



**US PARAGLIDING**



# ***Training Syllabus***

## ***2010***

**Foot launch or on wheels - no license required. Kitty Hawk  
Airfield, Garden Ridge, TX - 5 miles outside San Antonio**

***Call Ashton Brunner @ 210-724-5086 or 210-888-6025 or  
[ashtonb32@yahoo.com](mailto:ashtonb32@yahoo.com) to book your training today.***



## 2010 Training

### Introduction

Welcome to US Paragliding, Apogee Aviation LLC. Training is provided at our facility at Kitty Hawk Airfield, Garden Ridge, TX - 5 miles outside San Antonio.

We are pleased you have taken the interest into joining the elite few who soar among the Eagles.

There is a saying that "I would rather be a Lion for a day than a sheep for the rest of my life". So welcome to the Lions den and the exciting sport of powered paragliding. Keep in mind our training schedule is an all day program, not just 2 to 4 hours a day. When physically tired or too windy, you will be in classroom.

This way you can get as many flights and classroom training while you are with us. In five years since we started our school, we have maintained a perfect flight safety record. Help us do so by following our pre-training guide sent at booking.

***"If there is air, It should be flown in"*** Jeff Goin President USPPA

### What am I going to learn?

- FAR103 guidelines and rules
- Air charts/ FR/TFRs/NOTAMs/VFR/MOAs/AGL/ MSL
- flight management / planning
- Insurance
- Pre-flight checks
- where to fly
- How to look for a flying site
- how to read the weather
- how to read a map to include elevations

- looking for weather triggers
- terrain features
- natural and mechanical rotor
- legal disclaimers ooh fun stuff ☺
- certifications various organizations and their benefits
- flight planning for first flight
- air port rules and regulations, operations, and flight patterns
- communications equipment, types and uses radios, helmets
- safety gear, helmet, foot vs. wheel launch , proper clothing general safety
- equipment maintenance and repair
- launch techniques
- personalize equipment
- wing tech glide calculations
- wing kiting and handling
- take off and landing
- airport safety
- Airspace class A through G

And much much more.

## **Instructor Background**

Who is Ashton Brunner and why does he remind me of a military instructor???

Well I was a military instructor. I am a Jump Master and have instructed several nations' militaries, foreign and domestic and have various military airborne operations training.

Instruction experience includes jumping (Airborne) HALO / HAHO, sky diving for civilians and handling various malfunctions under pressure in the clouds. I have been in the sky in one form or another since 1987.

I have the flying addiction and what a great one it is. You will know you have it when you look at everything as a launch site and become truly aware of weather and animals more alert to your surroundings. I believe people should focus more on becoming a Human Being vs. a Human Doing and live life fully. Think back to when you were a child and how many dreams you had of flying and as we get older we think flying is impractical

or out of reach as we put our dreams on hold but now you have an opportunity of a lifetime to fulfill those dreams.

I hope you will enjoy our passion for flying and I promise not to be too hard on you. I do expect you to listen and I will make sure you understand me when I tell you whether you are ready or not.

Some students are naturals and learn very quickly and have a feel for the wing and equipment. Others ..... *Well there are others and we will work with you till you are a safe and confident pilot.*

## **About Paragliding a few myths and facts**

### **1. *Is our sport safe?***

Yes, absolutely! With proper training and proper use of the space between your ears and by making appropriate decisions on when and when not to fly you will enjoy the sport for many years to come without incident.

### **2. *Is Paragliding is an extreme sport?***

This sport only becomes extreme when you do. Meaning, if you become an ACRO pilot, then the sport is extreme. If you're a weekend flyer driving your car in traffic is statistically more dangerous by far.

### **3. *What if my engine quits?***

You will not fall out of the sky. As a matter of fact we have you cut your power on landings to realize your going to be ok. Glide ratios on most beginner wings are 7 to 1 meaning 7 feet forward for every on foot you drop. Many people gain altitude and cut their engine for thermalling or gliding.

### **4. *Do I need a license?***

No you need to simply follow the guidelines of your country and in the USA there is no license if FAR103 is followed.

### **5. *How high can I fly?***

This really depends on the wing and the Flight restrictions imposed on the airspace you are flying. Many PPG units can reach altitude of well above 11,000 feet. The fuel injected Green Eagle can take you to where you are unable to breathe over 14,000 feet. By law you are to be under 10,000 in class G airspace.

Remember carburetors have altitude issues usually above 6,000 feet unless it is an aircraft CV carb or fuel injection. Most people find life is sweet at 500 feet giving you 3,500 feet over 1,166 yards glide ratio with an engine out at only 7 to 1 glide ratio.

## **How to be a good PPG Student and Pilot**

Keep in mind you are flying. With that there are certain risks. We will train you in safety and proper handling of your equipment with the time you have with us. The DVD Pack we send with you will supplement, reinforce and add to what you will learn.

After your time with us feel free to call any time and ask questions.

After you learn the basics take the time to master them.

You will learn basic kiting skills while under our instruction and as homework, we expect you to not only listen well, but to practice kiting for your entire flying career.

We will be teaching you information that can and maybe will save your life some day so always ask questions take notes. Be a consistent student in this sport, keep reading, and learning the sport; Its technology is in constant flux.

Wings 5 years ago are completely different from wings today more so depending on what they were designed for.

Powered Units have changed drastically in the past three years.

There are units with engines that were made just for Powered Paragliding that didn't exist three years ago.

Many PPGs you see on the internet or eBay are someone's old junk they are trying to unload. You don't know how well that 2 stroke has been treated as they are sensitive to heat and type of oil and fuel mix ratios.

Many people selling equipment are usually neither dealers nor instructors nor do they even participate in the sport. Our warning here is to be very careful of something you will place your life upon and be cautious of someone who knows nothing of the sport selling something for a friend. Not only could you lose your money but more important you could lose your life or have a severe injury as these engines do spin a prop that demands our respect. *CALL US BEFORE BUYING USED EQUIPMENT*

We have already had a few students who bought equipment that was not airworthy and unsafe many had major engine problems with no parts

availability causing the buyer to spend twice as much as they would for a new or used unit from a dealer.

Most pilots injure themselves by not remembering to do flight checks making bad decisions and unsafe equipment verses actual flying.

We will train you on other equipment and there are many great companies out there. We will not train you on inadequate or unsafe equipment.

Please contact us before purchasing used equipment as to whether we will train you on it or not. If we ground your equipment it will be for your safety and we will point out the reasons. Please feel free to call us before buying equipment. In any case the seller should include some kind of short warranty. We will help you make the safest decision. We might have a used unit that is a demo or someone just lost interest after a purchase that will still have a warranty.

Many times Men go home and the real leader of the house says “*YOU CAN’T*” and they come back trying to sell their equipment.

Hopefully this is not you and you have the proper kitchen pass or permission from your significant other. Remember we all have to keep Mamma happy.

If you are a Lady Flyer all WE have to say is WOW!

Your husband or significant other is very lucky.

We need more ladies in the sport.

## **II. Materials Needed**

- Water
- Sunscreen
- Light Weight Gloves, Golf, Driving, (neoprene with rubber on the palms or something similar). These are usually found in all weather sports section.  
*You do not want frictions burns from kiting a wing.*
- A clear, well rested mind. Be ready to soak up a lot of information.

## **III. Day One** – Schedule Weather Permitting

### **A. Getting familiar with your new PPG – 7:00 am**

If you have ordered your PPG in time, we will have it assembled.

Swing Test:

We will swing test equipment to set up your harness and get the proper pitch for your PPG meaning 8 to 12 degrees.

Thrust Test:

Then we will do a thrust test so you get the feel of the throttle and how much power you have. You will learn about engine torque steer and propeller theory. *You must have respect for the Propeller. Many of the injuries in this sport are from not paying attention and tossing a rock or other object with the prop. Not to mention you're Fingers.*

*Trust me when we say you don't want to be known as "Stumpy the Nine fingered pilot."*

Kill Switch:

You will learn where everything is and grow familiar with the **kill switch** which we will drill you on.

PPG detail:

We will go over your equipment type and choice and we will give you in depth information on the PPG you have chosen.

*Engine break in:*

*While following a short flight simulation of climb outs and flight patterns to keep you engine at various RPMs for proper break-in.*

Basic Maintenance:

We will then go over assembly fuel mixture, fuel types, oil types, and basic break down procedures if you purchased a suit case model.

Review

*Keep in Mind Apogee Aviation does full service on everything we sell. We are very familiar with engines in general. We do rebuild and repairs, when and if needed, on 90% of your equipment. Basically meaning our mechanics don't sew, so if it's a large tear in fabric we will have to send it out for repairs.*

**B. Lunch – 11:00 am**

**C. Wing training – 12:00 pm**

· Wing Specifications:

We will then go over the wing, type of wing, conditions of flying it was made for. And proper care/storage line placement.

*There are:*

*Soaring Cross Country, Thermal, Speed, Acro, and our favorite, leisure wings. Leisure wings are docile around 25 to 35 miles an hour very easy to recover and most of the time you need to do nothing for recovery.*

*You will get to know [www.para2000.org](http://www.para2000.org). This site covers most wings and what rating they are. If you come across that great deal you may find out is too dangerous or too old for you.*

*After the course we will be giving you a plethora of information and websites to keep you busy on rainy days.*

Kiting = 75% of your training will be kiting and practicing the forward launch Techniques used for little to no wind forwards , wheel, and the reverse launch technique for the winds at a steady 4 to 14 miles an hour. *You should not fly in winds above 14 miles an hour until you have many hours under your belt as well the right type of wing for fast winds.*

You could call this the PPG weight loss program.

**Keep plenty of water handy.**

We will kite and practice launch techniques for the rest of the day while we answer many questions and you lose weight in a rather fast manner.

## **Day two, three, and beyond 7:00 am Continued Training**

### **- Familiarization:**

It's time to learn how to hook up your equipment.

Learn how to jog forward with arms up and power on. You will learn how the make the engine work for you. You will run while holding your arms up in a forward launch position and we will again practice quick Kill switch exercises on the simulator.

*This will keep you from Parablending and damaging your wing, lines or prop. We will do dry runs with engine not running and we will push you into the air. This will act as a guide to let you know just how much break to pull and power it will take to get you and your machine in the air.*

*If you are trike training you will have it pretty easy. You will be doing practice runs and developing power management skills throughout the day. Your first flight even if you are a foot launch pilot will most likely be on a trike for safety reasons.*

*The new **Green Eagle** will allow hi ground clearance low center of gravity, providing full body protection. It has a cushy landing even on rough hard landings which will keep you from damaging your own equipment. Flying a trike will also allow you to make mistakes and still have a wonderful experience. If you learn to bring the trike in properly you will not damage your own equipment.*

**See Green Eagle Below:**



### **Lunch:**

This day you will be too excited for Lunch and will want to fly. Suggested You bring a snack to hold you over.

### **Technical Training. FAR 103**

After your physical practice you may be tired so we will move to technical training such as:

- FAR103 guidelines and rules
- Insurance
- where to fly
- Pre-flight checks
- How to look for a flying site
- how to read the weather
- how to read a map to include elevations
- looking for weather triggers
- terrain features
- natural and mechanical rotor
- legal disclaimers ooh fun stuff ☺
- certifications various organizations and their benefits
- flight planning for first flight
- air port rules and regulations
- communications equipment, types and uses radios, helmets
- safety gear, helmet, foot vs. wheel launch , proper clothing general safety
- A line assist with wheel launch
- engine adjustments and tuning
- parts availability
- propeller theory
- Engine out drills
- Radio communication
- hand signals
- Wing lay out
- Wing maintenance and care
- Emergency equipment from woods to flotation

### **Launch or Taxi:**

If conditions are right and you are well rested we will practice taxi and power management with a trike. Do not focus on flying just practice till we tell you to go full power and then you will find yourself in the air.

*Once you are airborne.... no sudden movements. Relax use slow breaking movement's right and left for the direction you want to turn. Flying is the easy part; landing and takeoff are what 75% of your training is about.*

## Landing:

When coming in for a landing we may ask you to cut your power. You will be instructed on our hand signals and radio, if we are training on the beach you must stay in close range. *Once you are in the air you will undoubtedly turn a few times and realize it's not that bad and it becomes an instant relief and sensation you will never forget.*

Make sure you are in the instructor's view and that you can see him. Don't make us come get you. When you land and if you still have the motor on, we will have you cut power before turning under the wing to set it down.

## Things to remember

Take the time to watch your instructional DVDs over and over and always read. You will pick up something you forgot quite often. The Powered PPG Bible we provide is a great study, reference it often.

After your experience we will want a picture and a testimonial from you telling us what you thought of your training and equipment. Send us pictures of your future flights so we can post them. Also, as a part of your training you will always have our time for questions about new equipment training on new types of equipment as well as tuning and maintenance questions. Welcome and congratulations on getting into the coolest sport there is. If you are a business owner talk to me about ads on your wing for tax deductions.

## V. Training Rates

- 1) \$950 – Complete Powered Paragliding Training (w/ unit purchase) 2 to 3 days or until completely trained
- 2) \$1350 Complete Powered Paragliding Training (w/o unit purchase) 2 to 3 days or until completely trained
- 3) \$250 – New! Intro to Paragliding Course – 1 day
- 4) \$95 I beginner student tandem flight Call for details!
- 5) Always ask what specials may be running at any given time on training.

**\*We offer a 10% discount on training to active duty and retired military.**

Disclaimer:

Remember, you are learning to fly with an engine and a propeller. Although this is a safe sport when trained properly, there are occasional injuries in the sport.

When you agree to training, Apogee Paragliding LLC, Staff, or charges will not be held liable for any injuries or damage to your equipment that may happen.

Our staff is trained to ensure you operate your equipment in the safest manner possible and is certified in first aid and CPR and emergency medical training. Your utmost attention and respect for any moving parts such as an engine, propeller and or terrain features such as power lines and buildings should be avoided or at least noted before flight.

We are giving some pre-training advice to you by offering an exercise program if you feel out of shape. If you are going to foot launch we recommend balance exercises with a light back pack with 35lbs to get use to weight on your back. Obtain good boots that allow ankle support without exposed boot lacing hooks. Purchase boots without the open lacing hooks to prevent snagging lines while kiting.

Below is an airspace break down designed to help you locate places to fly in your area once you leave training. Exercising good common sense now can save you any headaches later and protect the sport for all of us.

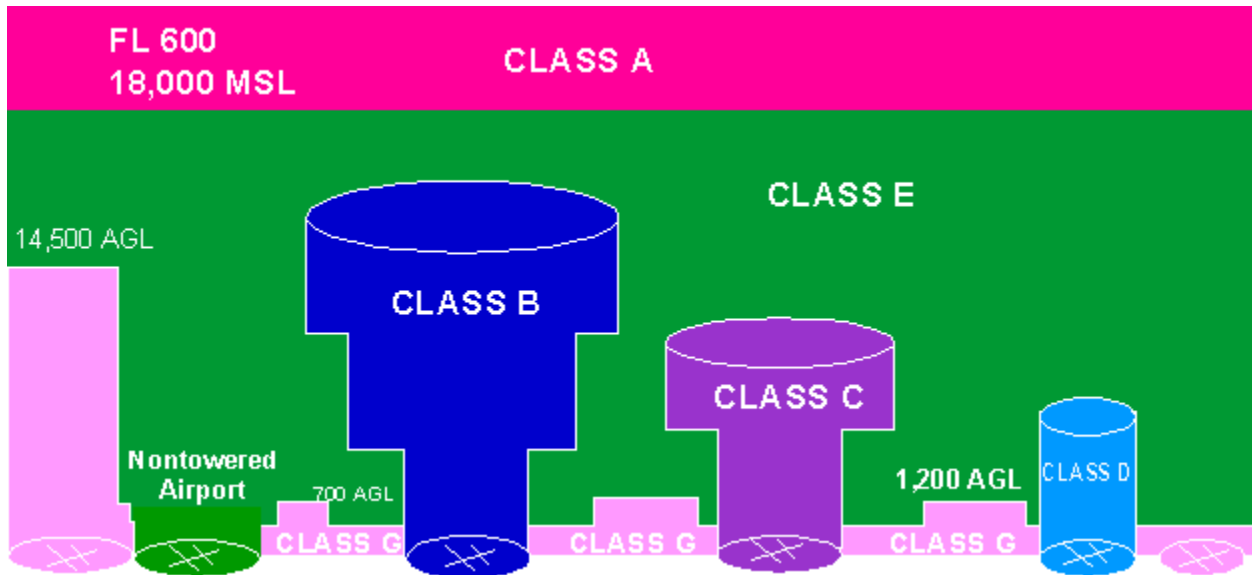
Call or visit your local airport for current air charts, and or go meet with them. Tell them who you are and when you will be flying. Most small airports will tell you where ultra lights fly and what AGL to maintain within a certain distance from an airport and radio frequencies' if any.

Example: Our airport approach is 800AGL and the ceiling is 1200 AGL for 5 miles due to a local military training base. Most of us fly lower than that and can operate VFR all around the airport watching for any approaching craft and keeping around 700 feet and lower without radio communication.

Some airports that are more medium in size will want you to maintain radio communication as they have a tower where ours does not.

Most of you will not be flying around airports.

These charts will help you choose where to fly.



| Airspace Features                | Class A                     | Class B                        | Class C   | Class D   | Class E   | Class G               |
|----------------------------------|-----------------------------|--------------------------------|---|---|---|-----------------------|
| Former Airspace Equivalent       | Positive Control Area (PCA) | Terminal Control Area (TCA)    | Airport Radar Service Area (ARSA)                 | Airport Traffic Area (ATA) and Control Zone(CZ)   | General Controlled Airspace                           | Uncontrolled Airspace |
| Operations Permitted             | IFR                         | IFR and VFR                    | IFR and VFR                                       | IFR and VFR                                       | IFR and VFR   | IFR and VFR           |
| Entry Requirements               | ATC Clearance               | ATC Clearance                  | ATC Clearance for IFR. All require radio contact. | ATC Clearance for IFR. All require radio contact. | ATC clearance for IFR. All IFR require radio contact. | None                  |
| Minimum Pilot Qualifications     | Instrument Rating           | Private or student certificate | Student certificate                               | Student certificate.                              | Student Certificate                                   | Student certificate   |
| Two-way Radio Communications     | Yes                         | Yes                            | Yes   | Yes   | Yes for IFR   | No                    |
| VFR Minimum Visibility           | N/A                         | 3 statute miles                | 3 statute miles                                   | 3 statute miles                                   | 3 statute miles                                       | 1 statute miles       |
| VFR Minimum Distance from Clouds | N/A                         | Clear of clouds                | 500' below, 1,000' above, and 2000' horizontal    | 500' below, 1,000' above and 2,000' horizontal    | 500' below, 1,000' above and 2,000' horizontal        | Clear of clouds       |
| Aircraft Separation              | All                         | All                            | IFR, SVFR, and runway operations                  | IFR, SVFR and runway operations                   | IFR and SVFR  | None                  |
| Traffic Advisories               | N/A                         | N/A                            | Yes   | Workload permitting                               | Workload permitting                                   | Workload permitting   |
| Safety Alerts                    | Yes                         | Yes                            | Yes   | Yes   | Yes   | Yes                   |
| Differs from ICAO                | No                          | Yes                            | Yes   | Yes for VFR                                       | No  | Yes for VFR           |
| Changes the Existing Rule        | No                          | Yes for VFR                    | No  | Yes   | No  | No                    |

## **VFR**

VFR flight is, basically flying an aircraft with reference to outside visual information, with a flight visibility of three miles, and remaining 1,000 feet away from any clouds. However, as with most every subject in aviation, it becomes a little more complex than this.

## **SPECIAL VFR**

This is a clearance, from ATC, permitting a VFR flight to operate in controlled airspace with minimums of 1 mile visibility, and "clear of clouds/"

## **A DIVIDED AIRSPACE**

There are two basic categories of airspace, Regulatory and Non-regulatory.

**REGULATORY** This is defined as the "Class A, B, C, D, and E Airspace Areas," Restricted Areas and Prohibited Areas. There is also a "Class G" airspace that the FAA defines as not being A, B, C, D, or E. (Don't you just love government definitions?)

**NON-REGULATORY** This is defined as MOA's (Military Operating Areas), Warning Areas, Alert Areas, and Controlled Firing areas.

### **CLASS "A" AIRSPACE**

*Class "A" airspace is 18,000 feet up to Flight Level (FL) 600 (60,000 feet).*

*You cannot operate VFR in this airspace.*

### **CLASS "B" AIRSPACE**

*The airspace from the surface to 10,000 feet that surrounds the busiest airports in the U.S. The configuration is often referred to as resembling a "upside down wedding cake." Each one of these guys is a little different, depending on the airport's configuration. You can't fly in this airspace without a clearance from ATC (Air Traffic Control).*

*You can operate VFR in this airspace, however you must have a clearance from ATC to do so. You must have 3 miles of visibility, and remain "clear of clouds."*

### **CLASS "C" AIRSPACE**

*This is the airspace reserved for the garden-variety commercial airports. It can be altered for regional conditions, but is generally a circle around the airport that is 5 miles in diameter from the surface to 1,200 feet AGL (Above Ground Level), and then expands to a 10 mile diameter from that point to 4,000 feet AGL.*

*You can operate VFR in this airspace, however you must establish two-way radio communications before entry. You must have 3 miles of visibility, and remain 500 feet below, 1,000 feet above, and 2,000 feet horizontal distances away from clouds.*

### **CLASS "D" AIRSPACE**

*For all intents and purposes, the airspace set aside for airports that have control towers. The airspace is from the surface up to 2,500 feet, and the radius is usually five miles. There may be "keys" that extend out from the circle.*

*You can operate VFR in this airspace, however you must establish two-way radio communications before entry. You must have 3 miles of visibility, and remain 500 feet below, 1,000 feet above, and 2,000 feet horizontal distances away from clouds.*

### **CLASS "E" AIRSPACE**

*This is a complex definition because it covers the rest of the airspace not designated in above Classes. If it is Controlled Airspace, and it is not A, B, C, or D, then it is Class "E". All of the Airways (the "V Routes") are in this airspace. Unless otherwise designated, like the "V Routes" for example, it commences at 14,500 feet and extends up to 18,000 feet.*

*You can operate VFR in this airspace, however you must have 3 miles of visibility, and remain 500 feet below, 1,000 feet above, and 2,000 feet horizontal distances away from clouds.*

### **PROHIBITED AREAS**

*These are designated for national security, or national welfare. For example, The White House has one. You cannot fly in them. Period.*

### **RESTRICTED AREAS**

*A catch-all category. These cover everything from test flight areas, to missile tests and artillery or aerial gunnery. This kind of stuff could hurt you. However, the area may or may not be "hot." You will want to check with the nearest ATC facility to find out. Usually they spend more time being inactive than active. If the area is inactive, you are perfectly legal to fly VFR. If you are IFR, ATC will not allow you in if the area is "hot."*

### **WARNING AREAS**

*Usually extending from three miles off of the U.S. coastlines and outward. They contain "...activity that may be hazardous to nonparticipating aircraft." That's enough to keep me out of them.*

### **MOA's, MILITARY OPERATING AREAS**

*This is where the guys, and gals, that protect us in our sleep practice. They can be of any size, and shape. If you are IFR, ATC will provide the proper separation. If you are VFR you can plow right in. It is strongly suggested that VFR operations contact the controlling facility to check on the MOA's status. ATC will provide separation for VFR flights that contact them.*

### **ALERT AREAS**

*This is similar to an MOA, different only in that aircraft operating in the area must observe all of the established rules and regulations- both the participants, and those transiting the area.*

### **CFA's, CONTROLLED FIRING AREAS**

*This is the only controlled airspace that is not charted. This is so because "they" cease all activity when spotter aircraft or ground controllers see an aircraft entering the area. Truly, ignorance is bliss.*

### **ADIZ, AIR DEFENSE IDENTIFICATION ZONES**

*These are over the water, along the East Coast and West Coast, around Hawaii and Guam. They are there to protect the country from a marauding fleet of bombers, or the individual flight bent on attacking the mainland. If you are IFR, ATC will handle the coordination with the military. If you are VFR, flying say from Bermuda to the East Coast, you must file a DVFR flight plan. If you don't tell the Feds. who you are in advance, count on seeing a man in a helmet flying close formation with you.*

## **FAR 103 ultralight rules for flying in US airspace.**

Authority: Secs. 307, 313(a), 601(a), 602, and 603, Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421(a), 1422, and 1423); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)). Source: Docket No. 21631, 47 FR 38776, Sept. 2, 1982, unless otherwise noted.

### **Subpart A-General**

#### **103.1 Applicability**

This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that:

- (a) Is used or intended to be used for manned operation in the air by a single occupant;
- (b) Is used or intended to be used for recreation or sport purposes only;
- (c) Does not have any U.S. or foreign airworthiness certificate; and
- (d) If unpowered, weighs less than 155 pounds; or
- (e) If powered:
  - (1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation;
  - (2) Has a fuel capacity not exceeding 5 U.S. gallons;
  - (3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and
  - (4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed.

#### **103.3 Inspection requirements.**

(a) Any person operating an ultralight vehicle under this part shall, upon request, allow the Administrator, or his designee, to inspect the vehicle to determine the applicability of this part.

(b) The pilot or operator of an ultralight vehicle must, upon request of the Administrator, furnish satisfactory evidence that the vehicle is subject only to the provisions of this part.

### **103.5 Waivers.**

No person may conduct operations that require a deviation from this part except under a written waiver issued by the Administrator.

### **103.7 Certification and registration.**

(a) Notwithstanding any other section pertaining to certification of aircraft or their parts or equipment, ultralight vehicles and their component parts and equipment are not required to meet the airworthiness certification standards specified for aircraft or to have certificates of airworthiness.

(b) Notwithstanding any other section pertaining to airman certification, operators of ultralight vehicles are not required to meet any aeronautical knowledge, age, or experience requirements to operate those vehicles or to have airman or medical certificates.

(c) Notwithstanding any other section pertaining to registration and marking of aircraft, ultralight vehicles are not required to be registered or to bear markings of any type.

## **Subpart B-Operating Rules**

### **103.9 Hazardous operations.**

(a) No person may operate any ultralight vehicle in a manner that creates a hazard to other persons or property.

(b) No person may allow an object to be dropped from an ultralight vehicle if such action creates a hazard to other persons or property.

### **103.11 Daylight operations.**

(a) No person may operate an ultralight vehicle except between the hours of sunrise and sunset.

(b) Notwithstanding paragraph (a) of this section, ultralight vehicles may be operated during the twilight periods 30 minutes before official sunrise and 30 minutes after official sunset or, in Alaska, during the period of civil twilight as defined in the Air Almanac, if:

(1) The vehicle is equipped with an operating anticollision light visible for at least 3 statute miles; and

(2) All operations are conducted in uncontrolled airspace.

### **103.13 Operation near aircraft; right-of-way rules.**

(a) Each person operating an ultralight vehicle shall maintain vigilance so as to see and avoid aircraft and shall yield the right-of-way to all aircraft.

(b) No person may operate an ultralight vehicle in a manner that creates a collision hazard with respect to any aircraft.

(c) Powered ultralights shall yield the right-of-way to unpowered ultralights.

### **103.15 Operations over congested areas.**

No person may operate an ultralight vehicle over any congested area of a city, town, or settlement, or over any open air assembly of persons.

### **103.17 Operations in certain airspace.**

No person may operate an ultralight vehicle within Class A, Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace.

### **103.19 Operations in prohibited or restricted areas.**

No person may operate an ultralight vehicle in prohibited or restricted areas unless that person has permission from the using or controlling agency, as appropriate.

### **103.20 Flight Restrictions in the Proximity of Certain Areas Designated by Notice to Airmen.**

No person may operate an ultralight vehicle in areas designated in a Notice to Airmen under 91.141 or 91.143 of this chapter, unless authorized by ATC.

*Notice: Effective October 11, 2001, 103.20 is amended as follows (per [Federal Register page 66 FR 47378](#)):*

*No person may operate an ultralight vehicle in areas designated in a Notice to Airmen under § 91.137, § 91.138, § 91.141, § 91.143 or § 91.145 of this chapter, unless authorized by:*

*(a) Air Traffic Control (ATC); or*

*(b) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.*

### **103.21 Visual reference with the surface.**

No person may operate an ultralight vehicle except by visual reference with the surface.

## 103.23 Flight visibility and cloud clearance requirements.

No person may operate an ultralight vehicle when the flight visibility or distance from clouds is less than that in the table found below. All operations in Class A, Class B, Class C, and Class D airspace or Class E airspace designated for an airport must receive prior ATC authorization as required in 103.17 of this part.

| Airspace  | Flight Visibility | Distance From Clouds   |
|---|-------------------|--|
| Class A   | Not applicable    | Not applicable   |
| Class B   | 3 statute miles   | Clear of Clouds.   |
| Class C   | 3 statute miles   | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal.       |
| Class D   | 3 statute miles   | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal.       |
| Class E<br>Less than 10,000 feet MSL                            | 3 statute miles   | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal.       |
| Class E<br>At or above 10,000 feet MSL                          | 5 statute miles   | 1,000 feet below.<br>1,000 feet above.<br>1 statute mile horizontal. |
| Class G:<br>1,200 feet or less above the surface (regardless of | 1 statute mile    | Clear of clouds.   |

|   |                 |  |
|---|-----------------|--|
| MSL altitude)   |                 |  |
| Class G<br>More than 1,200 feet above the surface but less than 10,000 feet MSL   | 1 statute mile  | 500 feet below.<br>1,000 feet above.<br>2,000 feet horizontal.       |
| Class G<br>More than 1,200 feet above the surface and at or above 10,000 feet MSL | 5 statute miles | 1,000 feet below.<br>1,000 feet above.<br>1 statute mile horizontal. |

Quick reference guide with including how to identify with a sectional chart

## Quick Reference:

Airspace is classified as Class A, B, C, D, E or G. There is no Class F airspace in the USA. Class A is the "most restrictive", and Class G is the "least restrictive". Class A and Class G airspace is *not* depicted on sectional charts. All other classes are.

**Class A:** Not shown on charts. This airspace begins at 18,000 MSL. Pilots need prior permission to enter this airspace, and they must be flying IFR.

**Class B:** Found around major airports. Depicted on chart with narrow solid blue line. Floor and ceilings of the Class B is depicted on the chart in hundreds of feet MSL. Pilots must get ***permission to enter*** from the controlling agency.

**Class C:** Found around heavy traffic airports. Looks similar to Class B on charts, but lines are magenta, not blue. Pilots cannot enter this airspace until they have established two-way communication with the controlling agency. Note this is not the same as the "permission to enter" requirement of Class B airspace. Part 103 ultralights must obtain "permission to enter", which is slightly different from the Part 91 rule.

**Class D:** By definition, this airspace exists at *any* airport with an operating control tower. Typically, Class D extends 5 miles from the airport, and 2500 AGL above. The actual dimensions of the Class D will be shown on the chart. The ceiling of the Class D will be shown as a number representing hundreds of feet MSL. Towered airports are depicted on the section in blue. If the tower is not in operation, the Class D ceases to exist. Pilots must establish two-way contact to enter from the controlling agency (usually the control tower). Part 103 ultralights must obtain "permission to enter", which is slightly different from the Part 91 rule.

**Class E:** Known as "General Controlled Airspace". The border of Class E is depicted on charts as a wide blue or magenta line, with one "fuzzy" edge. Class E airspace also exists in the vicinity of the Federal Airways ("Victor" airways). Although not shown on charts, the Class E airspace surrounding airways extends upward from 1200 AGL, to 18,000 MSL (or to the next overlying airspace), and extends 4nm on either side of the airway. Another type of (surface) Class E airspace, is found around airports, and is depicted as a thin magenta line. Class E airspace has more strict visibility and cloud clearance requirements. No prior permission or contact is required to enter this airspace. Part 103 ultralights must obtain permission before entering the surface Class E airspace designated around an airport.

**Class G:** Known as "uncontrolled airspace". Not depicted on charts. It is basically "everything else not defined as some other class". Anyone can fly in this airspace. It differs from all other airspace because of its lower visibility and cloud clearance minimums.

**Where is all this shown?** Airspace is depicted on aviation Sectional charts, VFR Terminal area charts, and WAC charts.

**What Airspace can Ultralight pilots fly in?** This is covered in FAA part 103.

**Where can I learn more about airspace?** For those interested in learning more, there are many good aviation books. One good source is the Airman's Information Manual (AIM).



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