spot increases as the distance between the eye and the object increases and large objects can be hidden from view.
- Autokinesis can occur when staring at a single light source for several seconds on a dark night -- the light appears to move on its own.
- The inability to determine if an object is moving towards you or away from you is called the Reversible Perspective Illusion.
- The Size-Distance Illusion results from viewing a light source with an increasing or decreasing brightness. Pilots may interpret the light as moving toward or away from them.
- Flicker Vertigo can occur when viewing a light with a flash rate between 4 and 20 cycles per second. The flashing light can produce conditions such as nausea, vomiting, and vertigo.

National Airspace System (NAS)

- Class B Airspace: "Big City" airports marked by solid blue lines, requires airspace authorization.
- Class C Airspace: "City" airports marked by solid magenta lines, requires airspace authorization.
- 110/SFC means controlled airspace from the surface up to 11,000 ft. MSL.
- 110/20 means controlled airspace from 2,000 ft. MSL up to 11,000 ft. MSL.
- Class D Airspace: "Diminutive" or "Dime-Sized" airports marked by dashed blue circles or sets of lines, requires airspace authorization.
- [25] means Class D controlled airspace from the surface up to 2,500 ft. MSL.
- [-25] means Class D controlled airspace from the surface up to (but not including) 2,500 ft. MSL.

- When a Class D airport tower is not in operation, one of the following becomes applicable: a) Class E surface area rules or; b) a combination of Class E rules to 700 feet AGL and Class G rules to the surface.
- Class E Airspace: "Elemental" or "Everywhere," is controlled airspace. There are a few types of Class E airspace, but you only need authorization to fly in Class E airspace if it is "within the lateral boundaries of the surface area of Class E airspace designated for an airport."
- Class E Airspace at the surface is marked by a magenta-dashed circle or set of lines. If it's a Class E airport that's surrounded by a closed off circle or circle with enclosed extensions, you need authorization. If it's only an extension area, you do not need an airspace authorization but should still exercise extreme caution.
- Class E Airspace starting at 700 ft. AGL is marked by a thick, fuzzy magenta shaded set of lines. You do not need authorization to fly in this type of Class E.
- Class E airspace starting at 1,200 ft. AGL isn't marked on a chart. Meaning, if you're looking at a sectional chart without any class of airspace indicated, (most of the airspace in the U.S.), it's Class G airspace from the surface up to 1,200 ft. AGL, and then it becomes Class E controlled airspace. You do not need authorization to fly in this type of Class E.
- Class G airspace is uncontrolled airspace, meaning that as long as there aren't other special use airspace considerations or NOTAM / TFR considerations, you do not need additional authorization or permission to fly there.
- Special Use airspace is defined by areas in which certain activities must be confined or where limitations may be imposed on aircraft operations that are not part of those activities.
- Prohibited areas are marked with a "P" and a number; no flying allowed.
- Restricted areas are marked with an "R" and a number and outlined with blue hash marks. In a restricted area, you might find unusual, often invisible, hazards to aircraft like artillery firing, aerial gunnery, or guided missiles. Drone pilots can fly in Restricted areas, but you need to contact the controlling agency in charge of the area for specific permission.
- Warning areas are similar to Restricted areas but marked with a "W."
- Military Operations Areas are marked with MOA on a chart. In an MOA, each pilot is responsible for collision avoidance. To find out if an MOA is "hot," or active, refer to the border of the Sectional Chart and then contact the controlling agency for more information.
- Alert areas are depicted on Sectional charts with an "A" followed by a number to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. As a drone pilot, you can fly in an

Alert area, but you should exercise extreme caution. And, like operating in a Military Operations Area (MOA), each pilot is responsible for collision avoidance in an Alert area.

- A Military Training Route (MTR) is used by the military for conducting low-altitude, high-speed flight training at speeds in excess of 250 knots (that's almost 300 mph). On a Sectional Chart, MTRs are identified as either IFR (IR) or VFR (VR), followed by a number.
- MTRs with four numbers denote routes flown at 1,500 ft. AGL and below. At such a low altitude, this can present challenges to an unmanned aircraft.
- MTRs with three numbers denote routes flown with at least one segment above 1,500 ft. AGL.
- A Temporary Flight Restriction (TFR) is a restriction on an area of airspace due to the movement of government VIPs, special events, natural disasters, or other unusual events.
- A Notice to Air Missions (NOTAM), formerly called a Notice to Airmen, describes airspace information that is time-critical and either of a temporary nature or not sufficiently known in advance to permit publication on aeronautical charts or in other operational publications.
- TFRs and NOTAMs affect ALL aircraft.

Reading Sectional Charts

- You'll have access to the FAA's supplemental charts during the FAA Knowledge Exam (the same supplement that we reference throughout this course). In that supplement, just after the Table of Contents on page 1-1, is a great legend that walks through the specific icons and numbers you may be asked to interpret. USE THIS LEGEND.
- The equator is an imaginary line drawn around the Earth that is equally distant from the North and South poles. It divides the Earth into the Northern and Southern hemispheres, and it's considered to be at 0° latitude. There are other imaginary lines that run parallel to the equator around the Earth, and these are the lines of latitude.
- The prime meridian is an imaginary line that runs vertically down the Earth from the North to the South pole and divides the Earth into the Eastern and Western hemispheres. It passes through Greenwich, England, and it represents 0° longitude. There are other imaginary lines that run up and down the Earth parallel to the prime meridian, and these are lines of longitude.

- As you move North, away from the equator, the latitudinal degree numbers go up. As you move South, they go down.
- As you move West or left, away from the prime meridian, the longitudinal degree numbers go up. As you move East, they go down.
- Each degree of latitude and longitude is made up of 60 units called “minutes” (unrelated to time) and is marked as a '. On a Sectional Chart, these minutes show up as small tic marks that you can actually count.
- Each longitudinal and latitudinal line is marked 30 minutes from the next line, which means they are half a degree apart, since 60 minutes is 1 degree.
- A small magenta colored flag indicates a visual reporting checkpoint or waypoint for manned VFR aircraft. As a drone pilot, you should expect a higher volume of manned aircraft traffic here.
- Above Ground Level, or AGL, describes the literal height above the ground over which you're flying.
- Mean Sea Level, or MSL, is your true altitude or elevation. It's the average height above standard sea level where the atmospheric pressure is measured in order to calibrate altitude.
- On a Sectional Chart, all of the numbers you see that denote altitude are denoted in MSL, unless they are in parentheses. If you see a number in parentheses, that denotes AGL.
- Isogonic lines indicate the magnetic variation or difference between true vs. magnetic north.
- If you think about the grid that is formed by intersecting lines of latitude and longitude, then we're calling the inside of each grid space a quadrangle. A Maximum Elevation Figure (MEF) is the minimum altitude that you can fly in a given quadrangle and still be able to clear all obstacles in that quadrangle, including terrain and obstructions.
- If you're asked about natural terrain elevation in a given Sectional Chart figure, you can consult the color chart, where the different color tints show bands of elevation relative to sea level. These colors range from light green for the lower elevations to dark brown for the higher elevations.
- A Victor Airway is a straight-line segment that's used to depict low-altitude civilian air traffic. On a Sectional Chart, these show up as thick, faded blue lines. Victor Airways are identified by a number, similar to an interstate highway (for example, a pilot could say that he/she is "flying Victor One Five"). Victor Airways are designated as Class E airspace and they start at a base of 1,200 ft. AGL and go up to but not including 18,000 ft. MSL. Along these Victor Airways lines, you have low-altitude civilian pilots flying from 1,200 ft. AGL to 18,000 ft. MSL. If you

get asked about the minimum altitude / lowest elevation of a Victor Airway, it'll be 1,200 ft. AGL.

- Still reading? Cool. Make sure to go through the Advanced Sectional Chart Interpretation lecture one more time :) Lots of great Sectional Chart questions in there!

Airport Operations

- The Chart Supplement U.S., formerly called the Airport/Facility Directory, provides the most comprehensive information on a given airport.
- At an airport, each runway is labeled with a number between 1 and 36, and that number corresponds to the runway's magnetic, or compass, alignment.
- As an example, Runway 9 indicates 090° magnetic and Runway 27 indicates 270° magnetic. To put it another way, Runway 9 points East (90°), Runway 18 points South (180°), Runway 27 points West (270°), and Runway 36 points North (360°).
- When a pilot uses Runway 9, he or she is landing or taking off to the East, or at a heading of 090°. If a pilot is using Runway 27, he or she is landing or taking off to the West, or at a heading of 270°.
- Runways are typically used in both directions, but remember that each direction is named separately, so Runway 9 in one direction is Runway 27 in the other direction — in this example, East vs. West. The two numbers differ by 18, which is 180°.
- The normal traffic pattern at an airport is a left pattern. In a left pattern, all turns are made to the left unless otherwise specified.
- In an ideal flight pattern, aircraft are taking off and landing into a headwind, and runways are typically designed to take advantage of normal wind patterns.
- A manned aircraft pilot should arrive at the proper traffic pattern altitude prior to entering the traffic pattern. That altitude varies from airport to airport and is available in the Chart Supplement.
- The recommended entry position to an airport traffic pattern is to enter 45° at the midpoint of the downwind leg at traffic pattern altitude.
- As a Remote PIC, you can't operate a small unmanned aircraft in a manner that interferes with operations and traffic patterns at any airport, heliport, or seaplane base.
- An aircraft in distress always has the right of way over all other air traffic.

- When it comes to other aircraft you might encounter, from helicopters to gliders, powered parachutes, and balloons, your sUAS should yield right of way.
- If you happen to be operating a fixed-wing unmanned aircraft and are approaching another, similar-sized fixed-wing unmanned aircraft, both pilots should alter course to the right.
- To comply with See and Avoid requirements, a Remote PIC cannot use a first-person view camera or binoculars to assist. Only a Remote PIC's diligence, or own natural unaided eyesight (glasses and contacts are OK) can be used.
- According to the FAA, to properly scan for other aircraft in the sky, you should systematically focus on different segments of the sky for short intervals. Imagine quickly scanning from left to right in intervals of no more than 10° to make sure you can efficiently cover the entire sky.
- If the color of an airport icon is blue, the airport has an operating control tower. If it's magenta, the airport does not have a control tower.

Weather and Micrometeorology

- At sea level, standard air temperature is 15°C (59°F), and standard air pressure is 29.92" Hg, or inches of mercury (1013 millibars). At these standard conditions, your density altitude and your pressure altitude will be equal to each other.
- Density altitude is the altitude at which your aircraft "feels" like it's flying. When we talk about density altitude, if the density altitude is higher, it means thinner air. If the density altitude is low, it means thicker air.
- As your density altitude increases, the performance of your aircraft decreases. Density altitude increases at higher elevations, lower atmospheric pressures, higher temperatures, and higher humidity.
- Anywhere there is uneven heating of the Earth's surface, you'll find convective currents. On a low-altitude flight over different types of surfaces, updrafts are likely to occur over areas like pavement or sand, and downdrafts often occur over water or expansive areas of vegetation like a group of trees.
- Be especially vigilant when flying around large buildings or large natural obstructions. They can break up the flow of the wind and create wind gusts that change rapidly in direction and speed.
- Wind shear is a sudden, drastic change in wind speed and/or direction over a relatively small area. Wind shear can occur at all altitudes, in all directions, and it's typically characterized by directional wind changes of 180° and speed changes of 50 knots or more.

- Always be alert to the possibility of wind shear, particularly when flying in and around thunderstorms, areas of low-level temperature inversion, frontal zones, and clear air turbulence.
- Evaporation and sublimation are the only ways water vapor is added into the atmosphere. Evaporation is the changing of liquid water to water vapor. After a rain, as the rainwater disappears from the ground, it evaporates into the atmosphere. Sublimation is the changing of ice directly to water vapor, completely bypassing the liquid stage. If you've ever seen dry ice, you've seen sublimation at work.
- The dew point, given in degrees, is the temperature at which the air can hold no more moisture, so it's at 100% humidity. As moist, unstable air rises, clouds often form at the altitude where temperature and dew point reach the same value. At this point, the air is completely saturated, and moisture begins to condense out of the air in the form of fog, dew, frost, clouds, rain, hail, or snow. Typically, when the temperature and the dew point converge, you will have fog.
- Frost is considered hazardous to sUAS operations because it spoils the smooth flow of air over the propellers or wings and makes it harder for the aircraft to generate lift. Frost decreases the lift capacity of the aircraft.
- Review both METAR and TAF lectures and practice questions! Too much information to put into a cram sheet :)
- Thunderstorms are produced by cumulonimbus clouds. They form when there is 1) high humidity — sufficient water vapor or moisture ; 2) unstable conditions — an unstable lapse rate (the lapse rate describes the rate of change of the temperature as the air increases in altitude); and 3) lifting force — an initial upward boost to start the process (heat).
- A thunderstorm begins with the cumulus stage, in which lifting action of the air begins.
- Within approximately 15 minutes, the thunderstorm reaches the mature stage, which is the most violent time period of the thunderstorm's life cycle.
- Once the vertical motion near the top of the cloud slows down, the top of the cloud spreads out and takes on an anvil-like shape. At this point, the storm enters the dissipating stage.
- A squall line is a nonfrontal, narrow band of thunderstorms usually ahead of a cold front.
- If you see lenticular clouds, expect turbulence. Wind can be blowing quite strong through lenticular clouds.

- To pilots, the most dangerous type of cloud is a cumulonimbus, or thunderstorm, cloud. Since rising air currents cause cumulonimbus clouds, they are extremely turbulent and pose a significant hazard to flight safety.
- In aviation, a ceiling is the lowest layer of clouds reported as being broken or overcast, or the vertical visibility into an obscuration like fog or haze.
- Unstable air tends to display the following characteristics: cumuliform clouds, turbulent air, good visibility, and showery precipitation.
- Stable air tends to display the following characteristics: stratiform clouds, smooth air, fair-to-poor visibility in haze and smoke, and continuous precipitation.

Drone Flight Operations

- The FAA recommendation is to fly at least 2,000 feet horizontally from skeletal structures like radio and television towers to be clear of guy wires.
- If you encounter an emergency situation while flying, rule #1 is to maintain your aircraft control.
- If you accidentally drop a LiPo battery on the ground, or your unmanned aircraft has been in an accident, and maybe during the accident your battery was ejected from its compartment or it hit something really hard, you absolutely need to assess the extent of that damage before flying again.
- When a series of judgmental errors leads to a human factors-related accident, this is sometimes referred to as the error chain.
- Aeronautical Decision-Making (ADM) is a systematic mental approach to consistently determine the best course of action in a given situation.
- To prevent the final "link" in the accident chain, a remote pilot must consider Risk Management.
- Crew Resource Management (CRM) is the effective use of all available resources—human, hardware, software and information—prior to and during flight to ensure the successful outcome of the operation.
- An extreme case of a pilot being overtaxed, or “getting behind the aircraft,” can lead to the operational pitfall of loss of situational awareness.
- Use the PAVE model to identify hazards.
- If advice is needed concerning possible flight with an illness, you should contact an Aviation Medical Examiner.
- Use the DECIDE model to help you continually evaluate each operation for hazards and to analyze risk.

- The first step toward neutralizing a hazardous thought is to recognize it. Then, you label it. Finally, you prescribe the appropriate antidote.
- [Hazardous Attitude] Anti-Authority = Don't tell me. // Antidote = Follow the rules.
- [Hazardous Attitude] Impulsivity = Do it quickly. // Antidote = Not so fast -- think first.
- [Hazardous Attitude] Invulnerability = It won't happen to me. // Antidote = Yes, it can happen to you.
- [Hazardous Attitude] Machismo (or Macho) = I can do it. // Antidote = Taking chances is foolish.
- [Hazardous Attitude] Resignation = What's the use? // Antidote = I'm not helpless -- I can make a difference.
- The key to monitoring manned aircraft communications near an airport without an operating control tower is selecting the right radio frequency. The Common Traffic Advisory Frequency (CTAF) is what you should tune into. It's a frequency designated for pilots to communicate with each other directly, air-to-air, while operating to or from an airport without an operating control tower.
- UNICOM is the nongovernment air/ground radio communication station which may provide airport information at public use airports where there's no tower or FSS.
- When there is no tower, FSS, or UNICOM station on the airport, a manned aircraft pilot will use the MULTICOM frequency 122.9 for self-announce procedures.
- The Automatic Terminal Information Service (ATIS) is a continuous broadcast of recorded aeronautical information in busier airports.
- The FAA uses Coordinated Universal Time (UTC) for all operations. The term "Zulu" may also be used to denote UTC.
- If you're operating a fixed-wing sUAS, the rudder will control the "yaw" of that aircraft.
- When a fixed-wing UA is in straight-and-level, unaccelerated flight, lift equals weight and thrust equals drag. Everything is in equilibrium.
- When you have an uphill terrain slope, and you're launching a fixed-wing aircraft on that slope, you'll need to increase your launch distance to get the aircraft up into the air.
- Know how to read a Load Factor chart. Load Factor = Total Load Supported by the Aircraft's Wings divided by the Actual Weight of the Aircraft and its Contents. You can also rewrite the formula as Load Factor multiplied by the Actual Weight of the Aircraft and its Contents = Total Load Supported by the Aircraft's Wings.

- The load factor on the wings may be increased any time the airplane is subjected to maneuvers other than straight-and-level flight.
- When your Center of Gravity is out-of-line, it becomes more difficult to recover from a stall and overall more difficult to control your sUAS.
- To ensure that the unmanned aircraft center of gravity (CG) limits are not exceeded, follow the aircraft loading instructions specified in the Pilot's Operating Handbook or UAS Flight Manual.
- A stall occurs when the smooth airflow over the unmanned airplane's wing (propeller) is disrupted, and the lift degenerates rapidly, which can ultimately cause your aircraft to fall.
- When the critical angle of attack is exceeded, the smooth airflow over the UA's wing will be disrupted, and a stall can occur.
- If your UA manufacturer does NOT provide a maintenance schedule, you'll need to establish a scheduled maintenance protocol.
- It is highly recommended that the maintenance be performed in accordance with the manufacturer's instructions.

Remote Identification (Remote ID)

- Remote ID is the ability of a drone to provide identification and location information while flying and this information helps the FAA, law enforcement, and other federal agencies locate the aircraft and control station.
- Remote ID is only required for unmanned aircraft weighing 0.55 lbs or less if the aircraft is operated under rules that require registration (think Part 107 rules).
- Unmanned aircraft with built-in broadcast capabilities will operate under the Standard Remote ID provision.
- Older unmanned aircraft or aircraft without the built-in capability to transmit flight data will have to attach a transmission module to comply with the Remote ID Broadcast Module provision.
- An FAA-Recognized Identification Area (FRIA) is an area recognized by the FAA where unmanned aircraft not equipped with Remote ID are allowed to fly.
- Unmanned aircraft without Remote ID must operate within visual line of sight and only within the boundaries of a FRIA.
- Organizations eligible to apply for a FRIA include: community-based organizations recognized by the Administrator, primary and secondary educational institutions, trade schools, colleges, and universities.



- The use of Automatic Dependent Surveillance-Broadcast (ADS-B) Out and Air Traffic Control (ATC) Transponders are prohibited for use on unmanned aircraft.
- If the Remote ID transmission fails during the self-test the unmanned aircraft cannot takeoff.
- The unmanned aircraft must broadcast the Remote ID transmission from takeoff until landing and cannot be disabled at any time during the flight.