



# Part 107 Study Guide

Current as of August 30, 2018 – Version 1.5

I took the test on August 29, 2016 and received a 100%.

You ONLY need to use the material listed in this guide to pass. It is all completely free.

## Game Plan:

Step 1. Read all the steps.

Step 2. Sign up for the test. [Instructions on signing up for the test getting your pilot license is here.](#) You should pick a date based upon how much time you have in relation to how much material you need to go through. You are looking at around **538 pages** of material you need to read. Yes, I know there are only 135 pages in THIS document. I reference pages in other documents below.

Step 3. Learn about the [Airmen Certification Standards \(ACS\) and read over the Part 107 ACS.](#)

Step 4. Start studying the material below.

Step 5. Once you are done or feel competent. [Take the test of 65 sample questions.](#) For your deficient areas, go over those particular areas in the [ACS](#). All 65 questions are answered and explained in this document in the back.

Step 6. In the final stretch of time studying for the INITIAL knowledge test, study [Area II and Area V](#) from the ACS since both of those areas will make up **50-70%** of the test.

Step 7. After you passed your test, you should be looking for quality mentorship for the long term. Being a professional is not just about passing a test. If you are looking to be mediocre, I suggest you go to another industry and do us all a favor. It should be about learning the material [AND](#) how to apply it properly in practice. Now go find a competent flight instructor who can help you apply the knowledge you learned to real life situations so you can be profitable, legal, and safe.

The FAA compiled a list of references in the final ACS and FAA study guide. Unfortunately, they did not include everything you need or would find helpful. Below I have included the extra items that the FAA should have included, which are in the bold text.

I find it interesting the FAA did not note anything about Part 830 (except for one small reference in a PLT code) or the NASA Aviation Safety Reporting System (ASRS). Both



of those programs are focused on safety while the FAA's accident reporting requirement in Part 107 is focused on safety *and* enforcement. A pilot needs to know both of these programs. I find it also interesting the FAA didn't mention anything about the NASA ASRS which is there for the pilot's benefit, not the FAA's, regarding enforcement actions. Let that sink in for a second. This shows the importance of why you need to have a good aviation attorney in your corner to look after you, as the FAA won't. Read [What Do I Do After I Crash My Drone?](#)

The total number of regulations and pages is very large. I chopped it up into what pieces of material you should know in entirety and what you should pick pieces and parts of based upon the ACS.

The total test will be 60 questions and you will have 2 hours to complete it. The minimum passing score is 70% which is a maximum of 18 questions wrong or a minimum of 42 questions right.

If there are any errors or broken links in here, for the greater good of everyone studying, let me know so I can correct it and inform everyone.

## TEST TAKING TIPS

- **USE THE [SUPPLEMENT LEGEND!](#)** A bunch of the questions on your test will be answered right by the legend in the supplement. You CAN refer to this while in the test. Make sure the test proctor gives you the correct one that is up to date prior to going into the test. I heard of one horror story where the person had an old one so the questions didn't match up. Make sure you have a current one!
- **Go with the “spirit of the question,” not the letter of the question.** Try and figure out what the FAA is trying to test you on. Remember that these questions were most likely created very hastily and do not make perfect sense. When I took the test, I remember a few questions that looked like they were written by someone who was up at 2AM trying to crank out tons of questions. If you are stumped, then ask yourself, “What is the guy up at 2AM in the morning trying to test me on?”
- **Always keep in mind how the answers can answer OTHER questions.** If you don't know the answer, or eliminate the wrong ones, keep moving on. Sometimes the questions and answers further down will provide you the answers to the one you are having trouble with. When I took the test, I noticed that there were two questions that were very similar in topic. One of the questions had two really dumb answers which basically gave away the correct answer. If you knew nothing about the topic, just using common sense to eliminate the two bad answer, you could have used the correct answer to answer the first question.
- **Brain dump everything immediately onto your scrap paper when you start the test.** You want to write down everything you think you will forget on the scrap piece of paper. Just dump it all out and any pictures and diagrams you have up in your head.



- **Try and answer the question BEFORE you read the answers so you don't get tricked.** The FAA likes to create answers where one is a slight "one-off" from the correct answer. By reading the answers, you can introduce doubt. For example, Federal Aviation Administration or Federal Aviation Agency? Which is it? They both seem like good answers. Is it MSL or AGL?
- **Eliminate the wrong answers.** You don't have to find the correct answer, just the wrong ones.
- **Read the test question AND answers carefully.** I cannot over emphasize this.
- **Sleep and eat well.** I would just sleep 8-10 hours. Take the test around 10AM-12PM. This way you aren't rushed and can miss rush hour traffic as you drive there. When I was in law school (3-4hour exams) and taking the Florida Bar exam (2 full 8 hour days), I had to make sure my body wouldn't go out on me. I would eat very greasy foods right before I would go in so I wouldn't be hungry while I would take a Kombucha vitamin B shot right before. **Check with your doctor to make sure this is ok with you.** The vitamin B would start metabolizing by the time I took the test or started answering questions.

## Tips For While You Are Studying

- You will be able to take the test with the [Airman Knowledge Testing Supplement for Sport Pilot, Recreational Pilot, and Private Pilot](#) which is a great resource. There are two reasons why you should look over this supplement and know what is in it: (1) there are helpful legends which will be great for answering sectional map questions and (2) many questions on the test will reference some of the figures in this supplement. At the end of your studying you should skim through and ask yourself questions based upon the numbered areas on the sectional charts.
- See a term you don't know in the ACS? Look up the term in the index of the [PHAK](#) and/or [Aeronautical Information Manual \(AIM\)](#) which will tell you where to find more information.
- Hit ctrl + f and type in the word to search through the PDF rapidly.

**Disclaimer: You aren't guaranteed to pass the test based off this material.**



## Having Trouble Learning the Material?

I've been creating online training courses for the sister company Rupprecht Drones.

All the material you need to pass the remote pilot knowledge exam is in this document. Some people want to learn quicker or don't have to read so I created online courses to meet their needs that are on [Rupprecht Drones](#). I'm planning on creating many more online courses to help individuals quickly learn the material for the remote pilot knowledge exam so frequently check in. These courses also are great for company training and recurrent training to keep the pilots and crew proficient. The courses on Rupprecht Drones are:

**[Part 107 Regulations Online Training Course \(test prep, waiver compliance, recurrent training, etc.\)](#)** 40 videos and 35 quizzes of over 100 questions! Remember that the area of regulations makes up 15-25% of the initial exam!

**[Night Operations Online Training Course for the Night Waiver](#)**. This is the training needed to fly under the Part 107-night waiver. It consists of 8 videos and 8 quizzes. If you pass it, you print out the certificate and keep it for your records in case the FAA audits you.



## Rupprecht Law P.A.'s Aviation Law Services:

- **Applying for a Certificate of Waiver (COW) / Authorization (COA).** Commercial drone operators operating outside of Part 107 as well as government agencies operating drones both need COAs according to the FAA. Also, sometimes operators need greater flexibility than what their current COAs provide. We can assist in the amendment of COAs.
- **Petitioning for a Section 333 Exemption for Commercial Drone Operations.** In July 2016, the FESSA changed what is allowed under the Section 333 exemptions. While Part 107 will replace the need for many of the 333 operations, there are very good reasons to have a Section 333 exemption going into the future.
- **Outside Counsel.** Are your attorneys wasting too much time on trying to figure out how to navigate the Federal Aviation Regulations? Rupprecht Law, P.A. can help assist your general counsel to get through difficult problems because the firm specifically focuses on aviation and drone law. Your legal counsel can get accurate answers to the many details and complexities of this area with Rupprecht Law, P.A.'s advice.
- **Federal Aviation Regulation and FAA Guidance Compliance.** Do you have general questions about whether you can do a certain type of operation?
- **Setting Up Drone Enterprise Operations inside a Company.** Developing the manuals to scale out a nationwide program is an important task. Rupprecht Law, P.A. is currently working with companies now on concepts of operations, putting those concepts in a manual, and then integrating those manuals into employee flight instruction operations.
- **Defense in FAA Enforcement Actions** – Sometimes the FAA chooses to start an investigation against unauthorized commercial drone operations or there is a violation of the regulations or exemption restrictions. If this is the case, please contact the firm for assistance.
- **Drone Operator Vetting.** Are you interested in hiring a drone operator or interested in developing a program on how to evaluate drone operators for your company?
- **Temporary Flight Restriction Waivers.** Are you needing to fly in a Temporary Flight Restriction? Rupprecht Law, P.A. can assist in obtaining waivers to operate within TFRs.
- **Helping Government Agencies Obtain a Public COA.** This can include drafting and seeking approval of a public aircraft operator declaration letter, filing the COA application through the portal, or providing guidance on whether proposed operations fall within public aircraft operations.
- **Assistance in Registering the Drones with the FAA via the Part 47 Paper-Based Method.** While many operations will continue to use the Part 48 electronic method of registration, not all aircraft operations can register via Part 48 and must register via Part 47. This process can be difficult for some individuals, but not if you use Rupprecht Law, P.A.
- **Other**– The firm gets all sorts of “odd-ball” types of questions relating to drones and law. If you have a legal question regarding drones, just call and ask.

Now that you know what we can do, ASK! Send an email to [jon@jrupprechtlaw.com](mailto:jon@jrupprechtlaw.com)

# It's the Final Count Down

## (Dur dee dur dooo) Study Guide

Airspaces Need  
Waiver: (B,C,D,&E@)

### AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft. MSL are shown.

**Class B Airspace**  
**Class C Airspace (Mode C - see FAR 91.215/AIM.)**  
**Class D Airspace**  
 Ceiling of Class D Airspace in hundreds of feet (A minus ceiling value indicates surface up to but not including that value.)  
**Class E (sfc) Airspace**

**CLASS G**  
 Class E Airspace with floor 700 ft. above surface that laterally abuts Class G Airspace.

Class E Airspace with floor 700 ft. above surface that laterally abuts 1200 ft. or higher Class E Airspace.  
 Class E Airspace with floor 1200 ft. or greater above surface that laterally abuts Class G Airspace

**2400 MSL** Differentiates floors of Class E Airspace greater than 700 ft. above surface.  
**4500 MSL** Class E Airspace exists at 1200' AGL unless otherwise designated as shown above. Class E Airspace low altitude Federal Airways are indicated by center line.  
 Intersection - Arrows are directed towards facilities which establish intersection.

**132° → V 69 ← 169**  
 Total mileage between NAVAIDs on direct Airways  
 Class E Airspace low altitude RNAV 2 Routes are indicated by center line.

**T 319 TK 313**  
 (Helicopter Only) RNAV Waypoint

Prohibited, Restricted, and Warning Areas; Canadian Advisory, Danger, and Restricted Areas

**Alert Area and MOA - Military Operations Area**  
 Special Airport Traffic Area (See FAR 93 for details.)

**ADIZ - Air Defense Identification Zone**  
**MODE C (See FAR 91.215/AIM.)**

**National Security Area**  
**Terminal Radar Service Area (TRSA)**

**MTR - Military Training Route**  
**IFR Departure Route**

**IFR Arrival Route**

**IFR Arrival/Departure Route**

**OBSTRUCTIONS**

1000 ft. and higher AGL Wind Turbine Wind Turbine Farm

Above 200 ft & below 1000 ft AGL (above 299 ft AGL in urban area) Group Obstruction

Obstruction with high-intensity lights; may operate part-time

Elevation of the top above mean sea level Height above ground Under construction or reported; position and elevation unverified

NOTICE: Guy wires may extend outward from structures.

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**MISCELLANEOUS**

**STADIUM** Intermittent TFR site (within 3 NM, up to & incl 300' AGL)

**Space Launch Activity Area (See Supplement.)**

**-1°E-** Isogonic Line (2015 VALUE)

**NAME (VPXYZ)**

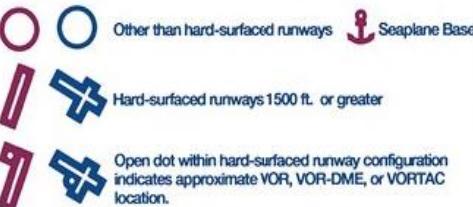
**VPXYZ** VFR Waypoints (See chart tabulation for latitude/longitude.)

### TYPES of AIRSPACE:

Remember that Blue > Magenta & solid > dashed.

- A – Altitude (18,000-60,000MSL) (not on sectional chart)
- B – Big, Blue, & Busy (SFC – ~10,000MSL (Solid blue line))
- C- Congested (SFC-4,000MSL) (Solid Magenta)
- D – Dainty/Dorky Wanabe C. (SFC-2,500MSL) (Dashed blue)
- E – Everywhere (At the Surface is magenta dashes) (At 700ft AGL is magenta halo) (1,200FT blue halo) (14,500MSL & 60,001MSL)

### AIRPORTS



All recognizable hard-surfaced runways, including those closed, are shown for visual identification. Airports may be public or private.

### ADDITIONAL AIRPORT INFORMATION

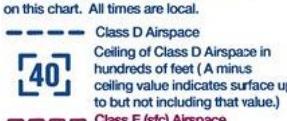


Services-fuel available and field tended during normal working hours depicted by use of ticks around basic airport symbol. (Normal working hours are Mon thru Fri 10:00 A.M. to 4:00 P.M. local time.) Consult A/FD for service availability at airports with hard-surfaced runways 1500 ft. or greater.

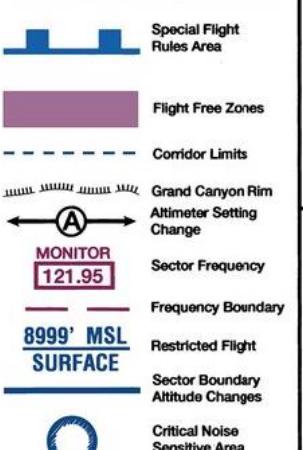
★ Rotating airport beacon in operation Sunset to Sunrise.

### AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft. MSL are shown on this chart. All times are local.



### SPECIAL FLIGHT RULES



**AIRPORT DATA**

Box indicates F.A.R. 93 Special Air Traffic Rules & Airport Traffic Patterns

FSS NO SVFR F.A.R. 91 Location Identifier

NAME (NAM) Location Identifier

CT -118.3 \* ATIS 123.8

285 L 72 122.95 UNICOI

Runways with Right Traffic Patterns (public use)

RP \* (See Airport/Facility Directory)

VFR Advsy 125.0 Airport of Entry

FSS - Flight Service Station  
 NO SVFR - Fixed-wing special VFR flight is prohibited.  
 CT -118.3 - Control Tower (CT) - primary frequency  
 NFCT - Non-Federal Control Tower  
 ★ - Star indicates operation part-time. See tower frequencies tabulation for hours of operation.  
 ○ - Indicates Common Traffic Advisory Frequencies (CTAF)  
 ATIS 123.8 - Automatic Terminal Information Service  
 ASOS / AWOS 135.42 - Automated Surface Weather Observing Systems. Some ASOS/AWOS facilities may not be located at airports.  
 UNICOM - Aerotronics advisory station  
 VFR Advsy - VFR Advisory Service shown where ATIS not available and frequency is other than primary CT frequency.

285 - Elevation in feet  
 L - Lighting in operation Sunset to Sunrise  
 \*L - Lighting limitations exist, refer to Airport/Facility Directory.  
 72 - Length of longest runway in hundreds of feet; usable length may be less.

When facility or information is lacking, the respective character is replaced by a dash. All lighting codes refer to runway lights. Lighted runway may not be the longest or lighted full length. All times are local.

### TOPOGRAPHIC INFORMATION

Roads  
 Road Markers  
 Railroad  
 Bridges And Viaducts  
 Power Transmission Lines  
 Aerial Cable

Landmark Feature - stadium, factory, school, golf course, etc.  
 Outdoor Theater  
 Lookout Tower P-17 (Site Number 618 (Elevation Base of Tower))

CG Coast Guard Station  
 Race Track

Tank - water, oil or gas  
 Oil Well  
 Water Well

Mines And Quarries

Mountain Pass  
 11823 (Elevation of Pass)

(Pass symbol does not indicate a recommended route or direction of flight and pass elevation does not indicate a recommended clearance altitude. Hazardous flight conditions may exist within and near mountain passes.)

Non-Perennial Lake  
 Rocks  
 Dams  
 Pier  
 Perennial Lake

Flashin Light  
 Marine Light

Ultralight Activity  
 Hang Glider Activity  
 Glider Operations  
 Parachute Jumping Area (See Airport/Facility Directory.)

A - Aerobatic Practice Area (See Supplement.)  
 G - Glider Operations  
 H - Hang Glider Activity  
 U - Ultralight Activity  
 UA - Unmanned Aircraft Activity  
 VPXYZ - Parachute Jumping Area (See Supplement.)

**PROHIBITED, RESTRICTED  
or WARNING AREA**



**ALERT AREA**



**MILITARY OPERATIONS  
AREA (MOA)**



← IR21

There are IFR (IR) and VFR (VR) routes as follows: Route identification:

- Routes at or below 1500' AGL (with no segment above 1500') are identified by four-digit numbers; e.g., VR1007, etc. These routes are generally developed for flight under Visual Flight Rules.
- Routes above 1500' AGL (some segments of these routes may be below 1500') are identified by three or fewer digit numbers; e.g., IR21, VR302, etc. These routes are developed for flight under Instrument Flight Rules.

A 628 UC Under Construction or reported and position / elevation unverified A 507 UC

Frequencies (VHF/UHF)

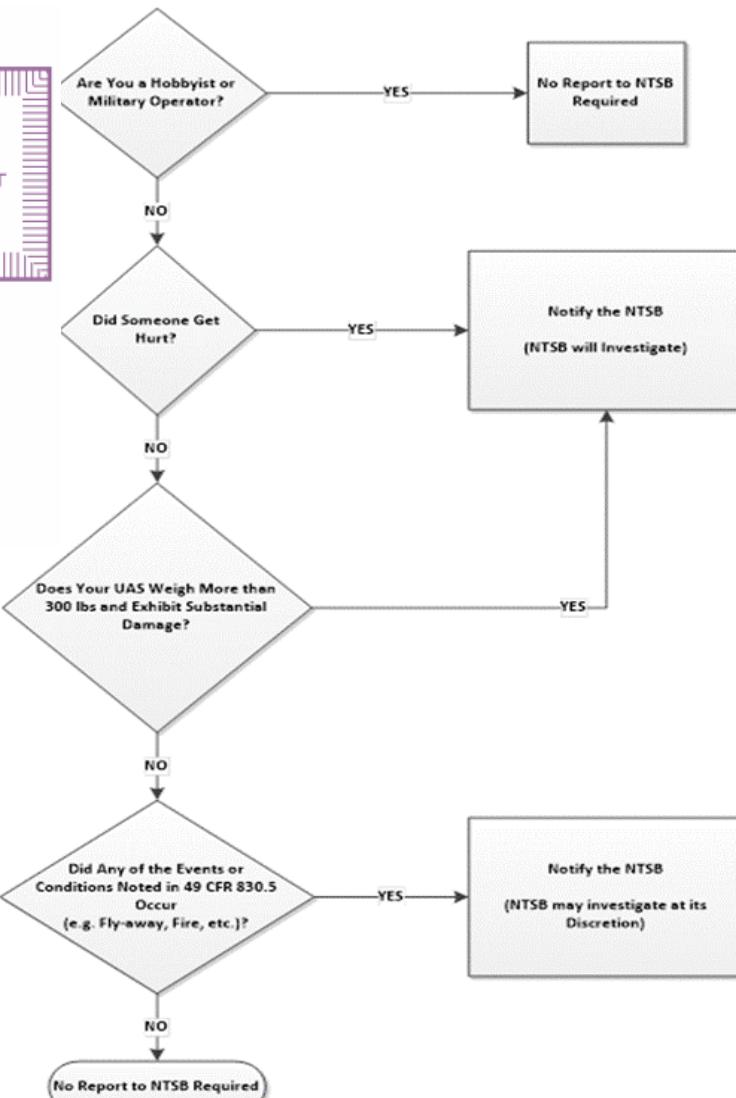
Airport Name	CONTROL TOWER	OPERATES	TWR FREQ	GND CON	ATIS	ASR/PAR
ABORNE		0700 MON-1800 SAT 0600-1800 SUN	119.475	121.6	124.925	
BLUE GRASS		CONTINUOUS	119.1 257.8	121.9	126.3	
BOLTON		0730-1930	128.1	121.3 (E) 121.8 (W)		ASR/PAR
CHARLOTTESVILLE-ALBEMARLE		0600-2300	124.5 338.275	121.9 338.275	118.425	PAR
CINCINNATI/NORTHERN KENTUCKY INTL		CONTINUOUS Runway dependent	{ 118.3 (RWYS 18R/36L & 09/27) 118.975 360.85 (RWY 18L/36R)	{ 121.3 (E) 121.7 (W)	{ 134.375 (ARR) 135.3 (DEP)	ASR
COX DAYTON INTL		CONTINUOUS	119.9 257.8	121.9	125.8	
EASTERN WV RGNL/SHEPHERD		0700-2200 TUE-THU 0700-1600 FRI-SAT 1300-1800 SUN O/T BY NOTAM Hours of Operation (local time)	124.3 236.6	121.8 275.8		Approach direction dependent

FL 600

## Airspace Classification

Class A

18,000' MSL



## Reports to FAA: 2 Types

- 107.29. In an in-flight emergency & requested by FAA to report.
- 107.9. Within 10 days of an accident.
  - Serious injury to any person or any loss of consciousness; OR
  - Damage to any property, other than the small unmanned aircraft, unless one of the following conditions is satisfied:
    - The cost of repair (including materials and labor) does not exceed \$500; OR
    - The fair market value of the property does not exceed \$500 in the event of total loss.

MODE C

30 NM

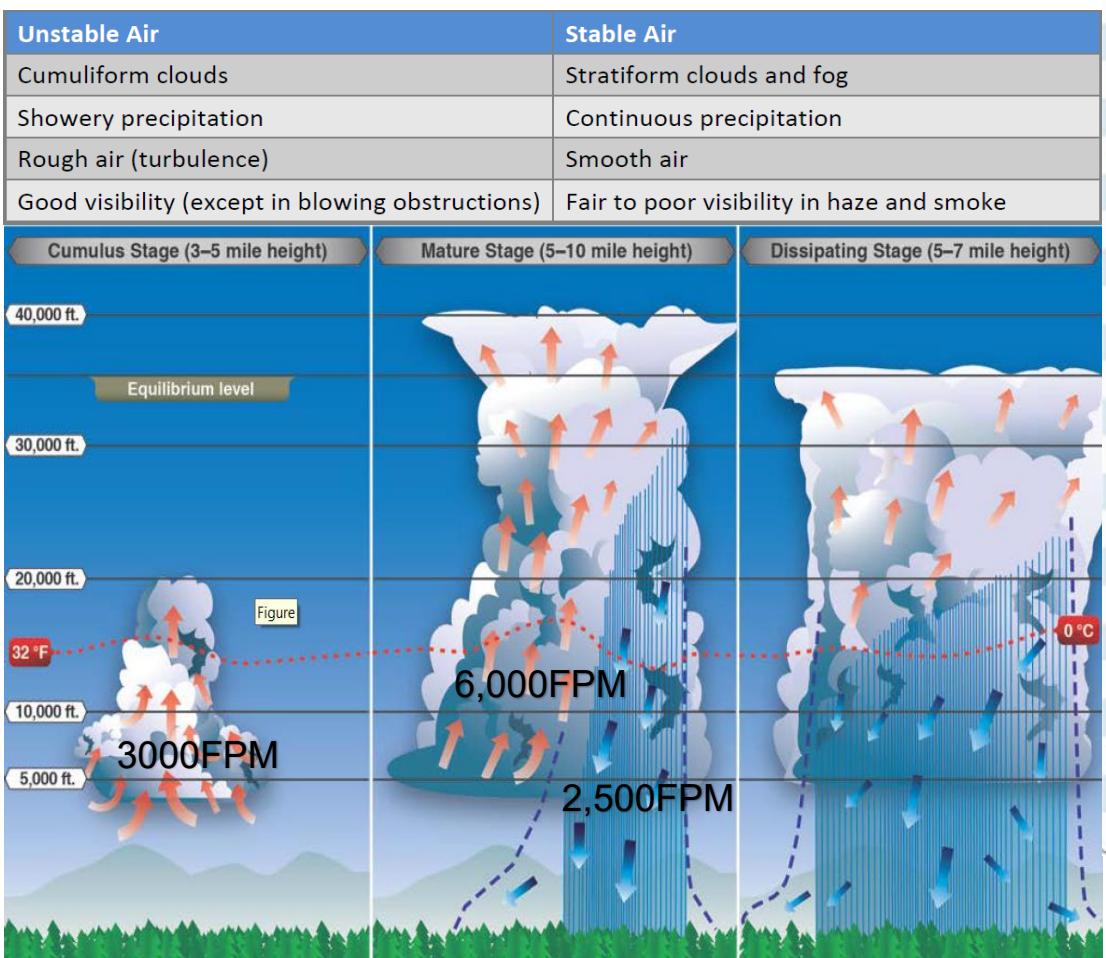


Flight operations below 1000' AGL over the designated areas within the Gulf of Farallones National Marine Sanctuary violate NOAA regulations (see 15 CFR 922).

## Structural Icing

Two conditions are necessary for structural icing in flight:

1. The aircraft must be flying through visible water such as rain or cloud droplets
2. The temperature at the point where the moisture strikes the aircraft must be 0° C or colder.



Character	Morse Code	Telephony	Phonic Pronunciation
A	•—	Alfa	(AL-FAH)
B	—••	Bravo	(BRAH-VOH)
C	—•—•	Charlie	(CH-AR-LEE) or (SHAR-LEE)
D	—••	Delta	(DELL-TAH)
E	•	Echo	(ECK-OH)
F	••—•	Foxtrot	(FOKS-TROT)
G	——•	Golf	(GOLF)
H	•••	Hotel	(HOH-TEL)
I	••	India	(IN-DEE-AH)
J	•——	Juliett	(JEW-LEE-ETT)
K	—•—	Kilo	(KEY-LOH)
L	•—••	Lima	(LEE-MAH)
M	——	Mike	(MIKE)
N	—•	November	(NO-VEM-BER)
O	———	Oscar	(OSS-CAH)
P	•——•	Papa	(PAH-PAH)
Q	——•—	Quebec	(KEH-BECK)
R	•—•	Romeo	(ROW-ME-OH)
S	•••	Sierra	(SEE-AIR-RAH)
T	—	Tango	(TANG-GO)
U	••—	Uniform	(YOU-NEE-FORM) or (OO-NEE-FORM)
V	••—•	Victor	(VIK-TAH)
W	•——	Whiskey	(WISS-KAY)
X	—•—•	Xray	(ECKS-RAY)
Y	—•——	Yankee	(YANG-KEY)
Z	——••	Zulu	(ZOO-LOO)
1	•—•—•	One	(WUN)
2	•—•——	Two	(TOO)
3	•—•——•	Three	(TREE)
4	•—•———	Four	(FOW-ER)
5	•—•—••	Five	(FIFE)
6	—•—••	Six	(SIX)
7	—•—•••	Seven	(SEV-EN)
8	—•—••••	Eight	(AIT)
9	—•—•••••	Nine	(NIN-ER)
0	—•—••••••	Zero	(ZEE-RO)

# ADM

## Can't Touch Controls or Be VO/Crew

- Has consumed any alcoholic beverage within the preceding 8 hours
- Is under the influence of alcohol
- Has a blood alcohol concentration of .04 percent or greater
- Is using a drug that affects the person's mental or physical capabilities.

### Drugs

The Federal Aviation Regulations include no specific references to medication usage. Title 14 of the CFR prohibits acting as PIC or in any other capacity as a required pilot flight crewmember, while that person:

1. Knows or has reason to know of any medical condition that would make the person unable to meet the requirement for the medical certificate necessary for the pilot operation, or
2. Is taking medication or receiving other treatment for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation.

The Perceive, Process, Perform (3P) model for ADM offers a simple, practical, and systematic approach that can be used during all phases of flight. To use it, the pilot will:

- **Perceive** the given set of circumstances for a flight
- **Process** by evaluating their impact on flight safety
- **Perform** by implementing the best course of action

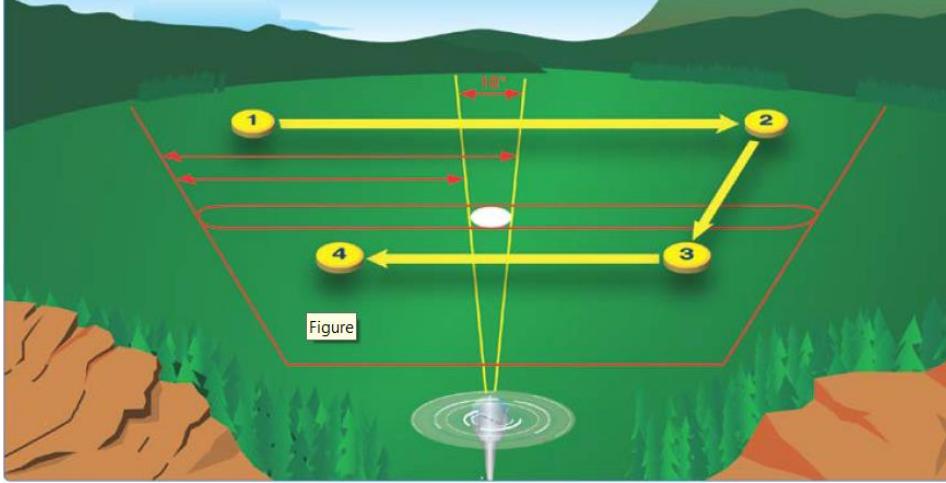


Figure 9-2. Scanning techniques.

Steps for good decision-making are:

1. Identifying personal attitudes hazardous to safe flight.
2. Learning behavior modification techniques.
3. Learning how to recognize and cope with stress.
4. Developing risk assessment skills.
5. Using all resources.
6. Evaluating the effectiveness of one's ADM skills.



You pick 3P, 5P, **Or** DECIDE Model for ADM (the picture above). FAA study guide only showed 3P and DECIDE MODELS

**P** = Pilot-in-Command (PIC) The pilot is one of the risk factors in a flight. (IMSAFE Checklist)

**Illness**—Am I sick? Illness is an obvious pilot risk.

**Medication**—Am I taking any medicines that might affect my judgment or make me drowsy?

**Stress**—While the regulations list medical conditions that require grounding, stress is not among them.

**Alcohol**—Have I been drinking within 8 hours? Within 24 hours? As little as one ounce of 4. liquor, one bottle of beer, or four ounces of wine can impair flying skills.

**Fatigue**—Am I tired and not adequately rested?

**Emotion**—Am I emotionally upset?

The Five Hazardous Attitudes	Antidote
<b>Anti-authority: "Don't tell me."</b> This attitude is found in people who do not like anyone telling them what to do. In a sense, they are saying, "No one can tell me what to do." They may be resentful of having someone tell them what to do or may regard rules, regulations, and procedures as silly or unnecessary. However, it is always your prerogative to question authority if you feel it is in error.	Follow the rules. They are usually right.
<b>Impulsivity: "Do it quickly."</b> This is the attitude of people who frequently feel the need to do something, anything, immediately. They do not stop to think about what they are about to do, they do not select the best alternative, and they do the first thing that comes to mind.	Not so fast. Think first.
<b>Invulnerability: "It won't happen to me."</b> Many people falsely believe that accidents happen to others, but never to them. They know accidents can happen, and they know that anyone can be affected. However, they never really feel or believe that they will be personally involved. Pilots who think this way are more likely to take chances and increase risk.	It could happen to me.
<b>Macho: "I can do it."</b> Pilots who are always trying to prove that they are better than anyone else think, "I can do it—I'll show them." Pilots with this type of attitude will try to prove themselves by taking risks in order to impress others. While this pattern is thought to be a male characteristic, women are equally susceptible.	Taking chances is foolish.
<b>Resignation: "What's the use?"</b> Pilots who think, "What's the use?" do not see themselves as being able to make a great deal of difference in what happens to them. When things go well, the pilot is apt to think that it is good luck. When things go badly, the pilot may feel that someone is out to get them or attribute it to bad luck. The pilot will leave the action to others, for better or worse. Sometimes, such pilots will even go along with unreasonable requests just to be a "nice guy."	I'm not helpless. I can make a difference.

**A** = Aircraft. What limitations will the aircraft impose upon the trip? Ask the following questions: Is this the right aircraft for the flight? Am I familiar with and current in this aircraft? Can this aircraft carry the planned load?

**V** = EnVironment (**WAT**)

**Weather**(What is the current ceiling and visibility? Consider the possibility that the weather may be different than forecast. Are there any thunderstorms present or forecast? If there are clouds, is there any icing, current or forecast? What is the temperature/dew point spread and the current temperature at altitude?)

**Airspace** - Check the airspace and any temporary flight restriction (TFRs).

**Terrain** - Evaluation of terrain is another important component of analyzing the flight environment.

**E** = External Pressures create a sense of pressure to complete a flight—often at the expense of safety. Factors: (The desire to demonstrate pilot qualifications. The desire to impress someone. The pilot's general goal-completion orientation. Emotional pressure associated with acknowledging that skill and experience levels may be lower than a pilot would like them to be. Pride can be a powerful external factor!)



Perceive – **P(IMS)AFE****AVE**(WAT)  
 Process – **(CARE)** Consequences, Alternatives, Reality, External factors  
 Perform – **(TEAM)** Transfer, Eliminate, Accept, or Mitigate

**OR** the DECIDE Model.

1. **Detect.** The decision maker detects the fact that change has occurred.
2. **Estimate.** The decision maker estimates the need to counter or react to the change.
3. **Choose.** The decision maker chooses a desirable outcome (in terms of success) for the flight.
4. **Identify.** The decision maker identifies actions which could successfully control the change.
5. **Do.** The decision maker takes the necessary action.
6. **Evaluate.** The decision maker evaluates the effect(s) of his/her action countering the change.

Latitude is like climbing a ladder. Each quadrant has 30 tick marks (minutes) for Lat. & Long. 60 minutes= 1 Degree.

**North vs. Magnetic.** If it is in print, it must be true. (Except: VOR compass rose, PIREPS, bearings on instrument approaches or departures, and runway headings.) If it is heard, it is magnetic.

You register and mark your aircraft according to Part 48 or according to Part 47 and Part 45 subparts A & C. (48 or 47 & 45.)

#### Abb./Acronym - Definition

AC -Advisory Circular  
 ACS - Airman Certification Standards  
 ADDS - Aviation Digital Data Services  
 ADIZ- Air Defense Identification Zone  
 ADM - Aeronautical Decision-Making  
 AFM - Airplane Flight Manual  
 AFS - Flight Standards Service  
 AGL - Above Ground Level  
 AIRMET - Airman's Meteorological Information  
 AOA - Angle of Attack  
 ATC - Air Traffic Control  
 ATD - Aviation Training Device  
 CB - Cumulonimbus  
 CFA - Controlled Firing Areas  
 CFR - Code of Federal Regulations  
 CG - Center of Gravity  
 CP - Center of Pressure  
 CRM - Crew Resource Management  
 CTAF - Common Traffic Advisory Frequency  
 CTP - Certification Training Program  
 DPE - Designated Pilot Examiner  
 DVFR - Defense VFR  
 EMS - Emergency Services  
 FAA - Federal Aviation Administration  
 FADEC - Full Authority Digital Engine Control  
 FDA - Federal Drug Administration  
 FDC - Flight Data Center  
 FL - Flight Level  
 FRZ - Flight Restriction Zone  
 FS - Flight Service  
 FSDO - Flight Standards District Office  
 IAP - Instrument Approach Procedures  
 ICAO - International Civil Aviation Organization  
 IFR - Instrument Flight Rules  
 IR - Instrument Routes (sectional charts)  
 ISA - International Standard Atmosphere

#### The Vultures Make Dull Company.

True North + Variation = Magnetic North.  
 Mag. North + Deviation = Compass Heading.

LAA - Local Airport Advisory  
 MAP - Missed Approach Point  
 MDA -Minimum Descent Altitude  
 MEL -Minimum Equipment List  
 MFD - Multi-functional Displays  
 MOA - Military Operation Areas  
 MSL - Mean Sea Level  
 MTR -Military Training Route  
 NACG - National Aeronautical Charting Group  
 NASA -National Aeronautics and Space Administration  
 NAS - National Airspace System  
 NM - Nautical Miles  
 NOAA - National Oceanic and Atmospheric Administration  
 NOTAM - Notice to Airmen  
 NSA - National Security Area  
 OTC - Over-the-Counter  
 PAVE - PIC – Aircraft – environment – External pressures  
 POH - Pilot's Operating Handbook  
 SAO - Special Area of Operation  
 SIGMET - Significant Meteorological Information  
 SOP -Standard Operating Procedures  
 TCU - Towering Cumulus  
 TFR - Temporary Flight Restrictions  
 TN - True North  
 TRSA - Terminal Radar Service Area  
 TUC - Time of Useful Consciousness  
 UNICOM - Aeronautical Advisory Communications Stations  
 UTC - Coordinated Universal Time  
 VFR - Visual Flight Rules  
 VR - Visual Routs (sectional charts)  
 VO - Visual Observer  
 W&B - Weight and Balance  
 WST - Convective Significant Meteorological Information Remote

<p>What decreases performance? Heavy, Hot, High Altitude, Humid.</p> <p>Humid air is lighter than dry air.</p> <p>Dry air has more mass which results in greater thrust.</p> <p>What is density altitude? Really an indication of aircraft performance.</p> <p>Standard day: 29.92 Inches of Hg. 59F 15 C.</p> <p>Microbursts have a diameter of 1-2 miles, hit 6,000FPM downdraft, last 5-15 minutes</p>	<p>Cool + Dry= Stable Hot + Humid= Unstable</p>	<p>Broken = 5/8-7/8</p>
<p><b>Methods for Air Reaching Saturation Point</b></p> <ol style="list-style-type: none"> <li>1. when warm air moves over a cold surface, the air temperature drops and reaches the saturation point.</li> <li>2. the saturation point may be reached when cold air and warm air mix.</li> <li>3. when air cools at night through contact with the cooler ground, air reaches its saturation point.</li> <li>4. when air is lifted or is forced upward in the atmosphere.</li> </ol>		

Stability in an aircraft affects two areas significantly:

- Maneuverability—the quality of an aircraft that permits it to be maneuvered easily and to withstand the stresses imposed by maneuvers. It is governed by the aircraft's weight, inertia, size and location of flight controls, structural strength, and powerplant. It too is an aircraft design characteristic.
- Controllability—the capability of an aircraft to respond to the pilot's control, especially with regard to flight path and attitude. It is the quality of the aircraft's response to the pilot's control application when maneuvering the aircraft, regardless of its stability characteristics.

Crew resource management (CRM) training for flight crews is focused on the effective use of all available resources: human resources, hardware, and information supporting ADM to facilitate crew cooperation and improve decision-making. The goal of all flight crews is good ADM and the use of CRM is one way to make good decisions.

A CTAF is a frequency designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, MULTICOM, FSS, or tower frequency and is identified in appropriate aeronautical publications.

Most non-towered airports will have a UNICOM frequency, which is usually 122.8; however, you should always check the Chart Supplements U.S. or sectional chart for the correct frequency. This frequency can vary when there are a large number of non-towered airports in the area. For non-towered airports that do not have a UNICOM or any other frequency listed, the MULTICOM frequency of 122.9 will be used. These frequencies can be found on a sectional chart by the airport or in the Chart Supplements publication from the FAA.



Reference	Title
<b>Read Entirely</b>	
<a href="#"><u>14 CFR Part 45 (Subpart A &amp; C)</u></a>	<a href="#"><u>Identification and Registration Marking</u></a>
<a href="#"><u>14 CFR part 47</u></a>	<a href="#"><u>Aircraft Registration</u></a>
<a href="#"><u>14 CFR part 48</u></a>	<a href="#"><u>Registration and Marking Requirements for Small Unmanned Aircraft Systems</u></a>
<a href="#"><u>14 CFR part 71</u></a>	<a href="#"><u>Designation of Class A, B, C, D and E Airspace Areas; Air Traffic Service Routes; and Reporting Points</u></a>
<a href="#"><u>14 CFR part 73 [this should have been in there]</u></a>	<a href="#"><u><b>SPECIAL USE AIRSPACE (Restricted and Prohibited Airspace).</b></u></a>
<b>14 CFR Part 91 Sections Referenced in Part 107.</b>	<p><b>Sections:</b></p> <ul style="list-style-type: none"><li>• <a href="#"><u>91.17 Alcohol or Drugs</u></a></li><li>• <a href="#"><u>91.19 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.</u></a></li><li>• <a href="#"><u>91.137 Temporary flight restrictions in the vicinity of disaster/hazard areas.</u></a></li><li>• <a href="#"><u>91.138 Temporary flight restrictions in national disaster areas in the State of Hawaii.</u></a></li><li>• <a href="#"><u>91.139 Emergency air traffic rules.</u></a></li><li>• <a href="#"><u>91.141 Flight restrictions in the proximity of the Presidential and other parties.</u></a></li><li>• <a href="#"><u>91.143 Flight limitation in the proximity of space flight operations.</u></a></li><li>• <a href="#"><u>91.144 Temporary restriction on flight operations during abnormally high barometric pressure conditions.</u></a></li><li>• <a href="#"><u>91.145 Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.</u></a></li></ul>



	<ul style="list-style-type: none"><li>• <a href="#"><u>91.203(a)(2) Civil aircraft: Certifications required.</u></a></li></ul>
<a href="#"><u>14 CFR 99.7</u></a>	<a href="#"><u>§ 99.7 Special security instructions.</u></a>
<a href="#"><u>14 CFR Part 101 Subpart E</u></a>	<a href="#"><u>Subpart E—Special Rule for Model Aircraft</u></a>
<a href="#"><u>14 CFR Part 107</u></a>	<a href="#"><u>Operation and Certification of Small Unmanned Aircraft Systems</u></a>
<a href="#"><u>49 CFR Part 830</u></a>	<a href="#"><u>Notification And Reporting Of Aircraft Accidents Or Incidents And Overdue Aircraft, And Preservation Of Aircraft Wreckage, Mail, Cargo, And Records</u></a>
<a href="#"><u>SAFO 15010</u> (2 Pages)</a>	<a href="#"><u>Carriage of Spare Lithium Batteries in Carry-on and Checked Baggage</u></a>
<a href="#"><u>SAFO 10015</u> (1 Page and 23 minute video)</a>	<a href="#"><u>Flying in the wire environment</u></a>
<a href="#"><u>SAFO 10017</u> (3 Pages)</a>	<a href="#"><u>Risks in Transporting Lithium Batteries in Cargo by Aircraft</u></a>
<a href="#"><u>SAFO 09013</u> (1 Page and a 10.5 minute Video)</a>	<a href="#"><u>Fighting Fires Caused By Lithium Type Batteries in Portable Electronic Devices</u></a>
<a href="#"><u>AC 150/5200-32</u> (11 Pages)</a>	<a href="#"><u>Reporting Wildlife Aircraft Strikes</u></a>
<a href="#"><u>AC 107-2</u> (53 Pages)</a>	<a href="#"><u>Small Unmanned Aircraft Systems (sUAS)</u></a>
<a href="#"><u>FAA-S-ACS-10</u> (33 Pages)</a>	<a href="#"><u>Remote Pilot – Small Unmanned Aircraft Systems Airman Certification Standards</u></a>
<a href="#"><u>FAA-G-8082-22</u> (87 Pages)</a>	<a href="#"><u>Remote Pilot – Small Unmanned Aircraft Systems Study Guide</u></a>
<a href="#"><u>FAA-G-8082-20</u> (17 Pages)</a>	<a href="#"><u>Remote Pilot Knowledge Test Guide</u></a>
<b>Articles I wrote that will help you understand some of the areas you need to know for the test. (12 webpages total)</b>	
	<ul style="list-style-type: none"><li>• <a href="#"><u>Part 107 (ACS) Airmen Certification Standards Explained (2 pages)</u></a></li></ul>

	<ul style="list-style-type: none"> <li>• <a href="#">Part 107 Knowledge Test (65 Questions Answered &amp; Explained) (4 pages)</a></li> <li>• <a href="#">TFR (Temporary Flight Restriction) (1 page)</a></li> <li>• <a href="#">What Type of Criminal Punishment (Prison Time) or Fines can Result for a TFR Violation? (1 page)</a></li> <li>• <a href="#">8 Different TFRs – Flight Restrictions for Good Reason (1 page)</a></li> <li>• <a href="#">FAA Part 107 Waiver (COA) – What Drone Pilots Need to Know (1 page)</a></li> <li>• <a href="#">What Do I Do After I Crash My Drone? (1 page)</a></li> <li>• <a href="#">How to Fly Your Drone at Night-(Part 107 Night Waiver from 107.29)</a></li> <li>• <a href="#">More Part 107 Test Questions for Remote Pilot Knowledge Test</a> (22 Super Hard Practice Questions)</li> </ul>
<p><b>Things you should NOT Read in Entirety but ONLY the relevant sections I list or ctrl +f the term in the document for the relevant sections. (The AC00-06, AIM, RMH, PHAK points came from the Knowledge Test Guide Pages 12-16)</b></p>	
<a href="#">Aeronautical Chart User's Guide</a>	<p><a href="#">Aeronautical Chart User's Guide (21 pages)</a></p> <ul style="list-style-type: none"> <li>• <a href="#">Pages 13-44</a></li> </ul>
<a href="#">AC 00-6 (200 Pages)</a>	<p><a href="#">Aviation Weather (42 Pages)</a></p> <ul style="list-style-type: none"> <li>• Thunderstorms (19-1 through 19-11) (11 Pages)</li> <li>• Winds / Currents (Chapter 7 – 6 pages) (Chapter 9 – 9 pages) (Chapter 10 – 9 pages).</li> <li>• Density Altitude (Sections 5.3 through 5.5 – 6 pages).</li> <li>• Effects – Temperature (Pages 5-10 through 5-12 already covered)</li> <li>• Effects - Frost Formation (Section 22-4 - 1 page)</li> <li>• Effects - Air Masses and Fronts (Section 10-1 through 10-8 - already covered)</li> </ul>
<a href="#">AC 00-45 - Aviation Weather Services</a>	<p><a href="#">Aviation Weather Services (17 pages)</a></p> <ul style="list-style-type: none"> <li>• Terminal Aerodrome Forecasts (TAF) (Pages 5-75 through 5-92 - 17 pages)</li> </ul>



	<ul style="list-style-type: none"><li>• Thunderstorms</li></ul>
<a href="#"><u>AIM</u></a>	<a href="#"><u>Aeronautical Information Manual</u></a> (54 pages) <ul style="list-style-type: none"><li>• General Airspace (3-1-1 through 3-5-10 - 26 pages)</li><li>• Authorization for Certain Airspace</li><li>• Airport Operations (4-3-1 through 4-3-4 - 4 pages)</li><li>• Aeronautical Charts (9-1-1 through 9-1-4 Don't read past Caribbean VFR aeronautical charts. - 3 pages)</li><li>• Radio Communications - Non-towered &amp; Towered (4-2-1 through 4-2-8 6 pages)</li><li>• Traffic Patterns</li><li>• Traffic Advisory Services</li><li>• Phonetic Alphabet</li><li>• Scanning / See and Avoid (4-4-14 &amp; 8-1-6 - 4 pages)</li><li>• NOTAMs (5-1-3 - 6 pages)</li><li>• Temporary Flight Restrictions (3-5-3 Overlap)</li><li>• Hyperventilation (8-1-3 - 1 page)</li><li>• MOA (3-4-5 Overlap)</li><li>• Sources - Weather Briefings / Sources (7-1-2 - 1 page)</li><li>• Prescription and OTC Medications (8-1-2 - 3 pages)</li></ul>
<a href="#"><u>FAA-H-8083-2</u></a>	<a href="#"><u>Risk Management Handbook</u></a> <ul style="list-style-type: none"><li>• Situational Awareness (2 pages)</li></ul>
<a href="#"><u>FAA-H-8083-25</u></a>	<a href="#"><u>Pilot's Handbook of Aeronautical Knowledge</u></a> (77 Pages) <ul style="list-style-type: none"><li>• Loading/Performance - Balance, Stability, Center of Gravity (Pages 5-33 through 5-43 - 11 pages)</li><li>• Aeronautical Decision Making - Crew Resource Management (Pages 2-4 through 2-32 29 Pages)</li><li>• Aviation Routine Weather Reports (METAR) (13-6 through 13-8 - 3 pages)</li><li>• Military Training Routes</li><li>• Other Airspace Areas (15-4 through 15-7 – 4 Pages)</li><li>• Reading a Chart</li><li>• Aeronautical Charts (14-3, 16-2 through 16-7 - 7 pages)</li><li>• Informational Sources (1-9 through 1-12 4 pages)</li><li>• Terminal Aerodrome Forecasts (TAF) (13-9 – 1 page)</li><li>• Hazardous Attitude (Page 2-4 through 2-6 - 4 Pages)</li></ul>

	<ul style="list-style-type: none"><li>• Crew Resource Management (G-8 - 1 page)</li><li>• Situational Awareness (2-22 1 page)</li><li>• Effective Scanning (17-23 1 page)</li><li>• Drugs and Alcohol (17-15 through 17-18 - 4 pages)</li><li>• Effects - Atmospheric Stability and Pressure (12-12 through 12-17 - 6 pages)</li><li>• Effects – Temperature</li><li>• Weather Briefings / Sources (13-5 1 page)</li><li>• Prescription and OTC Medications</li></ul>
<a href="#"><u>FAA-CT-8080-2H</u></a>	<p><a href="#"><u>Airman Knowledge Testing Supplement for Sport Pilot, Recreational Pilot, and Private Pilot</u></a></p> <ul style="list-style-type: none"><li>• Know how to <u>use</u> the two legends. Pages 1-19. This supplement will be provided to you when you take the test. If they do not, ask for it. <a href="#"><u>Read Page 7 of this FAA document for proof.</u></a></li><li>• Know all the terms in Figure 1. (Look these terms up in the PHAK)</li><li>• Figure 2 – Know how to use.</li><li>• Figure 12- Decode these and study them. You should know how to read these for the real world, not just memorize these so you can pass the test.</li><li>• Figure 13 – You should read over this and know what information is important for you as a drone pilot and what is not.</li><li>• Figure 15 – This is important to know so you can plan operations.</li><li>• Figure 55 – Picture 3 and 7. This is how pilots dance at parties. After the party, if you ever have a flag and you need to hide it so it doesn't get stolen at an airport, a great place to hide it is under the tail of an airplane. See Picture 4.</li><li>• Study Figure 20-26, 59, 69-71, 74-76, 78, 80</li><li>• Decode 31, 52, 63, 77, 79, 81,</li></ul>



## Other Helpful Resources:

I have included below all the regulations from Part 107. To aid in studying, I have created a [Drone Regulations Directory](#) on my website with a page for each Part 107 regulation. The big benefit to using these pages is that the regulation, the applicable section of AC 107-2, and [the FAA's commentary on that regulation](#) are all on one page. Sometime people have a hard time understanding exactly the reasoning of the FAA when they said certain things. The FAA's commentary from the preamble of the small unmanned aircraft rule is on the same page which gives you great insight into the FAA's reasoning.

### PART 107

#### Subpart A—General

- [§ 107.1 Applicability.](#)
- [§ 107.3 Definitions.](#)
- [§ 107.5 Falsification, reproduction or alteration.](#)
- [§ 107.7 Inspection, testing, and demonstration of compliance.](#)
- [§ 107.9 Accident reporting.](#)

#### Subpart B—Operating Rules

- [§ 107.11 Applicability.](#)
- [§ 107.12 Requirement for a remote pilot certificate with a small UAS rating.](#)
- [§ 107.13 Registration.](#)
- [§ 107.15 Condition for safe operation.](#)
- [§ 107.17 Medical condition.](#)
- [§ 107.19 Remote pilot in command.](#)
- [§ 107.21 In-flight emergency.](#)
- [§ 107.23 Hazardous operation.](#)
- [§ 107.25 Operation from a moving vehicle or aircraft.](#)
- [§ 107.27 Alcohol or drugs.](#)
- [§ 107.29 Daylight operation.](#)
- [§ 107.31 Visual line of sight aircraft operation.](#)
- [§ 107.33 Visual observer.](#)
- [§ 107.35 Operation of multiple small unmanned aircraft.](#)
- [§ 107.36 Carriage of hazardous material.](#)
- [§ 107.37 Operation near aircraft; right-of-way rules.](#)
- [§ 107.39 Operation over human beings.](#)
- [§ 107.41 Operation in certain airspace.](#)
- [§ 107.43 Operation in the vicinity of airports.](#)
- [§ 107.45 Operation in prohibited or restricted areas.](#)
- [§ 107.47 Flight restrictions in the proximity of certain areas designated by notice to airmen.](#)



[§ 107.49 Preflight familiarization, inspection, and actions for aircraft operation.](#)  
[§ 107.51 Operating limitations for small unmanned aircraft.](#)

### **Subpart C—Remote Pilot Certification**

[§107.53 Applicability.](#)  
[§ 107.57 Offenses involving alcohol or drugs.](#)  
[§ 107.59 Refusal to submit to an alcohol test or to furnish test results.](#)  
[§ 107.61 Eligibility.](#)  
[§ 107.63 Issuance of a remote pilot certificate with a small UAS rating.](#)  
[§ 107.64 Temporary certificate.](#)  
[§ 107.65 Aeronautical knowledge recency.](#)  
[§ 107.67 Knowledge tests: General procedures and passing grades.](#)  
[§ 107.69 Knowledge tests: Cheating or other unauthorized conduct.](#)  
[§ 107.71 Retesting after failure.](#)  
[§ 107.73 Initial and recurrent knowledge tests.](#)  
[§ 107.74 Initial and recurrent training courses.](#)  
[§ 107.77 Change of name or address.](#)  
[§ 107.79 Voluntary surrender of certificate.](#)

### **Subpart D—Waivers**

[§ 107.200 Waiver policy and requirements.](#)  
[§ 107.205 List of regulations subject to waiver.](#)



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## Area I. REGULATIONS

### PART 45—IDENTIFICATION AND REGISTRATION MARKING

Note: This is the Part of the FARs telling you how to mark your aircraft if you are registering it via Part 47. Part 48 individuals should mark their aircraft according to 48.205.

#### Subpart A—General

##### §45.1 Applicability.

This part prescribes the requirements for—

(a) Marking products and articles manufactured under—

(1) A type certificate;

(2) A production approval as defined under part 21 of this chapter; and

(3) The provisions of an agreement between the United States and another country or jurisdiction for the acceptance of products and articles; and

(b) Nationality and registration marking of aircraft registered in the United States in accordance with part 47.

[Doc. No. 2047, 29 FR 3223, Mar. 11, 1964, as amended by Amdt. 45-3, 32 FR 188, Jan. 10, 1967; Amdt. 45-26, 74 FR 53394, Oct. 16, 2009; Doc. No. FAA-2015-7396, Amdt. 45-30, 80 FR 78645, Dec. 16, 2015]

#### Subpart C—Nationality and Registration Marks

##### §45.21 General.

(a) Except as provided in §45.22, no person may operate a U.S.-registered aircraft unless that aircraft displays nationality and registration marks in accordance with the requirements of this section and §§45.23 through 45.33.

(b) Unless otherwise authorized by the FAA, no person may place on any aircraft a design, mark, or symbol that modifies or confuses the nationality and registration marks.

(c) Aircraft nationality and registration marks must—

(1) Except as provided in paragraph (d) of this section, be painted on the aircraft or affixed by any other means insuring a similar degree of permanence;

(2) Have no ornamentation;

(3) Contrast in color with the background; and



(4) Be legible.

(d) The aircraft nationality and registration marks may be affixed to an aircraft with readily removable material if—

(1) It is intended for immediate delivery to a foreign purchaser;

(2) It is bearing a temporary registration number; or

(3) It is marked temporarily to meet the requirements of §45.22(c)(1) or §45.29(h) of this part, or both.

[Doc. No. 8093, Amdt. 45-5, 33 FR 450, Jan. 12, 1968, as amended by Amdt. 45-17, 52 FR 34102, Sept. 9, 1987]

## **§45.22 Exhibition, antique, and other aircraft: Special rules.**

(a) When display of aircraft nationality and registration marks in accordance with §§45.21 and 45.23 through 45.33 would be inconsistent with exhibition of that aircraft, a U.S.-registered aircraft may be operated without displaying those marks anywhere on the aircraft if:

(1) It is operated for the purpose of exhibition, including a motion picture or television production, or an airshow;

(2) Except for practice and test flights necessary for exhibition purposes, it is operated only at the location of the exhibition, between the exhibition locations, and between those locations and the base of operations of the aircraft; and

(3) For each flight in the United States:

(i) It is operated with the prior approval of the Flight Standards District Office, in the case of a flight within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for the takeoff airport, or within 4.4 nautical miles of that airport if it is within Class G airspace; or

(ii) It is operated under a flight plan filed under either §91.153 or §91.169 of this chapter describing the marks it displays, in the case of any other flight.

(b) A small U.S.-registered aircraft built at least 30 years ago or a U.S.-registered aircraft for which an experimental certificate has been issued under §21.191(d) or 21.191(g) for operation as an exhibition aircraft or as an amateur-built aircraft and which has the same external configuration as an aircraft built at least 30 years ago may be operated without displaying marks in accordance with §§45.21 and 45.23 through 45.33 if:

(1) It displays in accordance with §45.21(c) marks at least 2 inches high on each side of the fuselage or vertical tail surface consisting of the Roman capital letter "N" followed by:

(i) The U.S. registration number of the aircraft; or

(ii) The symbol appropriate to the airworthiness certificate of the aircraft ("C", standard; "R", restricted; "L", limited; or "X", experimental) followed by the U.S. registration number of the aircraft; and



(2) It displays no other mark that begins with the letter "N" anywhere on the aircraft, unless it is the same mark that is displayed under paragraph (b)(1) of this section.

(c) No person may operate an aircraft under paragraph (a) or (b) of this section—

(1) In an ADIZ or DEWIZ described in Part 99 of this chapter unless it temporarily bears marks in accordance with §§45.21 and 45.23 through 45.33;

(2) In a foreign country unless that country consents to that operation; or

(3) In any operation conducted under Part 121, 133, 135, or 137 of this chapter.

(d) If, due to the configuration of an aircraft, it is impossible for a person to mark it in accordance with §§45.21 and 45.23 through 45.33, he may apply to the FAA for a different marking procedure.

[Doc. No. 8093, Amdt. 45-5, 33 FR 450, Jan. 12, 1968, as amended by Amdt. 45-13, 46 FR 48603, Oct. 1, 1981; Amdt. 45-19, 54 FR 39291, Sept. 25, 1989; Amdt. 45-18, 54 FR 34330, Aug. 18, 1989; Amdt. 45-21, 56 FR 65653, Dec. 17, 1991; Amdt. 45-22, 66 FR 21066, Apr. 27, 2001]

### **§45.23 Display of marks; general.**

(a) Each operator of an aircraft must display on that aircraft marks consisting of the Roman capital letter "N" (denoting United States registration) followed by the registration number of the aircraft. Each suffix letter used in the marks displayed must also be a Roman capital letter.

(b) When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

[Doc. No. 8093, Amdt. 45-5, 33 FR 450, Jan. 12, 1968, as amended by Amdt. 45-9, 42 FR 41102, Aug. 15, 1977; Amdt. 45-24, 69 FR 44863, July 27, 2004]

### **§45.25 Location of marks on fixed-wing aircraft.**

(a) The operator of a fixed-wing aircraft must display the required marks on either the vertical tail surfaces or the sides of the fuselage, except as provided in §45.29(f).

(b) The marks required by paragraph (a) of this section must be displayed as follows:

(1) If displayed on the vertical tail surfaces, horizontally on both surfaces, horizontally on both surfaces of a single vertical tail or on the outer surfaces of a multivertical tail. However, on aircraft on which marks at least 3 inches high may be displayed in accordance with §45.29(b)(1), the marks may be displayed vertically on the vertical tail surfaces.

(2) If displayed on the fuselage surfaces, horizontally on both sides of the fuselage between the trailing edge of the wing and the leading edge of the horizontal stabilizer. However, if engine pods or other appurtenances are located in this area and are an integral part of the fuselage side surfaces, the operator may place the marks on those pods or appurtenances.

[Amdt. 45-9, 42 FR 41102, Aug. 15, 1977]

**§45.27 Location of marks; nonfixed-wing aircraft.**

- (a) *Rotorcraft*. Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by §45.23.
- (b) *Airships*. Each operator of an airship must display on that airship the marks required by §45.23, horizontally on—
- (1) The upper surface of the right horizontal stabilizer and on the under surface of the left horizontal stabilizer with the top of the marks toward the leading edge of each stabilizer; and
  - (2) Each side of the bottom half of the vertical stabilizer.
- (c) *Spherical balloons*. Each operator of a spherical balloon must display the marks required by §45.23 in two places diametrically opposite and near the maximum horizontal circumference of that balloon.
- (d) *Nonspherical balloons*. Each operator of a nonspherical balloon must display the marks required by §45.23 on each side of the balloon near its maximum cross section and immediately above either the rigging band or the points of attachment of the basket or cabin suspension cables.
- (e) *Powered parachutes and weight-shift-control aircraft*. Each operator of a powered parachute or a weight-shift-control aircraft must display the marks required by §§45.23 and 45.29(b)(2) of this part. The marks must be displayed in two diametrically opposite positions on the fuselage, a structural member, or a component of the aircraft and must be visible from the side of the aircraft.
- [Doc. No. 2047, 29 FR 3223, Mar. 11, 1964, as amended by Amdt. 45-15, 48 FR 11392, Mar. 17, 1983; Amdt. 45-24, 69 FR 44863, July 27, 2004; Amdt. 45-25, 72 FR 52469, Sept. 14, 2007]
- §45.29 Size of marks.**
- (a) Except as provided in paragraph (f) of this section, each operator of an aircraft must display marks on the aircraft meeting the size requirements of this section.
- (b) *Height*. Except as provided in paragraph (h) of this part, the nationality and registration marks must be of equal height and on—
- (1) Fixed-wing aircraft, must be at least 12 inches high, except that:
    - (i) An aircraft displaying marks at least 2 inches high before November 1, 1981 and an aircraft manufactured after November 2, 1981, but before January 1, 1983, may display those marks until the aircraft is repainted or the marks are repainted, restored, or changed;
    - (ii) Marks at least 3 inches high may be displayed on a glider;
    - (iii) Marks at least 3 inches high may be displayed on an aircraft for which the FAA has issued an experimental certificate under §21.191 (d), §21.191 (g), or §21.191 (i) of this chapter to operate as an exhibition aircraft, an amateur-built aircraft, or a light-sport aircraft when the maximum cruising speed of the aircraft does not exceed 180 knots CAS; and
  - (iv) Marks may be displayed on an exhibition, antique, or other aircraft in accordance with §45.22.



(2) Airships, spherical balloons, nonspherical balloons, powered parachutes, and weight-shift-control aircraft must be at least 3 inches high; and

(3) Rotorcraft, must be at least 12 inches high, except that rotorcraft displaying before April 18, 1983, marks required by §45.29(b)(3) in effect on April 17, 1983, and rotorcraft manufactured on or after April 18, 1983, but before December 31, 1983, may display those marks until the aircraft is repainted or the marks are repainted, restored, or changed.

(c) *Width*. Characters must be two-thirds as wide as they are high, except the number "1", which must be one-sixth as wide as it is high, and the letters "M" and "W" which may be as wide as they are high.

(d) *Thickness*. Characters must be formed by solid lines one-sixth as thick as the character is high.

(e) *Spacing*. The space between each character may not be less than one-fourth of the character width.

(f) If either one of the surfaces authorized for displaying required marks under §45.25 is large enough for display of marks meeting the size requirements of this section and the other is not, full size marks must be placed on the larger surface. If neither surface is large enough for full-size marks, marks as large as practicable must be displayed on the larger of the two surfaces. If no surface authorized to be marked by §45.27 is large enough for full-size marks, marks as large as practicable must be placed on the largest of the authorized surfaces. However, powered parachutes and weight-shift-control aircraft must display marks at least 3 inches high.

(g) *Uniformity*. The marks required by this part for fixed-wing aircraft must have the same height, width, thickness, and spacing on both sides of the aircraft.

(h) After March 7, 1988, each operator of an aircraft penetrating an ADIZ or DEWIZ must display on that aircraft temporary or permanent nationality and registration marks at least 12 inches high.

[Doc. No. 2047, 29 FR 3223, Mar. 11, 1964, as amended by Amdt. 45-2, 31 FR 9863, July 21, 1966; Amdt. 45-9, 42 FR 41102, Aug. 15, 1977; Amdt. 45-13, 46 FR 48604, Oct. 1, 1981; Amdt. 45-15, 48 FR 11392, Mar. 17, 1983; Amdt. 45-17, 52 FR 34102, Sept. 9, 1987; 52 FR 36566, Sept. 30, 1987; Amdt. 45-24, 69 FR 44863, July 27, 2004; Amdt. 45-25, 72 FR 52469, Sept. 14, 2007]

### **§45.31 Marking of export aircraft.**

A person who manufactures an aircraft in the United States for delivery outside thereof may display on that aircraft any marks required by the State of registry of the aircraft. However, no person may operate an aircraft so marked within the United States, except for test and demonstration flights for a limited period of time, or while in necessary transit to the purchaser.

### **§45.33 Sale of aircraft; removal of marks.**

When an aircraft that is registered in the United States is sold, the holder of the Certificate of Aircraft Registration must remove, before its delivery to the purchaser, all United States marks from the aircraft, unless the purchaser is—

(a) A citizen of the United States;

(b) An individual citizen of a foreign country who is lawfully admitted for permanent residence in the United States; or



(c) When the aircraft is to be based and primarily used in the United States, a corporation (other than a corporation which is a citizen of the United States) lawfully organized and doing business under the laws of the United States or any State thereof.

## PART 47—AIRCRAFT REGISTRATION

### Subpart A—General

#### §47.1 Applicability.

This part prescribes the requirements for registering aircraft under 49 U.S.C. 44101-44104. Subpart B applies to each applicant for, and holder of, a Certificate of Aircraft Registration, AC Form 8050-3. Subpart C applies to each applicant for, and holder of, a Dealer's Aircraft Registration Certificate, AC Form 8050-6.

[Amendt. 47-29, 75 FR 41979, July 20, 2010]

#### §47.2 Definitions.

The following are definitions of terms used in this part:

*Citizen of the United States or U.S. citizen* means one of the following:

- (1) An individual who is a citizen of the United States or one of its possessions.
- (2) A partnership each of whose partners is an individual who is a citizen of the United States.

(3) A corporation or association organized under the laws of the United States or a State, the District of Columbia, or a territory or possession of the United States, of which the president and at least two-thirds of the board of directors and other managing officers are citizens of the United States, which is under the actual control of citizens of the United States, and in which at least 75 percent of the voting interest is owned or controlled by persons that are citizens of the United States.

*Registry* means the FAA, Civil Aviation Registry, Aircraft Registration Branch.

*Resident alien* means an individual citizen of a foreign country lawfully admitted for permanent residence in the United States as an immigrant in conformity with the regulations of the Department of Homeland Security (8 CFR Chapter 1).

[Doc. No. FAA-2015-7396; Amendt. 47-30, 80 FR 78645, Dec. 16, 2015]

#### §47.3 Registration required.

(a) An aircraft may be registered under 49 U.S.C. 44103 only when the aircraft is not registered under the laws of a foreign country and is—

- (1) Owned by a citizen of the United States;



(2) Owned by an individual citizen of a foreign country lawfully admitted for permanent residence in the United States;

(3) Owned by a corporation not a citizen of the United States when the corporation is organized and doing business under the laws of the United States or a State within the United States, and the aircraft is based and primarily used in the United States; or

(4) An aircraft of—

(i) The United States Government; or

(ii) A State, the District of Columbia, a territory or possession of the United States, or a political subdivision of a State, territory, or possession.

(b) No person may operate an aircraft that is eligible for registration under 49 U.S.C. 44101-44104, unless the aircraft—

(1) Has been registered by its owner;

(2) Is carrying aboard the temporary authorization required by §47.31(c); or

(3) Is an aircraft of the Armed Forces of the United States.

(c) Governmental units are those named in paragraph (a) of this section and Puerto Rico.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-20, 44 FR 61939, Oct. 29, 1979; Amdt. 47-27, 70 FR 244, Jan. 3, 2005; Amdt. 47-29, 75 FR 41979, July 20, 2010; Doc. No. FAA-2015-7396; Amdt. 47-30, 80 FR 78645, Dec. 16, 2015]

## **§47.5 Applicants.**

(a) A person who wishes to register an aircraft in the United States must submit an Aircraft Registration Application, AC Form 8050-1 under this part.

(b) An aircraft may be registered only by and in the legal name of its owner.

(c) 49 U.S.C. 44103(c), provides that registration is not evidence of ownership of aircraft in any proceeding in which ownership by a particular person is in issue. The FAA does not issue any certificate of ownership or endorse any information with respect to ownership on a Certificate of Aircraft Registration, AC Form 8050-3. The FAA issues a Certificate of Aircraft Registration, AC Form 8050-3 to the person who appears to be the owner on the basis of the evidence of ownership submitted pursuant to §47.11 with the Aircraft Registration Application, or recorded at the Registry.

(d) In this part, “owner” includes a buyer in possession, a bailee, or a lessee of an aircraft under a contract of conditional sale, and the assignee of that person.

[Amdt. 47-20, 44 FR 61939, Oct. 29, 1979, as amended by Amdt. 47-27, 70 FR 244, Jan. 3, 2005; Amdt. 47-29, 75 FR 41979, July 20, 2010]

## **§47.7 United States citizens and resident aliens.**



(a) *U.S. citizens*. An applicant for aircraft registration under this part who is a U.S. citizen must certify to this in the Aircraft Registration Application, AC Form 8050-1.

(b) *Resident aliens*. An applicant for aircraft registration under 49 U.S.C. 44102 who is a resident alien must furnish a representation of permanent residence and the applicant's alien registration number issued by the Department of Homeland Security.

(c) *Trustees*. An applicant for aircraft registration under 49 U.S.C. 44102 that holds legal title to an aircraft in trust must comply with the following requirements:

(1) Each trustee must be either a U.S. citizen or a resident alien.

(2) The applicant must submit with the Aircraft Registration Application—

(i) A copy of each document legally affecting a relationship under the trust;

(ii) If each beneficiary under the trust, including each person whose security interest in the aircraft is incorporated in the trust, is either a U.S. citizen or a resident alien, an affidavit by the applicant to that effect; and

(iii) If any beneficiary under the trust, including any person whose security interest in the aircraft is incorporated in the trust, is not a U.S. citizen or resident alien, an affidavit from each trustee stating that the trustee is not aware of any reason, situation, or relationship (involving beneficiaries or other persons who are not U.S. citizens or resident aliens) as a result of which those persons together would have more than 25 percent of the aggregate power to influence or limit the exercise of the trustee's authority.

(3) If persons who are neither U.S. citizens nor resident aliens have the power to direct or remove a trustee, either directly or indirectly through the control of another person, the trust instrument must provide that those persons together may not have more than 25 percent of the aggregate power to direct or remove a trustee. Nothing in this paragraph prevents those persons from having more than 25 percent of the beneficial interest in the trust.

(d) *Partnerships*. A partnership may apply for a Certificate of Aircraft Registration, AC Form 8050-3, under 49 U.S.C. 44102 only if each partner, whether a general or limited partner, is an individual who is a citizen of the United States. Nothing in this section makes ineligible for registration an aircraft which is not owned as a partnership asset but is co-owned by—

(1) Resident aliens; or

(2) One or more resident aliens and one or more U.S. citizens.

[Amdt. 47-20, 44 FR 61939, Oct. 29, 1979, as amended by Amdt. 47-27, 70 FR 244, Jan. 3, 2005; Amdt. 47-29, 75 FR 41980, July 20, 2010; Doc. No. FAA-2015-7396; Amdt. 47-30, 80 FR 78645, Dec. 16, 2015]

#### **§47.8 Voting trusts.**

(a) If a voting trust is used to qualify a domestic corporation as a U.S. citizen, the corporate applicant must submit to the Registry—

(1) A true copy of the fully executed voting trust agreement, which must identify each voting interest of the applicant, and which must be binding upon each voting trustee, the applicant corporation, all foreign stockholders, and each other party to the transaction; and



(2) An affidavit executed by each person designated as voting trustee in the voting trust agreement, in which each affiant represents—

(i) That each voting trustee is a citizen of the United States within the meaning of 49 U.S.C. 40102(a)(15).

(ii) That each voting trustee is not a past, present, or prospective director, officer, employee, attorney, or agent of any other party to the trust agreement;

(iii) That each voting trustee is not a present or prospective beneficiary, creditor, debtor, supplier or contractor of any other party to the trust agreement;

(iv) That each voting trustee is not aware of any reason, situation, or relationship under which any other party to the agreement might influence the exercise of the voting trustee's totally independent judgment under the voting trust agreement.

(b) Each voting trust agreement submitted under paragraph (a)(1) of this section must provide for the succession of a voting trustee in the event of death, disability, resignation, termination of citizenship, or any other event leading to the replacement of any voting trustee. Upon succession, the replacement voting trustee shall immediately submit to the Registry the affidavit required by paragraph (a)(2) of this section.

(c) If the voting trust terminates or is modified, and the result is less than 75 percent control of the voting interest in the corporation by citizens of the United States, a loss of citizenship of the holder of the Certificate of Aircraft Registration, AC Form 8050-3 occurs, and §47.41(a)(3) of this part applies.

(d) A voting trust agreement may not empower a trustee to act through a proxy.

[Amendt. 47-20, 44 FR 61939, Oct. 29, 1979, as amended by Amendt. 47-27, 70 FR 245, Jan. 3, 2005; Amendt. 47-29, 75 FR 41980, July 20, 2010]

#### **§47.9 Corporations not U.S. citizens.**

(a) Each corporation applying for registration of an aircraft under 49 U.S.C. 44102 must submit to the Registry with the Aircraft Registration Application, AC Form 8050-1—

(1) A certified copy of its certificate of incorporation;

(2) A certification that it is lawfully qualified to do business in one or more States;

(3) A certification that the aircraft will be based and primarily used in the United States; and

(4) The location where the records required by paragraph (e) of this section will be maintained.

(b) For the purposes of registration, an aircraft is based and primarily used in the United States if the flight hours accumulated within the United States amount to at least 60 percent of the total flight hours of the aircraft during—

(1) For aircraft registered on or before January 1, 1980, the 6-calendar month period beginning on January 1, 1980, and each 6-calendar month period thereafter; and



(2) For aircraft registered after January 1, 1980, the period consisting in the remainder of the registration month and the succeeding 6 calendar months and each 6-calendar month period thereafter.

(c) For the purpose of this section, only those flight hours accumulated during non-stop (except for stops in emergencies or for purposes of refueling) flight between two points in the United States, even if the aircraft is outside of the United States during part of the flight, are considered flight hours accumulated within the United States.

(d) In determining compliance with this section, any periods during which the aircraft is not validly registered in the United States are disregarded.

(e) The corporation that registers an aircraft pursuant to 49 U.S.C. 44102 shall maintain, and make available for inspection by the FAA upon request, records containing the total flight hours in the United States of the aircraft for three calendar years after the year in which the flight hours were accumulated.

(f) The corporation that registers an aircraft pursuant to 49 U.S.C. 44102 shall send to the Registry, at the end of each period of time described in paragraphs (b)(1) and (2) of this section, either—

(1) A signed report containing—

(i) The total time in service of the airframe as provided in §91.417(a)(2)(i), accumulated during that period; and

(ii) The total flight hours in the United States of the aircraft accumulated during that period; or

(2) A signed statement that the total flight hours of the aircraft, while registered in the United States during that period, have been exclusively within the United States.

[Amdt. 47-20, 44 FR 61940, Oct. 29, 1979, as amended by Amdt. 47-24, 54 FR 34330, Aug. 18, 1989; Amdt. 47-27, 70 FR 245, Jan. 3, 2005; Amdt. 47-29, 75 FR 41979, July 20, 2010]

#### **§47.11 Evidence of ownership.**

Except as provided in §§47.33 and 47.35, each person that submits an Aircraft Registration Application, AC Form 8050-1 under this part must also submit the required evidence of ownership, recordable under §§49.13 and 49.17 of this chapter, as follows:

(a) The buyer in possession, the bailee, or the lessee of an aircraft under a contract of conditional sale must submit the contract. The assignee under a contract of conditional sale must submit both the contract (unless it is already recorded at the Registry), and his assignment from the original buyer, bailee, lessee, or prior assignee.

(b) The repossession of an aircraft must submit—

(1) A Certificate of Repossession of Encumbered Aircraft, FAA Form 8050-4, or its equivalent, signed by the applicant and stating that the aircraft was repossessed or otherwise seized under the security agreement involved and applicable local law;

(2) The security agreement (unless it is already recorded at the Registry), or a copy thereof certified as true under §49.21 of this chapter; and



(3) When repossession was through foreclosure proceedings resulting in sale, a bill of sale signed by the sheriff, auctioneer, or other authorized person who conducted the sale, and stating that the sale was made under applicable local law.

(c) The buyer of an aircraft at a judicial sale, or at a sale to satisfy a lien or charge, must submit a bill of sale signed by the sheriff, auctioneer, or other authorized person who conducted the sale, and stating that the sale was made under applicable local law.

(d) The owner of an aircraft, the title to which has been in controversy and has been determined by a court, must submit a certified copy of the decision of the court.

(e) The executor or administrator of the estate of the deceased former owner of an aircraft must submit a certified copy of the letters testamentary or letters of administration appointing him executor or administrator. The Certificate of Aircraft Registration, AC Form 8050-3 is issued to the applicant as executor or administrator.

(f) The buyer of an aircraft from the estate of a deceased former owner must submit both a bill of sale, signed for the estate by the executor or administrator, and a certified copy of the letters testamentary or letters of administration. When no executor or administrator has been or is to be appointed, the applicant must submit both a bill of sale, signed by the heir-at-law of the deceased former owner, and an affidavit of the heir-at-law stating that no application for appointment of an executor or administrator has been made, that so far as he can determine none will be made, and that he is the person entitled to, or having the right to dispose of, the aircraft under applicable local law.

(g) The guardian of another person's property that includes an aircraft must submit a certified copy of the order of the court appointing him guardian. The Certificate of Aircraft Registration is issued to the applicant as guardian.

(h) The trustee of property that includes an aircraft, as described in §47.7(c), must submit either a certified copy of the order of the court appointing the trustee, or a complete and true copy of the instrument creating the trust. If there is more than one trustee, each trustee must sign the Aircraft Registration Application. The Certificate of Aircraft Registration is issued to a single applicant as trustee, or to several trustees jointly as co-trustees.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-23, 53 FR 1915, Jan. 25, 1988; Amdt. 47-29, 75 FR 41980, July 20, 2010]

#### **§47.13 Signatures and instruments made by representatives.**

(a) Each person signing an Aircraft Registration Application, AC Form 8050-1, or a document submitted as supporting evidence under this part, must sign in ink or by other means acceptable to the FAA. If signed in ink, the Aircraft Registration Application must also have the typed or legibly printed name of each signer in the signature block.

(b) When one or more persons doing business under a trade name submits an Aircraft Registration Application, a document submitted as supporting evidence under this part, or a request for cancellation of a Certificate of Aircraft Registration, AC Form 8050-3, the application, document, or request must be signed by, or on behalf of, each person who shares title to the aircraft.

(c) When an agent submits an Aircraft Registration Application, a document submitted as supporting evidence under this part, or a request for cancellation of a Certificate of Aircraft Registration, on behalf of the owner, that agent must—



- (1) State the name of the owner on the application, document, or request;
  - (2) Sign as agent or attorney-in-fact on the application, document, or request; and
  - (3) Submit a signed power of attorney, or a true copy thereof certified under §49.21 of this chapter, with the application, document, or request.
- (d) When a corporation submits an Aircraft Registration Application, a document submitted as supporting evidence under this part, or a request for cancellation of a Certificate of Aircraft Registration, it must—
- (1) Have an authorized person sign, by means acceptable to the FAA, the application, document, or request;
  - (2) Show the title of the signer's office on the application, document, or request; and
  - (3) Submit a copy of the authorization from the board of directors to sign for the corporation, certified as true under §49.21 of this chapter by a corporate officer or other person in a managerial position therein, with the application, document, or request, unless—
    - (i) The signer of the application, document, or request is a corporate officer or other person in a managerial position in the corporation and the title of his office is stated in connection with his signature; or
    - (ii) A valid authorization to sign is on file at the Registry.
- (4) The provisions of paragraph (d)(3) of this section do not apply to an irrevocable deregistration and export request authorization when an irrevocable deregistration and export request authorization under the Cape Town Treaty is signed by a corporate officer and is filed with the Registry.
- (e) When a partnership submits an Aircraft Registration Application, a document submitted as supporting evidence under this part, or a request for cancellation of a Certificate of Aircraft Registration, it must—
- (1) State the full name of the partnership on the application, document, or request;
  - (2) State the name of each general partner on the application, document, or request; and
  - (3) Have a general partner sign the application, document, or request.
- (f) When co-owners, who are not engaged in business as partners, submit an Aircraft Registration Application, a document submitted as supporting evidence under this part, or a request for cancellation of a Certificate of Aircraft Registration, each person who shares title to the aircraft under the arrangement must sign the application, document, or request.
- (g) A power of attorney or other evidence of a person's authority to sign for another, submitted under this part, is valid for the purposes of this section, unless sooner revoked, until—
- (1) Its expiration date stated therein; or
  - (2) If an expiration date is not stated therein, for not more than 3 years after the date—



(i) It is signed; or

(ii) The grantor (a corporate officer or other person in a managerial position therein, where the grantor is a corporation) certifies in writing that the authority to sign shown by the power of attorney or other evidence is still in effect.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-2, 31 FR 15349, Dec. 8, 1966; Amdt. 47-3, 32 FR 6554, Apr. 28, 1967; Amdt. 47-12, 36 FR 8661, May 11, 1971; Amdt. 47-27, 70 FR 245, Jan. 3, 2005; Amdt. 47-29, 75 FR 41980, July 20, 2010]

#### **§47.15 Registration number.**

(a) *Number required.* An applicant for aircraft registration must place a U.S. registration number (registration mark) on the Aircraft Registration Application, AC Form 8050-1, and on any evidence submitted with the application. There is no charge for the assignment of numbers provided in this paragraph. This paragraph does not apply to an aircraft manufacturer who applies for a group of U.S. registration numbers under paragraph (c) of this section; a person who applies for a special registration number under paragraphs (d) through (f) of this section; or a holder of a Dealer's Aircraft Registration Certificate, AC Form 8050-6, who applies for a temporary registration number under §47.16.

(1) *Aircraft not previously registered anywhere.* The applicant must obtain the U.S. registration number from the Registry by request in writing describing the aircraft by make, type, model, and serial number (or, if it is amateur-built, as provided in §47.33(b)) and stating that the aircraft has not previously been registered anywhere. If the aircraft was brought into the United States from a foreign country, the applicant must submit evidence that the aircraft has never been registered in a foreign country.

(2) *Aircraft last previously registered in the United States.* Unless the applicant applies for a different number under paragraphs (d) through (f) of this section, the applicant must place the U.S. registration number that is already assigned to the aircraft on the Aircraft Registration Application, and the supporting evidence. If there is no number assigned, the applicant must obtain a U.S. registration number from the Registry by making a written request that describes the aircraft by make, model, and serial number.

(3) *Aircraft last previously registered in a foreign country.* Whether or not the foreign registration has ended, the applicant must obtain a U.S. registration number from the Registry for an aircraft last previously registered in a foreign country, by request in writing describing the aircraft by make, model, and serial number, accompanied by—

(i) Evidence of termination of foreign registration in accordance with §47.37(b) or the applicant's affidavit showing that foreign registration has ended; or

(ii) If foreign registration has not ended, the applicant's affidavit stating that the number will not be placed on the aircraft until foreign registration has ended.

(4) *Duration of a U.S. registration number assignment.* Authority to use the registration number obtained under paragraph (a)(1), (2), or (3) of this section expires 90 days after the date it is issued unless the applicant submits an Aircraft Registration Application and complies with §47.33 or §47.37, as applicable, within that period of time. However, the applicant may obtain an extension of this 90-day period from the Registry if the applicant shows that the delay in complying with that section is due to circumstances beyond the applicant's control.

(b) A U.S. registration number may not exceed five symbols in addition to the prefix letter "N". These symbols may be all numbers (N10000), one to four numbers and one suffix letter (N 1000A), or one to three numbers and two suffix letters (N 100AB). The letters "I" and "O" may not be used. The first zero in a number must always be preceded by at least one of the numbers 1 through 9.



(c) An aircraft manufacturer may apply to the Registry for enough U.S. registration numbers to supply estimated production for the next 18 months. There is no charge for this allocation of numbers.

(d) Any available, unassigned U.S. registration number may be assigned as a special registration number. An applicant who wants a special registration number or wants to change the registration number of his aircraft may apply for it to the Registry. The fee required by §47.17 must accompany the application.

(e) [Reserved]

(f) The Registry authorizes a special registration number change on the Assignment of Special Registration Numbers, AC Form 8050-64. The authorization expires one year from the date the Registry issues an Assignment of Special Registration Numbers unless the special registration number is permanently placed on the aircraft. Within five days after the special registration number is placed on the aircraft, the owner must complete and sign the Assignment of Special Registration Numbers, state the date the number was placed on the aircraft, and return the original form to the Registry. The duplicate of the Assignment of Special Registration Numbers and the present Certificate of Aircraft Registration, AC Form 8050-3, must be carried in the aircraft as temporary authority to operate it. This temporary authority is valid until the date the owner receives the revised Certificate of Aircraft Registration showing the new registration number, but in no case is it valid for more than 120 days from the date the number is placed on the aircraft.

(g) [Reserved]

(h) A special registration number may be reserved for no more than 1 year. If a person wishes to renew his reservation from year to year, he must apply to the Registry for renewal and submit the fee required by §47.17 for a special registration number.

(i) When aircraft registration has ended, as described in §47.41(a), the assignment of a registration number to an aircraft is no longer authorized for use except as provided in §47.31(c) and will be cancelled:

(1) Following the date established in §47.40(a)(1) for any aircraft that has not been re-registered under §47.40(a);

(2) Following the expiration date shown on the Certificate of Aircraft Registration for any aircraft whose registration has not been renewed under §47.40(c);

(3) Following the expiration date shown on the Dealer's Aircraft Registration Certificate, AC Form 8050-6, for any aircraft registered under Subpart C of this part, when the certificate has not been renewed, and the owner has not applied for registration in accordance with §47.31; or

(4) When ownership has transferred—

(i) Six months after first receipt of notice of aircraft sale or evidence of ownership from the last registered owner or successive owners, and an Aircraft Registration Application has not been received.

(ii) Six months after evidence of ownership authorized under §47.67 has been submitted, and the applicant has not met the requirements of this part.

(iii) Twelve months after a new owner has submitted evidence of ownership and an Aircraft Registration Application under §47.31, and the applicant or a successive applicant has not met the requirements of this part.



(j) At the time an assignment of registration number is cancelled, the number may be reserved for one year in the name of the last owner of record if a request has been submitted with the fee required by §47.17. If the request for reservation and fee are not submitted prior to cancellation, the registration number is unavailable for assignment for a period of five years.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-1, 31 FR 13314, Oct. 14, 1966; Amdt. 47-5, 32 FR 13505, Sept. 27, 1967; Amdt. 47-7, 34 FR 2480, Feb. 21, 1969; Amdt. 47-13, 36 FR 16187, Aug. 20, 1971; Amdt. 47-15, 37 FR 21528, Oct. 12, 1972; Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-17, 39 FR 1353, Jan. 8, 1974; Amdt. 47-22, 47 FR 12153, Mar. 22, 1982; Amdt. 47-29, 75 FR 41980, July 20, 2010]

#### **§47.16 Temporary registration numbers.**

(a) Temporary registration numbers are issued by the FAA to manufacturers, distributors, and dealers who are holders of Dealer's Aircraft Registration Certificates, AC Form 8050-6, for temporary display on aircraft during flight allowed under Subpart C of this part.

(b) The holder of a Dealer's Aircraft Registration Certificate may apply to the Registry for as many temporary registration numbers as are necessary for his business. The application must be in writing and include—

- (1) Sufficient information to justify the need for the temporary registration numbers requested; and
- (2) The number of each Dealer's Aircraft Registration Certificate held by the applicant.

There is no charge for these numbers.

(c) The use of temporary registration numbers is subject to the following conditions:

(1) The numbers may be used and reused—

- (i) Only in connection with the holder's Dealer's Aircraft Registration Certificate;
- (ii) Within the limitations of §47.69 where applicable, including the requirements of §47.67; and
- (iii) On aircraft not registered under Subpart B of this part or in a foreign country, and not displaying any other identification markings.

(2) A temporary registration number may not be used on more than one aircraft in flight at the same time.

(3) Temporary registration numbers may not be used to fly aircraft into the United States for the purpose of importation.

(d) The assignment of any temporary registration number to any person lapses upon the expiration of all of his Dealer's Aircraft Registration Certificates. When a temporary registration number is used on a flight outside the United States for delivery purposes, the holder shall record the assignment of that number to the aircraft and shall keep that record for at least 1 year after the removal of the number from that aircraft. Whenever the owner of an aircraft bearing a temporary registration number applies for an airworthiness certificate under Part 21 of this chapter he shall furnish that number in the application. The temporary registration number must be removed from the aircraft not later than the date on which either title or possession passes to another person.

[Amdt. 47-4, 32 FR 12556, Aug. 30, 1967, as amended by Amdt. 47-29, 75 FR 41981, July 20, 2010]

**§47.17 Fees.**

(a) The fees for applications under this part are as follows:

(1) Certificate of Aircraft Registration (each aircraft)	\$5.00
(2) Dealer's Aircraft Registration Certificate	10.00
(3) Additional Dealer's Aircraft Registration Certificate (issued to same dealer)	2.00
(4) Special registration number (each number)	10.00
(5) To change, reassign, or reserve a registration number	10.00
(6) Replacement Certificate of Aircraft Registration	2.00
(7) Re-registration or Renewal Certificate of Aircraft Registration	5.00

(b) Each application must be accompanied by the proper fee, that may be paid by check or money order to the Federal Aviation Administration.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Doc. No. 8084, 32 FR 5769, Apr. 11, 1967; Amdt. 47-29, 75 FR 41981, July 20, 2010]

**§47.19 Registry.**

Each application, request, notification, or other communication sent to the FAA under this part must be mailed to the Registry, Department of Transportation, Post Office Box 25504, Oklahoma City, Oklahoma 73125-0504, or delivered to the Registry at 6425 S. Denning Ave., Oklahoma City, Oklahoma 73169.

[Amdt. 47-27, 70 FR 245, Jan. 3, 2005]

**Subpart B—Certificates of Aircraft Registration****§47.31 Application.**

(a) Each applicant for a Certificate of Aircraft Registration, AC Form 8050-3 must submit the following to the Registry—

(1) An Aircraft Registration Application, AC Form 8050-1, signed by the applicant in the manner prescribed by §47.13;

(2) The original Aircraft Bill of Sale, AC Form 8050-2, or other evidence of ownership authorized by §47.33, §47.35, or §47.37 (unless already recorded at the Registry); and

(3) The fee required by §47.17.

(b) The FAA rejects an application when—

(1) Any form is not completed;

(2) The name and signature of the applicant are not the same throughout; or



(3) The applicant does not provide a legibly printed or typed name with the signature in the signature block.

(c) After compliance with paragraph (a) of this section, the applicant for registration of an aircraft last previously registered in the United States must carry the second copy of the Aircraft Registration Application in the aircraft as temporary authority to operate without registration.

(1) This temporary authority is valid for operation within the United States until the date the applicant receives the Certificate of Aircraft Registration or until the date the FAA denies the application, but in no case for more than 90 days after the date the applicant signs the application. If by 90 days after the date the applicant signs the Aircraft Registration Application, the FAA has neither issued the Certificate of Aircraft Registration nor denied the application, the Registry will issue a letter of extension that serves as authority to continue to operate the aircraft without registration while it is carried in the aircraft.

(2) This temporary authority is not available in connection with any Aircraft Registration Application received when 12 months have passed since the receipt of the first application following transfer of ownership by the last registered owner.

(3) If there is no registration number assigned at the time application for registration is made, the second copy of the Aircraft Registration Application may not be used as temporary authority to operate the aircraft.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Amdt. 47-6, 33 FR 11, Jan. 3, 1968; Amdt. 47-15, 37 FR 21528, Oct. 12, 1972; Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-28, 73 FR 10667, Feb. 28, 2008; Amdt. 47-29, 75 FR 41981, July 20, 2010]

### **§47.33 Aircraft not previously registered anywhere.**

(a) A person who is the owner of an aircraft that has not been registered under 49 U.S.C. 44101-44104, under other law of the United States, or under foreign law, may register it under this part if he—

(1) Complies with §§47.3, 47.7, 47.8, 47.9, 47.11, 47.13, 47.15, and 47.17, as applicable; and

(2) Submits with his Aircraft Registration Application, AC Form 8050-1, an Aircraft Bill of Sale, AC Form 8050-2, signed by the seller, an equivalent bill of sale, or other evidence of ownership authorized by §47.11.

(b) If, for good reason, the applicant cannot produce the evidence of ownership required by paragraph (a) of this section, he must submit other evidence that is satisfactory to the FAA. This other evidence may be an affidavit stating why he cannot produce the required evidence, accompanied by whatever further evidence is available to prove the transaction.

(c) The owner of an amateur-built aircraft who applies for registration under paragraphs (a) and (b) of this section must describe the aircraft by class (airplane, rotorcraft, glider, or balloon), serial number, number of seats, type of engine installed, (reciprocating, turbopropeller, turbojet, or other), number of engines installed, and make, model, and serial number of each engine installed; and must state whether the aircraft is built for land or water operation. Also, he must submit as evidence of ownership an affidavit giving the U.S. registration number, and stating that the aircraft was built from parts and that he is the owner. If he built the aircraft from a kit, the applicant must also submit a bill of sale from the manufacturer of the kit.

(d) The owner, other than the holder of the type certificate, of an aircraft that he assembles from parts to conform to the approved type design, must describe the aircraft and engine in the manner



required by paragraph (c) of this section, and also submit evidence of ownership satisfactory to the FAA, such as bills of sale, for all major components of the aircraft.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-27, 70 FR 245, Jan. 3, 2005; Amdt. 47-29, 75 FR 41979, July 20, 2010]

#### **§47.35 Aircraft last previously registered in the United States.**

(a) A person who is the owner of an aircraft last previously registered under 49 U.S.C. Sections 44101-44104, or under other law of the United States, may register it under this part if he complies with §§47.3, 47.7, 47.8, 47.9, 47.11, 47.13, 47.15, and 47.17, as applicable and submits with his Aircraft Registration Application, AC Form 8050-1 an Aircraft Bill of Sale, AC Form 8050-2, signed by the seller or an equivalent conveyance, or other evidence of ownership authorized by §47.11.

(1) If the applicant bought the aircraft from the last registered owner, the conveyance must be from that owner to the applicant.

(2) If the applicant did not buy the aircraft from the last registered owner, he must submit conveyances or other instruments showing consecutive transactions from the last registered owner through each intervening owner to the applicant.

(b) If, for good reason, the applicant cannot produce the evidence of ownership required by paragraph (a) of this section, he must submit other evidence that is satisfactory to the FAA. This other evidence may be an affidavit stating why he cannot produce the required evidence, accompanied by whatever further evidence is available to prove the transaction.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-27, 70 FR 245, Jan. 3, 2005; 73 FR 55722, Sept. 26, 2008; Amdt. 47-29, 75 FR 41979, July 20, 2010]

#### **§47.37 Aircraft last previously registered in a foreign country.**

(a) A person who is the owner of an aircraft last previously registered under the law of a foreign country may register it under this part if the owner—

(1) Complies with §§47.3, 47.7, 47.8, 47.9, 47.11, 47.13, 47.15, and 47.17, as applicable;

(2) Submits with his Aircraft Registration Application, AC Form 8050-1 a bill of sale from the foreign seller or other evidence satisfactory to the FAA that he owns the aircraft; and

(3) Submits evidence satisfactory to the FAA that—

(i) If the country in which the aircraft was registered has not ratified the Convention on the International Recognition of Rights in Aircraft (4 U.S.T. 1830), (the Geneva Convention), or the Convention on International Interests in Mobile Equipment, as modified by the Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Aircraft Equipment (the Cape Town Treaty), the foreign registration has ended or is invalid; or

(ii) If that country has ratified the Geneva Convention, but has not ratified the Cape Town Treaty, the foreign registration has ended or is invalid, and each holder of a recorded right against the aircraft has been satisfied or has consented to the transfer, or ownership in the country of export has been ended by a sale in execution under the terms of the Geneva Convention; or



(iii) If that country has ratified the Cape Town Treaty and the aircraft is subject to the Treaty, that the foreign registration has ended or is invalid, and that all interests ranking in priority have been discharged or that the holders of such interests have consented to the deregistration and export of the aircraft.

(iv) Nothing under (a)(3)(iii) affects rights established prior to the Treaty entering into force with respect to the country in which the aircraft was registered.

(b) For the purposes of paragraph (a)(3) of this section, satisfactory evidence of termination of the foreign registration may be—

(1) A statement, by the official having jurisdiction over the national aircraft registry of the foreign country, that the registration has ended or is invalid, and showing the official's name and title and describing the aircraft by make, model, and serial number; or

(2) A final judgment or decree of a court of competent jurisdiction of the foreign country, determining that, under the laws of that country, the registration has become invalid.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-26, 68 FR 10317, Mar. 4, 2003; Amdt. 47-27, 70 FR 245, Jan. 3, 2005]

#### **§47.39 Effective date of registration.**

An aircraft is registered on the date the Registry determines that the submissions meet the requirements of this part. The effective date of registration is shown by a date stamp on the Aircraft Registration Application, AC Form 8050-1, and as the date of issue on the Certificate of Aircraft Registration, AC Form 8050-3.

[Amdt. 47-29, 75 FR 41981, July 20, 2010]

#### **§47.40 Registration expiration and renewal.**

(a) *Re-registration.* Each aircraft registered under this part before October 1, 2010, must be re-registered in accordance with this paragraph (a).

(1) A Certificate of Aircraft Registration issued before October 1, 2010, expires on the expiration date identified in the following schedule that corresponds with the month in which the certificate was issued.

<i>If the certificate was issued in:</i>	<i>The certificate expires on:</i>	<i>The owner must apply for re-registration between these dates—to allow delivery of the new certificate before expiration</i>
March of any year	March 31, 2011	November 1, 2010 and January 31, 2011.
April of any year	June 30, 2011	February 1, 2011 and April 30, 2011.
May of any year	September 30, 2011	May 1, 2011 and July 31, 2011.
June of any year	December 31, 2011	August 1, 2011 and October 31, 2011.
July of any year	March 31, 2012	November 1, 2011 and January 31, 2012.

August of any year	June 30, 2012	February 1, 2012 and April 30, 2012.
September of any year	September 30, 2012	May 1, 2012 and July 31, 2012.
October of any year	December 31, 2012	August 1, 2012 and October 31, 2012.
November of any year	March 31 2013	November 1, 2012 and January 31, 2013.
December of any year	June 30, 2013	February 1, 2013 and April 30, 2013.
January of any year	September 30, 2013	May 1, 2013 and July 31, 2013.
February of any year	December 31, 2013	August 1, 2013 and October 31, 2013.

(2) Each holder of a Certificate of Aircraft Registration, AC Form 8050-3, issued before October 1, 2010, must submit an Application for Aircraft Re-registration, AC Form 8050-1A, and the fee required by §47.17, between October 1, 2010, and December 31, 2013, according to the schedule in paragraph (a)(1) of this section.

(3) A Certificate of Aircraft Registration issued under this paragraph expires three years after the last day of the month in which it is issued.

(b) *Initial Registration.* A Certificate of Aircraft Registration issued in accordance with §47.31 expires three years after the last day of the month in which it is issued.

(c) *Renewal.* Each holder of a Certificate of Aircraft Registration, AC Form 8050-3, containing an expiration date may apply for renewal by submitting an Application for Aircraft Registration Renewal, AC Form 8050-1B, and the fee required by §47.17 during the six months preceding the expiration date. A certificate issued under this paragraph expires three years from the expiration date of the previous certificate.

[Amend. 47-29, 75 FR 41981, July 20, 2010]

#### **§47.41 Duration and return of Certificate.**

(a) Each Certificate of Aircraft Registration, AC Form 8050-3, issued by the FAA under this subpart is effective, unless registration has ended by reason of having been revoked, canceled, expired, or the ownership is transferred, until the date upon which one of the following events occurs:

(1) Subject to the Convention on the International Recognition of Rights in Aircraft when applicable, the aircraft is registered under the laws of a foreign country.

(2) The aircraft is totally destroyed or scrapped.

(3) The holder of the certificate loses his U.S. citizenship.



(4) 30 days have elapsed since the death of the holder of the certificate.

(5) The owner, if an individual who is not a citizen of the United States, loses status as a resident alien, unless that person becomes a citizen of the United States at the same time.

(6) If the owner is a corporation other than a corporation which is a citizen of the United States—

(i) The corporation ceases to be lawfully organized and doing business under the laws of the United States or any State thereof; or

(ii) A period described in §47.9(b) ends and the aircraft was not based and primarily used in the United States during that period.

(7) If the trustee in whose name the aircraft is registered—

(i) Loses U.S. citizenship;

(ii) Loses status as a resident alien and does not become a citizen of the United States at the same time; or

(iii) In any manner ceases to act as trustee and is not immediately replaced by another who meets the requirements of §47.7(c).

(b) The Certificate of Aircraft Registration, with the reverse side completed, must be returned to the Registry—

(1) Within 21 days in the case of registration under the laws of a foreign country, by the person who was the owner of the aircraft before foreign registration;

(2) Within 60 days after the death of the holder of the certificate, by the administrator or executor of his estate, or by his heir-at-law if no administrator or executor has been or is to be appointed; or

(3) Within 21 days of the termination of the registration, by the holder of the Certificate of Aircraft Registration in all other cases mentioned in paragraph (a) of this section, except in the case of expired certificates, the holder must destroy the expired certificate.

(4) If the certificate is not available for return, as directed in paragraph (b) of this section, a statement describing the aircraft and stating the reason the certificate is not available must be submitted to the Registry within the time required by paragraph (b) of this section.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-28, 73 FR 10667, Feb. 28, 2008; Amdt. 47-29, 75 FR 41982, July 20, 2010]

#### **§47.43 Invalid registration.**

(a) The registration of an aircraft is invalid if, at the time it is made—

(1) The aircraft is registered in a foreign country;

(2) The applicant is not the owner;

(3) The applicant is not qualified to submit an application under this part; or



(4) The interest of the applicant in the aircraft was created by a transaction that was not entered into in good faith, but rather was made to avoid (with or without the owner's knowledge) compliance with 49 U.S.C. 44101-44104.

(b) If the registration of an aircraft is invalid under paragraph (a) of this section, the holder of the invalid Certificate of Aircraft Registration, AC Form 8050-3, must return it as soon as possible to the Registry.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Amdt. 47-20, 44 FR 61940, Oct. 29, 1979; Amdt. 47-27, 70 FR 245, Jan. 3, 2005; Amdt. 47-29, 75 FR 41982, July 20, 2010]

#### **§47.45 Change of address.**

Within 30 days after any change in a registered owner's mailing address, the registered owner must notify the Registry in writing of the change of address. If a post office box or mailing drop is used for mailing purposes, the registered owner also must provide that owner's physical address or location. Upon acceptance, the Registry will issue, without charge, a revised Certificate of Aircraft Registration, AC Form 8050-3, reflecting the new mailing address. When a post office box or mailing drop is used for mailing purposes, and the registered owner's physical address or location changes, the registered owner must notify the Registry in writing of the new address or location within 30 days.

[Amdt. 47-29, 75 FR 41982, July 20, 2010]

#### **§47.47 Cancellation of Certificate for export purpose.**

(a) The holder of a Certificate of Aircraft Registration, AC Form 8050-3, or the holder of an irrevocable deregistration and export request authorization recognized under the Cape Town Treaty and filed with the FAA, who wishes to cancel the Certificate of Aircraft Registration for the purpose of export must submit to the Registry—

(1) A written request for cancellation of the Certificate of Aircraft Registration describing the aircraft by make, model, and serial number, and stating the U.S. registration number and the country to which the aircraft will be exported;

(2)(i) For an aircraft not subject to the Cape Town Treaty, evidence satisfactory to the FAA that each holder of a recorded right has been satisfied or has consented to the transfer; or

(ii) For an aircraft subject to the Cape Town Treaty, evidence satisfactory to the FAA that each holder of a recorded right established prior to the date the Treaty entered into force with respect to the United States has been satisfied or has consented to the transfer; and

(3) A written certification that all registered interests ranking in priority to that of the requestor have been discharged or that the holders of such interests have consented to the cancellation for export purposes.

(b) If the aircraft is subject to the Cape Town Treaty and an irrevocable deregistration and export request authorization has been filed with the Registry, the Registry will honor a request for cancellation only if an authorized party makes the request.

(c) The Registry notifies the country to which the aircraft is to be exported of the cancellation.

[Amdt. 47-27, 70 FR 245, Jan. 3, 2005, as amended by Amdt. 47-29, 75 FR 41982, July 20, 2010]

**§47.49 Replacement of Certificate.**

(a) If the original Certificate of Aircraft Registration, AC Form 8050-3, is lost, stolen, or mutilated, the registered owner may submit to the Registry a written request that states the reason a replacement certificate is needed and the fee required by §47.17. The Registry will send a replacement certificate to the registered owner's mailing address or to another mailing address if requested in writing by the registered owner.

(b) The registered owner may request a temporary Certificate of Aircraft Registration pending receipt of a replacement certificate. The Registry issues a temporary Certificate of Aircraft Registration in the form of a fax that must be carried in the aircraft until receipt of the replacement certificate.

[Amdt. 47-29, 75 FR 41982, July 20, 2010]

**§47.51 [Reserved]****Subpart C—Dealers' Aircraft Registration Certificate****§47.61 Dealer's Aircraft Registration Certificates.**

(a) The FAA issues a Dealer's Aircraft Registration Certificate, AC Form 8050-6, to U.S. manufacturers and dealers to—

(1) Allow manufacturers to make any required flight tests of aircraft.

(2) Facilitate operating, demonstrating, and merchandising aircraft by the manufacturer or dealer without the burden of obtaining a Certificate of Aircraft Registration, AC Form 8050-3, for each aircraft with each transfer of ownership, under subpart B of this part.

(b) A Dealer's Aircraft Registration Certificate is an alternative for the Certificate of Aircraft Registration issued under subpart B of this part. A dealer may, under this subpart, obtain one or more Dealer's Aircraft Registration Certificates in addition to his original certificate, and he may use a Dealer's Aircraft Registration Certificate for any aircraft he owns.

(c) If the Dealer's Aircraft Registration Certificate expires under §47.71, and an aircraft is registered under this subpart, application for registration must be made under §47.31, or the assignment of registration number may be cancelled in accordance with §47.15(i)(3).

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-9, 35 FR 802, Jan. 21, 1970; Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-29, 75 FR 41982, July 20, 2010]

**§47.63 Application.**

A manufacturer or dealer that wishes to obtain a Dealer's Aircraft Registration Certificate, AC Form 8050-6, must submit—

(a) A Dealer's Aircraft Registration Certificate Application, AC Form 8050-5; and

(b) The fee required by §47.17.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-16, 37 FR 25487, Dec. 1, 1972; Amdt. 47-29, 75 FR 41982, July 20, 2010]



**§47.65 Eligibility.**

To be eligible for a Dealer's Aircraft Registration Certificate, AC Form 8050-6, the applicant must have an established place of business in the United States, must be substantially engaged in manufacturing or selling aircraft, and must be a citizen of the United States, as defined by 49 U.S.C. 40102 (a)(15).

[Amdt. 47-29, 75 FR 41983, July 20, 2010]

**§47.67 Evidence of ownership.**

Before using a Dealer's Aircraft Registration Certificate, AC Form 8050-6, for operating the aircraft, the holder of the certificate (other than a manufacturer) must send to the Registry evidence of ownership under §47.11. An Aircraft Bill of Sale, AC Form 8050-2, or its equivalent, may be used as evidence of ownership. There is no recording fee.

[Amdt. 47-29, 75 FR 41983, July 20, 2010]

**§47.69 Limitations.**

A Dealer's Aircraft Registration Certificate, AC Form 8050-6 is valid only in connection with use of aircraft—

- (a) By the owner of the aircraft to whom it was issued, his agent or employee, or a prospective buyer, and in the case of a dealer other than a manufacturer, only after he has complied with §47.67;
- (b) Within the United States, except when used to deliver to a foreign purchaser an aircraft displaying a temporary registration number and carrying an airworthiness certificate on which that number is written;
- (c) While a certificate is carried within the aircraft; and
- (d) On a flight that is—
  - (1) For required flight testing of aircraft; or
  - (2) Necessary for, or incident to, sale of the aircraft.

However, a prospective buyer may operate an aircraft for demonstration purposes only while he is under the direct supervision of the holder of the Dealer's Aircraft Registration Certificate or his agent.

[Doc. No. 7190, 31 FR 4495, Mar. 17, 1966; 31 FR 5483, Apr. 7, 1966, as amended by Amdt. 47-4, 32 FR 12556, Aug. 30, 1967; Amdt. 47-29, 75 FR 41983, July 20, 2010]

**§47.71 Duration of Certificate; change of status.**

- (a) A Dealer's Aircraft Registration Certificate, AC Form 8050-6, expires 1 year after the date it is issued. Each additional certificate expires on the date the original certificate expires.
- (b) The holder of a Dealer's Aircraft Registration Certificate must immediately notify the Registry of any of the following—



- (1) A change of name;
- (2) A change of address;
- (3) A change that affects status as a citizen of the United States; or
- (4) The discontinuance of business.

[31 FR 4495, Mar. 17, 1966, as amended by Amdt. 47-29, 75 FR 41983, July 20, 2010]

## PART 48—REGISTRATION AND MARKING REQUIREMENTS FOR SMALL UNMANNED AIRCRAFT

### Subpart A—General

#### §48.1 Applicability.

(a) This part provides registration and identification requirements for small unmanned aircraft that are part of a small unmanned aircraft system as defined in §1.1 of this chapter.

(b) Small unmanned aircraft eligible for registration in the United States must be registered and identified in accordance with either:

(1) The registration and identification requirements in this part; or

(2) The registration requirements in part 47 and the identification and registration marking requirements in subparts A and C of part 45.

(c) Small unmanned aircraft intended to be operated outside of the territorial airspace of the United States, or registered through a trust or voting trust, must be registered in accordance with subparts A and B of part 47 and satisfy the identification and registration marking requirements of subparts A and C of part 45.

#### §48.5 Compliance dates.

(a) *Small unmanned aircraft used exclusively as model aircraft.* For small unmanned aircraft operated by the current owner prior to December 21, 2015, compliance with the requirements of this part or part 47 is required no later than February 19, 2016. For all other small unmanned aircraft, compliance with this part is required prior to operation of the small unmanned aircraft.

(b) *Small unmanned aircraft used as other than model aircraft.* Small unmanned aircraft owners authorized to conduct operations other than model aircraft operations must register the small unmanned aircraft in accordance with part 47 of this chapter. Beginning March 31, 2016, small unmanned aircraft operated as other than model aircraft may complete aircraft registration in accordance with this part.

#### §48.10 Definitions.



For purposes of this part, the following definitions apply:

*Citizen of the United States or U.S. citizen* means one of the following:

(1) An individual who is a citizen of the United States or one of its possessions.

(2) A partnership each of whose partners is an individual who is a citizen of the United States.

(3) A corporation or association organized under the laws of the United States or a State, the District of Columbia, or a territory or possession of the United States, of which the president and at least two-thirds of the board of directors and other managing officers are citizens of the United States, which is under the actual control of citizens of the United States, and in which at least 75 percent of the voting interest is owned or controlled by persons that are citizens of the United States.

*Registry* means the FAA, Civil Aviation Registry, Aircraft Registration Branch.

*Resident alien* means an individual citizen of a foreign country lawfully admitted for permanent residence in the United States as an immigrant in conformity with the regulations of the Department of Homeland Security (8 CFR Chapter 1).

#### **§48.15 Requirement to register.**

No person may operate a small unmanned aircraft that is eligible for registration under 49 U.S.C. 44101-44103 unless one of the following criteria has been satisfied:

(a) The owner has registered and marked the aircraft in accordance with this part;

(b) The aircraft weighs 0.55 pounds or less on takeoff, including everything that is on board or otherwise attached to the aircraft; or

(c) The aircraft is an aircraft of the Armed Forces of the United States.

#### **§48.20 Eligibility for registration.**

A small unmanned aircraft may be registered under 49 U.S.C. 44103 and under this part only when the aircraft is not registered under the laws of a foreign country and is—

(a) Owned by a U.S. citizen;

(b) Owned by an individual citizen of a foreign country lawfully admitted for permanent residence in the United States;

(c) Owned by a corporation not a citizen of the United States when the corporation is organized and doing business under the laws of the United States or a State within the United States, and the aircraft is based and primarily used in the United States; or

(d) An aircraft of—

(1) The United States Government; or

(2) A State, the District of Columbia, a territory or possession of the United States, or a political subdivision of a State, territory, or possession.



#### **§48.25 Applicants.**

(a) To register a small unmanned aircraft in the United States under this part, a person must provide the information required by §48.100 to the Registry in the form and manner prescribed by the Administrator. Upon submission of this information, the FAA issues a Certificate of Aircraft Registration to that person.

(b) A small unmanned aircraft must be registered by its owner using the legal name of its owner, unless the owner is less than 13 years of age. If the owner is less than 13 years of age, then the small unmanned aircraft must be registered by a person who is at least 13 years of age.

(c) In accordance with 49 U.S.C. 44103(c), registration is not evidence of aircraft ownership in any proceeding in which ownership of an unmanned aircraft by a particular person is in issue.

(d) In this part, “owner” includes a buyer in possession, a bailee, a lessee of a small unmanned aircraft under a contract of conditional sale, and the assignee of that person.

#### **§48.30 Fees.**

(a) The fee for issuing or renewing a Certificate of Aircraft Registration for aircraft registered in accordance with §48.100(a) is \$5.00 per aircraft.

(b) The fee for issuing or renewing a Certificate of Aircraft Registration for aircraft registered in accordance with §48.100(b) is \$5.00 per certificate.

(c) Each application for and renewal of a Certificate of Aircraft Registration must be accompanied by the fee described in paragraphs (a) and (b), as applicable, paid to the Federal Aviation Administration through the web-based aircraft registration system, or in another manner if prescribed by the Administrator.

### **Subpart B—Certificates of Aircraft Registration for Small Unmanned Aircraft**

#### **§48.100 Application.**

(a) *Required information:* Persons intending to use the small unmanned aircraft as other than a model aircraft. Each applicant for a Certificate of Aircraft Registration issued under this part must submit all of the following information to the Registry:

(1) Applicant name and, for an applicant other than an individual, the name of the authorized representative applying for a Certificate of Aircraft Registration.

(2) Applicant's physical address and, for an applicant other than an individual, the physical address for the authorized representative. If the applicant or authorized representative does not receive mail at their physical address, a mailing address must also be provided.

(3) Applicant's email address or, for applicants other than individuals, the email address of the authorized representative.

(4) The aircraft manufacturer and model name.

(5) The aircraft serial number, if available.



(6) Other information as required by the Administrator.

(b) *Required information:* Individuals intending to use the small unmanned aircraft exclusively as a model aircraft. Each applicant for a Certificate of Aircraft Registration issued under this part must submit all of the following information to the Registry:

(1) Applicant name.

(2) Applicant's physical address and if the applicant does not receive mail at their physical address, a mailing address must also be provided.

(3) Applicant's email address.

(4) Other information as required by the Administrator.

(c) *Provision of information.* The information identified in paragraphs (a) and (b) of this section must be submitted to the Registry through the Web-based small unmanned aircraft registration system in a form and manner prescribed by the Administrator.

(d) *Issuance of Certificate of Aircraft registration.* The FAA will issue a Certificate of Aircraft Registration upon completion of the application requirements provided in paragraph (a) or (b) of this section as applicable.

#### **§48.105 Requirement to maintain current information.**

(a) The holder of a Certificate of Aircraft Registration must ensure that the information provided under §48.100 remains accurate.

(b) The holder of a Certificate of Aircraft Registration must update the information using the web-based small unmanned aircraft registration system within 14 calendar days of the following:

(1) A change in the information provided under §48.100.

(2) When aircraft registration requires cancellation for any reason including sale or transfer, destruction, or export.

#### **§48.110 Registration: Persons intending to use small unmanned aircraft for purposes other than as model aircraft.**

(a) *Certificate of Aircraft Registration.* A Certificate of Aircraft Registration issued in accordance with §48.100 for aircraft used for purposes other than as model aircraft constitutes registration only for the small unmanned aircraft identified on the application.

(b) *Effective date of registration.* An aircraft is registered when the applicant receives a Certificate of Aircraft Registration for the specific aircraft. The effective date of registration is shown by the date of issue on the Certificate of Aircraft Registration issued for the aircraft.

(c) *Registration renewal.* A Certificate of Aircraft registration issued under this part expires 3 years after the date of issue unless it is renewed.

(1) The holder of a Certificate of Aircraft Registration must renew the Certificate by verifying, in a form and manner prescribed by the Administrator, that the information provided in accordance with



§48.100 of this subpart is accurate and if it is not, provide updated information. The verification may take place at any time within the six months preceding the month in which the Certificate of Aircraft registration expires.

(2) A certificate issued under this paragraph expires three years from the expiration date of the previous certificate.

(d) *Other events affecting effectiveness of Certificate.* Each Certificate of Aircraft Registration issued by the FAA under this subpart is effective, unless registration has ended by reason of having been revoked, canceled, expired, or the ownership is transferred, until the date upon which one of the following events occurs:

(1) Subject to the Convention on the International Recognition of Rights in Aircraft when applicable, the aircraft is registered under the laws of a foreign country.

(2) The small unmanned aircraft is totally destroyed or scrapped.

(3) The holder of the Certificate of Aircraft Registration loses U.S. citizenship.

(4) Thirty days have elapsed since the death of the holder of the Certificate of Aircraft Registration.

(5) The owner, if an individual who is not a citizen of the United States, loses status as a resident alien, unless that person becomes a citizen of the United States at the same time.

(6) The owner is a corporation other than a corporation which is a citizen of the United States and one of the following events occurs:

(i) The corporation ceases to be lawfully organized and doing business under the laws of the United States or any State thereof; or

(ii) The aircraft was not operated exclusively within the United States during the period of registration under this part.

#### **§48.115 Registration: Individuals intending to use small unmanned aircraft exclusively as a model aircraft.**

(a) *Certificate of Aircraft Registration:* A Certificate of Aircraft Registration issued in accordance with §48.100 for small unmanned aircraft used exclusively as model aircraft constitutes registration for all small unmanned aircraft used exclusively as model aircraft owned by the individual identified on the application.

(b) *Effective date of registration.* An aircraft is registered when the applicant receives a Certificate of Aircraft Registration. The effective date of registration is shown by the date of issue on the Certificate of Aircraft Registration issued under this part.

(c) *Registration renewal.* A Certificate of Aircraft registration issued under this part expires 3 years after the date of issue unless it is renewed.

(1) The holder of a Certificate of Aircraft Registration must renew the Certificate by verifying, in a form and manner prescribed by the Administrator, that the information provided in accordance with §48.100(b) and (c) of this part is accurate and if it is not, provide updated information. The verification may take place at any time within the six months preceding the month in which the Certificate of Aircraft registration expires.



(2) A certificate issued under this paragraph expires three years from the expiration date of the previous certificate.

(d) *Other events affecting effectiveness of Certificate.* Each Certificate of Aircraft Registration issued by the FAA under this part is effective, unless registration has ended by reason of having been revoked, canceled or expired, or until the date upon which one of the following events occurs:

- (1) The holder of the Certificate of Aircraft Registration loses U.S. citizenship.
- (2) Thirty days have elapsed since the death of the holder of the Certificate of Aircraft Registration.
- (3) The owner, if an individual who is not a citizen of the United States, loses status as a resident alien, unless that person becomes a citizen of the United States at the same time.

#### **§48.120 Invalid registration.**

The registration of a small unmanned aircraft is invalid if, at the time it is made—

- (a) The aircraft is registered in a foreign country;
- (b) The applicant is not the owner, except when the applicant registers on behalf of an owner who is under 13 years of age;
- (c) The applicant is not eligible to submit an application under this part; or
- (d) The interest of the applicant in the aircraft was created by a transaction that was not entered into in good faith, but rather was made to avoid (with or without the owner's knowledge) compliance with 49 U.S.C. 44101-44103.

#### **§48.125 Foreign civil aircraft.**

Except for corporations eligible to register under §48.20(c), the FAA will issue a recognition of ownership to persons required to comply with the provisions of this part pursuant to an authorization to operate issued under part 375 of this title. The recognition of ownership does not have the effect of U.S. aircraft registration.

### **Subpart C—Aircraft Marking**

#### **§48.200 General.**

(a) No person may operate a small unmanned aircraft registered in accordance with this part unless the aircraft displays a unique identifier in accordance with the requirements of §48.205 of this subpart.

(b) A unique identifier is one of the following:

(1) The registration number issued to an individual or the registration number issued to the aircraft by the Registry upon completion of the registration process provided by this part; or

(2) If authorized by the Administrator and provided with the application for Certificate of Aircraft Registration under §48.100 of this part, the small unmanned aircraft serial number.

#### **§48.205 Display and location of unique identifier.**



(a) The unique identifier must be maintained in a condition that is legible.

(b) The unique identifier must be affixed to the small unmanned aircraft by any means necessary to ensure that it will remain affixed for the duration of each operation.

(c) The unique identifier must be readily accessible and visible upon inspection of the small unmanned aircraft. A unique identifier enclosed in a compartment is readily accessible if it can be accessed without the use of any tool.

## PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

### **§71.1 Applicability.**

A listing for Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points can be found in FAA Order 7400.9Z, Airspace Designations and Reporting Points, dated August 6, 2015. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The approval to incorporate by reference FAA Order 7400.9Z is effective September 15, 2015, through September 15, 2016. During the incorporation by reference period, proposed changes to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as proposed rule documents in the FEDERAL REGISTER. Amendments to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as final rules in the FEDERAL REGISTER. Periodically, the final rule amendments will be integrated into a revised edition of the Order and submitted to the Director of the Federal Register for approval for incorporation by reference in this section. Copies of FAA Order 7400.9Z may be obtained from Airspace Policy and Regulations Group, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591, (202) 267-8783. An electronic version of the Order is available on the FAA Web site at [http://www.faa.gov/air\\_traffic/publications](http://www.faa.gov/air_traffic/publications). Copies of FAA Order 7400.9Z may be inspected in Docket No. FAA-2015-3375; Amendment No. 71-47 on <http://www.regulations.gov>. A copy of FAA Order 7400.9Z may be inspected at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

[Doc. No. FAA-2015-3375, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.1 was revised, effective Sept. 15, 2015 through Sept. 15, 2016.

### **§71.3 [Reserved]**

### **§71.7 Bearings, radials, and mileages.**

All bearings and radials in this part are true and are applied from point of origin and all mileages in this part are stated as nautical miles.

### **§71.9 Overlapping airspace designations.**

(a) When overlapping airspace designations apply to the same airspace, the operating rules associated with the more restrictive airspace designation apply.



(b) For the purpose of this section—

- (1) Class A airspace is more restrictive than Class B, Class C, Class D, Class E, or Class G airspace;
- (2) Class B airspace is more restrictive than Class C, Class D, Class E, or Class G airspace;
- (3) Class C airspace is more restrictive than Class D, Class E, or Class G airspace;
- (4) Class D airspace is more restrictive than Class E or Class G airspace; and
- (5) Class E is more restrictive than Class G airspace.

## **Subpart A—Class A Airspace**

### **§71.31 Class A airspace.**

The airspace descriptions contained in §71.33 and the routes contained in subpart A of FAA Order 7400.9Z (incorporated by reference, see §71.1) are designated as Class A airspace within which all pilots and aircraft are subject to the rating requirements, operating rules, and equipment requirements of part 91 of this chapter.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55268, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26, 2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.31 was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

### **§71.33 Class A airspace areas.**

(a) That airspace of the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States, from 18,000 feet MSL to and including FL600 excluding the states of Alaska and Hawaii.

(b) That airspace of the State of Alaska, including that airspace overlying the waters within 12 nautical miles of the coast, from 18,000 feet MSL to and including FL600 but not including the airspace less than 1,500 feet above the surface of the earth and the Alaska Peninsula west of longitude 160°00' 00" West.

(c) The airspace areas listed as offshore airspace areas in subpart A of FAA Order 7400.9Z (incorporated by reference, see §71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied.

[Amdt. 71-14, 56 FR 65654, Dec. 17, 1991]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §71.33, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).



EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.33(c) was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## **Subpart B—Class B Airspace**

### **§71.41 Class B airspace.**

The Class B airspace areas listed in subpart B of FAA Order 7400.9Z (incorporated by reference, see §71.1) consist of specified airspace within which all aircraft operators are subject to the minimum pilot qualification requirements, operating rules, and aircraft equipment requirements of part 91 of this chapter. Each Class B airspace area designated for an airport in subpart B of FAA Order 7400.9Z (incorporated by reference, see §71.1) contains at least one primary airport around which the airspace is designated.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55268, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26, 2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.41 was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## **Subpart C—Class C Airspace**

### **§71.51 Class C airspace.**

The Class C airspace areas listed in subpart C of FAA Order 7400.9Z (incorporated by reference, see §71.1) consist of specified airspace within which all aircraft operators are subject to operating rules and equipment requirements specified in part 91 of this chapter. Each Class C airspace area designated for an airport in subpart C of FAA Order 7400.9Z (incorporated by reference, see §71.1) contains at least one primary airport around which the airspace is designated.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55269, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26, 2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.51 was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## **Subpart D—Class D Airspace**

### **§71.61 Class D airspace.**

The Class D airspace areas listed in subpart D of FAA Order 7400.9Z (incorporated by reference, see §71.1) consist of specified airspace within which all aircraft operators are subject to operating rules and equipment requirements specified in part 91 of this chapter. Each Class D airspace area designated for an airport in subpart D of FAA Order 7400.9Z (incorporated by reference, see §71.1) contains at least one primary airport around which the airspace is designated.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55269, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26,



2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.61 was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## Subpart E—Class E Airspace

### §71.71 Class E airspace.

Class E Airspace consists of:

(a) The airspace of the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous states and Alaska, extending upward from 14,500 feet MSL up to, but not including 18,000 feet MSL, and the airspace above FL600, excluding—

(1) The Alaska peninsula west of longitude 160°00' 00" W.; and

(2) The airspace below 1,500 feet above the surface of the earth.

(b) The airspace areas designated for an airport in subpart E of FAA Order 7400.9Z (incorporated by reference, see §71.1) within which all aircraft operators are subject to the operating rules specified in part 91 of this chapter.

(c) The airspace areas listed as domestic airspace areas in subpart E of FAA Order 7400.9Z (incorporated by reference, see §71.1) which extend upward from 700 feet or more above the surface of the earth when designated in conjunction with an airport for which an approved instrument approach procedure has been prescribed, or from 1,200 feet or more above the surface of the earth for the purpose of transitioning to or from the terminal or en route environment. When such areas are designated in conjunction with airways or routes, the extent of such designation has the lateral extent identical to that of a Federal airway and extends upward from 1,200 feet or higher. Unless otherwise specified, the airspace areas in the paragraph extend upward from 1,200 feet or higher above the surface to, but not including, 14,500 feet MSL.

(d) The Federal airways described in subpart E of FAA Order 7400.9Z (incorporated by reference, see §71.1).

(e) The airspace areas listed as en route domestic airspace areas in subpart E of FAA Order 7400.9Z (incorporated by reference, see §71.1). Unless otherwise specified, each airspace area has a lateral extent identical to that of a Federal airway and extends upward from 1,200 feet above the surface of the earth to the overlying or adjacent controlled airspace.

(f) The airspace areas listed as offshore airspace areas in subpart E of FAA Order 7400.9Z (incorporated by reference, see §71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied. Unless otherwise specified, each airspace area extends upward from a specified altitude up to, but not including, 18,000 feet MSL.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55269, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26, 2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]



EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.71(b), (c), (d), (e), and (f) were amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## **Subparts F-G [Reserved]**

### **Subpart H—Reporting Points**

#### **§71.901 Applicability.**

Unless otherwise designated:

(a) Each reporting point listed in subpart H of FAA Order 7400.9Z (incorporated by reference, see §71.1) applies to all directions of flight. In any case where a geographic location is designated as a reporting point for less than all airways passing through that point, or for a particular direction of flight along an airway only, it is so indicated by including the airways or direction of flight in the designation of geographical location.

(b) Place names appearing in the reporting point descriptions indicate VOR or VORTAC facilities identified by those names.

[Doc. No. 29334, 73 FR 54495, Sept. 22, 2008, as amended by Amdt. 71-40, 73 FR 60940, Oct. 15, 2008; Amdt. 71-41, 74 FR 46490, Sept. 10, 2009; Amdt. 71-42, 75 FR 55269, Sept. 10, 2010; Amdt. 71-43, 76 FR 53329, Aug. 26, 2011; Amdt. 71-44, 77 FR 50908, Aug. 23, 2012; Amdt. 71-45, 78 FR 52848, Aug. 27, 2013; Amdt. 71-46, 79 FR 51888, Sept. 2, 2014; Amdt. 71-47, 80 FR 51937, Aug. 27, 2015]

EFFECTIVE DATE NOTE: By Amdt. 71-47, 80 FR 51937, Aug. 27, 2015, §71.901(a) was amended by removing the words "FAA Order 7400.9Y" and adding, in their place, the words "FAA Order 7400.9Z", effective Sept. 15, 2015 through Sept. 15, 2016.

## **PART 73—SPECIAL USE AIRSPACE**

### **Subpart A—General**

#### **§73.1 Applicability.**

The airspace that is described in subpart B and subpart C of this part is designated as special use airspace. These parts prescribe the requirements for the use of that airspace.

#### **§73.3 Special use airspace.**

(a) Special use airspace consists of airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both.

(b) The vertical limits of special use airspace are measured by designated altitude floors and ceilings expressed as flight levels or as feet above mean sea level. Unless otherwise specified, the word "to" (an altitude or flight level) means "to and including" (that altitude or flight level).

(c) The horizontal limits of special use airspace are measured by boundaries described by geographic coordinates or other appropriate references that clearly define their perimeter.



(d) The period of time during which a designation of special use airspace is in effect is stated in the designation.

**§73.5 Bearings; radials; miles.**

(a) All bearings and radials in this part are true from point of origin.

(b) Unless otherwise specified, all mileages in this part are stated as statute miles.

**Subpart B—Restricted Areas**

**§73.11 Applicability.**

This subpart designates restricted areas and prescribes limitations on the operation of aircraft within them.

**§73.13 Restrictions.**

No person may operate an aircraft within a restricted area between the designated altitudes and during the time of designation, unless he has the advance permission of

(a) The using agency described in §73.15; or

(b) The controlling agency described in §73.17.

**§73.15 Using agency.**

(a) For the purposes of this subpart, the following are using agencies;

(1) The agency, organization, or military command whose activity within a restricted area necessitated the area being so designated.

(b) Upon the request of the FAA, the using agency shall execute a letter establishing procedures for joint use of a restricted area by the using agency and the controlling agency, under which the using agency would notify the controlling agency whenever the controlling agency may grant permission for transit through the restricted area in accordance with the terms of the letter.

(c) The using agency shall—

(1) Schedule activities within the restricted area;

(2) Authorize transit through, or flight within, the restricted area as feasible; and

(3) Contain within the restricted area all activities conducted therein in accordance with the purpose for which it was designated.

**§73.17 Controlling agency.**

For the purposes of this part, the controlling agency is the FAA facility that may authorize transit through or flight within a restricted area in accordance with a joint-use letter issued under §73.15.



**§73.19 Reports by using agency.**

(a) Each using agency shall prepare a report on the use of each restricted area assigned thereto during any part of the preceding 12-month period ended September 30, and transmit it by the following January 31 of each year to the Manager, Air Traffic Division in the regional office of the Federal Aviation Administration having jurisdiction over the area in which the restricted area is located, with a copy to the Program Director for Air Traffic Airspace Management, Federal Aviation Administration, Washington, DC 20591.

(b) In the report under this section the using agency shall:

(1) State the name and number of the restricted area as published in this part, and the period covered by the report.

(2) State the activities (including average daily number of operations if appropriate) conducted in the area, and any other pertinent information concerning current and future electronic monitoring devices.

(3) State the number of hours daily, the days of the week, and the number of weeks during the year that the area was used.

(4) For restricted areas having a joint-use designation, also state the number of hours daily, the days of the week, and the number of weeks during the year that the restricted area was released to the controlling agency for public use.

(5) State the mean sea level altitudes or flight levels (whichever is appropriate) used in aircraft operations and the maximum and average ordinate of surface firing (expressed in feet, mean sea level altitude) used on a daily, weekly, and yearly basis.

(6) Include a chart of the area (of optional scale and design) depicting, if used, aircraft operating areas, flight patterns, ordnance delivery areas, surface firing points, and target, fan, and impact areas. After once submitting an appropriate chart, subsequent annual charts are not required unless there is a change in the area, activity or altitude (or flight levels) used, which might alter the depiction of the activities originally reported. If no change is to be submitted, a statement indicating "no change" shall be included in the report.

(7) Include any other information not otherwise required under this part which is considered pertinent to activities carried on in the restricted area.

(c) If it is determined that the information submitted under paragraph (b) of this section is not sufficient to evaluate the nature and extent of the use of a restricted area, the FAA may request the using agency to submit supplementary reports. Within 60 days after receiving a request for additional information, the using agency shall submit such information as the Program Director for Air Traffic Airspace Management considers appropriate. Supplementary reports must be sent to the FAA officials designated in paragraph (a) of this section.

(Secs. 307 and 313(a), Federal Aviation Act of 1958 (49 U.S.C. 1348 and 1354(a)))

[Doc. No. 15379, 42 FR 54798, Oct. 11, 1977, as amended by Amdt. 73-5, 54 FR 39292, Sept. 25, 1989; Amdt. 73-6, 58 FR 42001, Aug. 6, 1993; Amdt. 73-8, 61 FR 26435, May 28, 1996; Amdt. 73-8, 63 FR 16890, Apr. 7, 1998]

EDITORIAL NOTE: The restricted areas formerly carried as §§608.21 to 608.72 of this title were transferred to part 73 as §§73.21 to 73.72 under subpart B but are not carried in the Code of Federal Regulations. For FEDERAL REGISTER citations affecting these restricted areas, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).



## **Subpart C—Prohibited Areas**

### **§73.81 Applicability.**

This subpart designates prohibited areas and prescribes limitations on the operation of aircraft therein.

### **§73.83 Restrictions.**

No person may operate an aircraft within a prohibited area unless authorization has been granted by the using agency.

### **§73.85 Using agency.**

For the purpose of this subpart, the using agency is the agency, organization or military command that established the requirements for the prohibited area.

EDITORIAL NOTE: Sections 73.87 through 73.99 are reserved for descriptions of designated prohibited areas. For FEDERAL REGISTER citations affecting these prohibited areas, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).

## **PART 101 Subpart E—Special Rule for Model Aircraft**

### **§101.41 Applicability.**

This subpart prescribes rules governing the operation of a model aircraft (or an aircraft being developed as a model aircraft) that meets all of the following conditions as set forth in section 336 of Public Law 112-95:

- (a) The aircraft is flown strictly for hobby or recreational use;
- (b) The aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization;
- (c) The aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization;
- (d) The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; and
- (e) When flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport) with prior notice of the operation.

### **§101.43 Endangering the safety of the National Airspace System.**

No person may operate model aircraft so as to endanger the safety of the national airspace system.



# PART 107—SMALL UNMANNED AIRCRAFT SYSTEMS

## Subpart A—General

### §107.1 Applicability.

(a) Except as provided in paragraph (b) of this section, this part applies to the registration, airman certification, and operation of civil small unmanned aircraft systems within the United States.

(b) This part does not apply to the following:

(1) Air carrier operations;

(2) Any aircraft subject to the provisions of part 101 of this chapter; or

(3) Any operation that a remote pilot in command elects to conduct pursuant to an exemption issued under section 333 of Public Law 112-95, unless otherwise specified in the exemption.

### §107.3 Definitions.

The following definitions apply to this part. If there is a conflict between the definitions of this part and definitions specified in §1.1 of this chapter, the definitions in this part control for purposes of this part:

*Control station* means an interface used by the remote pilot to control the flight path of the small unmanned aircraft.

*Corrective lenses* means spectacles or contact lenses.

*Small unmanned aircraft* means an unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

*Small unmanned aircraft system (small UAS)* means a small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation of the small unmanned aircraft in the national airspace system.

*Unmanned aircraft* means an aircraft operated without the possibility of direct human intervention from within or on the aircraft.

*Visual observer* means a person who is designated by the remote pilot in command to assist the remote pilot in command and the person manipulating the flight controls of the small UAS to see and avoid other air traffic or objects aloft or on the ground.

### §107.5 Falsification, reproduction or alteration.

(a) No person may make or cause to be made—

(1) Any fraudulent or intentionally false record or report that is required to be made, kept, or used to show compliance with any requirement under this part.



(2) Any reproduction or alteration, for fraudulent purpose, of any certificate, rating, authorization, record or report under this part.

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for any of the following:

(1) Denial of an application for a remote pilot certificate or a certificate of waiver,

(2) Suspension or revocation of any certificate or waiver issued by the Administrator under this part and held by that person; or

(3) A civil penalty.

#### **§107.7 Inspection, testing, and demonstration of compliance.**

(a) A remote pilot in command, owner, or person manipulating the flight controls of a small unmanned aircraft system must, upon request, make available to the Administrator:

(1) The remote pilot certificate with a small UAS rating; and

(2) Any other document, record, or report required to be kept under the regulations of this chapter.

(b) The remote pilot in command, visual observer, owner, operator, or person manipulating the flight controls of a small unmanned aircraft system must, upon request, allow the Administrator to make any test or inspection of the small unmanned aircraft system, the remote pilot in command, the person manipulating the flight controls of a small unmanned aircraft system, and, if applicable, the visual observer to determine compliance with this part.

#### **§107.9 Accident reporting.**

No later than 10 calendar days after an operation that meets the criteria of either paragraph (a) or (b) of this section, a remote pilot in command must report to the FAA, in a manner acceptable to the Administrator, any operation of the small unmanned aircraft involving at least:

(a) Serious injury to any person or any loss of consciousness; or

(b) Damage to any property, other than the small unmanned aircraft, unless one of the following conditions is satisfied:

(1) The cost of repair (including materials and labor) does not exceed \$500; or

(2) The fair market value of the property does not exceed \$500 in the event of total loss.

### **Subpart B—Operating Rules**

#### **§107.11 Applicability.**

This subpart applies to the operation of all civil small unmanned aircraft systems subject to this part.

#### **§107.12 Requirement for a remote pilot certificate with a small UAS rating.**



(a) Except as provided in paragraph (c) of this section, no person may manipulate the flight controls of a small unmanned aircraft system unless:

(1) That person has a remote pilot certificate with a small UAS rating issued pursuant to subpart C of this part and satisfies the requirements of §107.65; or

(2) That person is under the direct supervision of a remote pilot in command and the remote pilot in command has the ability to immediately take direct control of the flight of the small unmanned aircraft.

(b) Except as provided in paragraph (c) of this section, no person may act as a remote pilot in command unless that person has a remote pilot certificate with a small UAS rating issued pursuant to Subpart C of this part and satisfies the requirements of §107.65.

(c) The Administrator may, consistent with international standards, authorize an airman to operate a civil foreign-registered small unmanned aircraft without an FAA-issued remote pilot certificate with a small UAS rating.

#### **§107.13 Registration.**

A person operating a civil small unmanned aircraft system for purposes of flight must comply with the provisions of §91.203(a)(2) of this chapter.

#### **14 CFR §91.203 Civil aircraft: Certifications required.**

(a) Except as provided in §91.715, no person may operate a civil aircraft unless it has within it the following: . . . .

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft Registration Application as provided for in §47.31(c), a Certificate of Aircraft registration as provided in part 48, or a registration certification issued under the laws of a foreign country.

#### **§107.15 Condition for safe operation.**

(a) No person may operate a civil small unmanned aircraft system unless it is in a condition for safe operation. Prior to each flight, the remote pilot in command must check the small unmanned aircraft system to determine whether it is in a condition for safe operation.

(b) No person may continue flight of the small unmanned aircraft when he or she knows or has reason to know that the small unmanned aircraft system is no longer in a condition for safe operation.

#### **§107.17 Medical condition.**

No person may manipulate the flight controls of a small unmanned aircraft system or act as a remote pilot in command, visual observer, or direct participant in the operation of the small unmanned aircraft if he or she knows or has reason to know that he or she has a physical or mental condition that would interfere with the safe operation of the small unmanned aircraft system.

#### **§107.19 Remote pilot in command.**

(a) A remote pilot in command must be designated before or during the flight of the small unmanned aircraft.



(b) The remote pilot in command is directly responsible for and is the final authority as to the operation of the small unmanned aircraft system.

(c) The remote pilot in command must ensure that the small unmanned aircraft will pose no undue hazard to other people, other aircraft, or other property in the event of a loss of control of the aircraft for any reason.

(d) The remote pilot in command must ensure that the small UAS operation complies with all applicable regulations of this chapter.

(e) The remote pilot in command must have the ability to direct the small unmanned aircraft to ensure compliance with the applicable provisions of this chapter.

#### **§107.21 In-flight emergency.**

(a) In an in-flight emergency requiring immediate action, the remote pilot in command may deviate from any rule of this part to the extent necessary to meet that emergency.

(b) Each remote pilot in command who deviates from a rule under paragraph (a) of this section must, upon request of the Administrator, send a written report of that deviation to the Administrator.

#### **§107.23 Hazardous operation.**

No person may:

(a) Operate a small unmanned aircraft system in a careless or reckless manner so as to endanger the life or property of another; or

(b) Allow an object to be dropped from a small unmanned aircraft in a manner that creates an undue hazard to persons or property.

#### **§107.25 Operation from a moving vehicle or aircraft.**

No person may operate a small unmanned aircraft system—

(a) From a moving aircraft; or

(b) From a moving land or water-borne vehicle unless the small unmanned aircraft is flown over a sparsely populated area and is not transporting another person's property for compensation or hire.

#### **§107.27 Alcohol or drugs.**

A person manipulating the flight controls of a small unmanned aircraft system or acting as a remote pilot in command or visual observer must comply with the provisions of §§91.17 and 91.19 of this chapter.

#### **14 CFR §91.17 Alcohol or drugs.**

(a) No person may act or attempt to act as a crewmember of a civil aircraft—

(1) Within 8 hours after the consumption of any alcoholic beverage;

(2) While under the influence of alcohol;



(3) While using any drug that affects the person's faculties in any way contrary to safety; or

(4) While having an alcohol concentration of 0.04 or greater in a blood or breath specimen. Alcohol concentration means grams of alcohol per deciliter of blood or grams of alcohol per 210 liters of breath.

(b) Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.

(c) A crewmember shall do the following:

(1) On request of a law enforcement officer, submit to a test to indicate the alcohol concentration in the blood or breath, when—

(i) The law enforcement officer is authorized under State or local law to conduct the test or to have the test conducted; and

(ii) The law enforcement officer is requesting submission to the test to investigate a suspected violation of State or local law governing the same or substantially similar conduct prohibited by paragraph (a)(1), (a)(2), or (a)(4) of this section.

(2) Whenever the FAA has a reasonable basis to believe that a person may have violated paragraph (a)(1), (a)(2), or (a)(4) of this section, on request of the FAA, that person must furnish to the FAA the results, or authorize any clinic, hospital, or doctor, or other person to release to the FAA, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates an alcohol concentration in the blood or breath specimen.

(d) Whenever the Administrator has a reasonable basis to believe that a person may have violated paragraph (a)(3) of this section, that person shall, upon request by the Administrator, furnish the Administrator, or authorize any clinic, hospital, doctor, or other person to release to the Administrator, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates the presence of any drugs in the body.

(e) Any test information obtained by the Administrator under paragraph (c) or (d) of this section may be evaluated in determining a person's qualifications for any airman certificate or possible violations of this chapter and may be used as evidence in any legal proceeding under section 602, 609, or 901 of the Federal Aviation Act of 1958.

[Doc. No. 18334, 54 FR 34292, Aug. 18, 1989, as amended by Amdt. 91-291, June 21, 2006]

**14 CFR §91.19 Carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances.**

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft within the United States with knowledge that narcotic drugs, marihuana, and depressant or stimulant drugs or substances as defined in Federal or State statutes are carried in the aircraft.

(b) Paragraph (a) of this section does not apply to any carriage of narcotic drugs, marihuana, and depressant or stimulant drugs or substances authorized by or under any Federal or State statute or by any Federal or State agency.

**§107.29 Daylight operation.**



(a) No person may operate a small unmanned aircraft system during night.

(b) No person may operate a small unmanned aircraft system during periods of civil twilight unless the small unmanned aircraft has lighted anti-collision lighting visible for at least 3 statute miles. The remote pilot in command may reduce the intensity of the anti-collision lighting if he or she determines that, because of operating conditions, it would be in the interest of safety to do so.

(c) For purposes of paragraph (b) of this section, civil twilight refers to the following:

(1) Except for Alaska, a period of time that begins 30 minutes before official sunrise and ends at official sunrise;

(2) Except for Alaska, a period of time that begins at official sunset and ends 30 minutes after official sunset; and

(3) In Alaska, the period of civil twilight as defined in the Air Almanac.

#### **§107.31 Visual line of sight aircraft operation.**

(a) With vision that is unaided by any device other than corrective lenses, the remote pilot in command, the visual observer (if one is used), and the person manipulating the flight control of the small unmanned aircraft system must be able to see the unmanned aircraft throughout the entire flight in order to:

(1) Know the unmanned aircraft's location;

(2) Determine the unmanned aircraft's attitude, altitude, and direction of flight;

(3) Observe the airspace for other air traffic or hazards; and

(4) Determine that the unmanned aircraft does not endanger the life or property of another.

(b) Throughout the entire flight of the small unmanned aircraft, the ability described in paragraph (a) of this section must be exercised by either:

(1) The remote pilot in command and the person manipulating the flight controls of the small unmanned aircraft system; or

(2) A visual observer.

#### **§107.33 Visual observer.**

If a visual observer is used during the aircraft operation, all of the following requirements must be met:

(a) The remote pilot in command, the person manipulating the flight controls of the small unmanned aircraft system, and the visual observer must maintain effective communication with each other at all times.

(b) The remote pilot in command must ensure that the visual observer is able to see the unmanned aircraft in the manner specified in §107.31.



(c) The remote pilot in command, the person manipulating the flight controls of the small unmanned aircraft system, and the visual observer must coordinate to do the following:

(1) Scan the airspace where the small unmanned aircraft is operating for any potential collision hazard; and

(2) Maintain awareness of the position of the small unmanned aircraft through direct visual observation.

#### **§107.35 Operation of multiple small unmanned aircraft.**

A person may not operate or act as a remote pilot in command or visual observer in the operation of more than one unmanned aircraft at the same time.

#### **§107.36 Carriage of hazardous material.**

A small unmanned aircraft may not carry hazardous material. For purposes of this section, the term hazardous material is defined in 49 CFR 171.8.

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

(a) Each small unmanned aircraft must yield the right of way to all aircraft, airborne vehicles, and launch and reentry vehicles. Yielding the right of way means that the small unmanned aircraft must give way to the aircraft or vehicle and may not pass over, under, or ahead of it unless well clear.

(b) No person may operate a small unmanned aircraft so close to another aircraft as to create a collision hazard.

#### **§107.39 Operation over human beings.**

No person may operate a small unmanned aircraft over a human being 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.

#### **§107.41 Operation in certain airspace.**

No person may operate a small unmanned aircraft in 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 Air Traffic Control (ATC).

#### **§107.43 Operation in the vicinity of airports.**

No person may operate a small unmanned aircraft in a manner that interferes with operations and traffic patterns at any airport, heliport, or seaplane base.

#### **§107.45 Operation in prohibited or restricted areas.**

No person may operate a small unmanned aircraft in prohibited or restricted areas unless that person has permission from the using or controlling agency, as appropriate.



**§107.47 Flight restrictions in the proximity of certain areas designated by notice to airmen.**

A person acting as a remote pilot in command must comply with the provisions of §§91.137 through 91.145 and 99.7 of this chapter.

**14 CFR §91.137 Temporary flight restrictions in the vicinity of disaster/hazard areas.**

(a) The Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply and specifying the hazard or condition requiring their imposition, whenever he determines it is necessary in order to—

(1) Protect persons and property on the surface or in the air from a hazard associated with an incident on the surface;

(2) Provide a safe environment for the operation of disaster relief aircraft; or

(3) Prevent an unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest.

The Notice to Airmen will specify the hazard or condition that requires the imposition of temporary flight restrictions.

(b) When a NOTAM has been issued under paragraph (a)(1) of this section, no person may operate an aircraft within the designated area unless that aircraft is participating in the hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(c) When a NOTAM has been issued under paragraph (a)(2) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions are met:

(1) The aircraft is participating in hazard relief activities and is being operated under the direction of the official in charge of on scene emergency response activities.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is operating under the ATC approved IFR flight plan.

(4) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather, or terrain; notification is given to the Flight Service Station (FSS) or ATC facility specified in the NOTAM to receive advisories concerning disaster relief aircraft operations; and the operation does not hamper or endanger relief activities and is not conducted for the purpose of observing the disaster.

(5) The aircraft is carrying properly accredited news representatives, and, prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the Notice to Airmen and the operation is conducted above the altitude used by the disaster relief aircraft, unless otherwise authorized by the official in charge of on scene emergency response activities.

(d) When a NOTAM has been issued under paragraph (a)(3) of this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:



(1) The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather or terrain, and the operation is not conducted for the purpose of observing the incident or event.

(2) The aircraft is operating under an ATC approved IFR flight plan.

(3) The aircraft is carrying incident or event personnel, or law enforcement officials.

(4) The aircraft is carrying properly accredited news representatives and, prior to entering that area, a flight plan is filed with the appropriate FSS or ATC facility specified in the NOTAM.

(e) Flight plans filed and notifications made with an FSS or ATC facility under this section shall include the following information:

(1) Aircraft identification, type and color.

(2) Radio communications frequencies to be used.

(3) Proposed times of entry of, and exit from, the designated area.

(4) Name of news media or organization and purpose of flight.

(5) Any other information requested by ATC.

#### **14 CFR §91.138 Temporary flight restrictions in national disaster areas in the State of Hawaii.**

(a) When the Administrator has determined, pursuant to a request and justification provided by the Governor of the State of Hawaii, or the Governor's designee, that an inhabited area within a declared national disaster area in the State of Hawaii is in need of protection for humanitarian reasons, the Administrator will issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply. The Administrator will designate the extent and duration of the temporary flight restrictions necessary to provide for the protection of persons and property on the surface.

(b) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft within the designated area unless at least one of the following conditions is met:

(1) That person has obtained authorization from the official in charge of associated emergency or disaster relief response activities, and is operating the aircraft under the conditions of that authorization.

(2) The aircraft is carrying law enforcement officials.

(3) The aircraft is carrying persons involved in an emergency or a legitimate scientific purpose.

(4) The aircraft is carrying properly accredited newscasters, and that prior to entering the area, a flight plan is filed with the appropriate FAA or ATC facility specified in the NOTAM and the operation is conducted in compliance with the conditions and restrictions established by the official in charge of on-scene emergency response activities.

(5) The aircraft is operating in accordance with an ATC clearance or instruction.



(c) A NOTAM issued under this section is effective for 90 days or until the national disaster area designation is terminated, whichever comes first, unless terminated by notice or extended by the Administrator at the request of the Governor of the State of Hawaii or the Governor's designee.

[Doc. No. 26476, 56 FR 23178, May 20, 1991, as amended by Amdt. 91-270, 66 FR 47377, Sept. 11, 2001]

**14 CFR §91.139 Emergency air traffic rules.**

(a) This section prescribes a process for utilizing Notices to Airmen (NOTAMs) to advise of the issuance and operations under emergency air traffic rules and regulations and designates the official who is authorized to issue NOTAMs on behalf of the Administrator in certain matters under this section.

(b) Whenever the Administrator determines that an emergency condition exists, or will exist, relating to the FAA's ability to operate the air traffic control system and during which normal flight operations under this chapter cannot be conducted consistent with the required levels of safety and efficiency—

(1) The Administrator issues an immediately effective air traffic rule or regulation in response to that emergency condition; and

(2) The Administrator or the Associate Administrator for Air Traffic may utilize the NOTAM system to provide notification of the issuance of the rule or regulation.

Those NOTAMs communicate information concerning the rules and regulations that govern flight operations, the use of navigation facilities, and designation of that airspace in which the rules and regulations apply.

(c) When a NOTAM has been issued under this section, no person may operate an aircraft, or other device governed by the regulation concerned, within the designated airspace except in accordance with the authorizations, terms, and conditions prescribed in the regulation covered by the NOTAM.

**14 CFR §91.141 Flight restrictions in the proximity of the Presidential and other parties.**

No person may operate an aircraft over or in the vicinity of any area to be visited or traveled by the President, the Vice President, or other public figures contrary to the restrictions established by the Administrator and published in a Notice to Airmen (NOTAM).

**14 CFR §91.143 Flight limitation in the proximity of space flight operations.**

When a Notice to Airmen (NOTAM) is issued in accordance with this section, no person may operate any aircraft of U.S. registry, or pilot any aircraft under the authority of an airman certificate issued by the Federal Aviation Administration, within areas designated in a NOTAM for space flight operation except when authorized by ATC.

[Doc. No. FAA-2004-19246, 69 FR 59753, Oct. 5, 2004]

**14 CFR §91.144 Temporary restriction on flight operations during abnormally high barometric pressure conditions.**

(a) *Special flight restrictions.* When any information indicates that barometric pressure on the route of flight currently exceeds or will exceed 31 inches of mercury, no person may operate an aircraft or initiate a flight contrary to the requirements established by the Administrator and published in a Notice to Airmen issued under this section.



(b) *Waivers*. The Administrator is authorized to waive any restriction issued under paragraph (a) of this section to permit emergency supply, transport, or medical services to be delivered to isolated communities, where the operation can be conducted with an acceptable level of safety.

[Amendt. 91-240, 59 FR 17452, Apr. 12, 1994; 59 FR 37669, July 25, 1994]

**14 CFR §91.145 Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.**

(a) The FAA will issue a Notice to Airmen (NOTAM) designating an area of airspace in which a temporary flight restriction applies when it determines that a temporary flight restriction is necessary to protect persons or property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft in the vicinity of an aerial demonstration or major sporting event. These demonstrations and events may include:

- (1) United States Naval Flight Demonstration Team (Blue Angels);
- (2) United States Air Force Air Demonstration Squadron (Thunderbirds);
- (3) United States Army Parachute Team (Golden Knights);
- (4) Summer/Winter Olympic Games;
- (5) Annual Tournament of Roses Football Game;
- (6) World Cup Soccer;
- (7) Major League Baseball All-Star Game;
- (8) World Series;
- (9) Kodak Albuquerque International Balloon Fiesta;
- (10) Sandia Classic Hang Gliding Competition;
- (11) Indianapolis 500 Mile Race;
- (12) Any other aerial demonstration or sporting event the FAA determines to need a temporary flight restriction in accordance with paragraph (b) of this section.

(b) In deciding whether a temporary flight restriction is necessary for an aerial demonstration or major sporting event not listed in paragraph (a) of this section, the FAA considers the following factors:

- (1) Area where the event will be held.
- (2) Effect flight restrictions will have on known aircraft operations.
- (3) Any existing ATC airspace traffic management restrictions.
- (4) Estimated duration of the event.



- (5) Degree of public interest.
- (6) Number of spectators.
- (7) Provisions for spectator safety.
- (8) Number and types of participating aircraft.
- (9) Use of mixed high and low performance aircraft.
- (10) Impact on non-participating aircraft.
- (11) Weather minimums.
- (12) Emergency procedures that will be in effect.

(c) A NOTAM issued under this section will state the name of the aerial demonstration or sporting event and specify the effective dates and times, the geographic features or coordinates, and any other restrictions or procedures governing flight operations in the designated airspace.

(d) When a NOTAM has been issued in accordance with this section, no person may operate an aircraft or device, or engage in any activity within the designated airspace area, except in accordance with the authorizations, terms, and conditions of the temporary flight restriction published in the NOTAM, unless otherwise authorized by:

- (1) Air traffic control; or
  - (2) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.
- (e) For the purpose of this section:

(1) *Flight restricted airspace area for an aerial demonstration*—The amount of airspace needed to protect persons and property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the aerial demonstration and the factors listed in paragraph (b) of this section. The restricted airspace area will normally be limited to a 5 nautical mile radius from the center of the demonstration and an altitude 17000 mean sea level (for high performance aircraft) or 13000 feet above the surface (for certain parachute operations), but will be no greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(2) *Flight restricted area for a major sporting event*—The amount of airspace needed to protect persons and property on the surface or in the air, to maintain air safety and efficiency, or to prevent the unsafe congestion of aircraft will vary depending on the size of the event and the factors listed in paragraph (b) of this section. The restricted airspace will normally be limited to a 3 nautical mile radius from the center of the event and 2500 feet above the surface but will not be greater than the minimum airspace necessary for the management of aircraft operations in the vicinity of the specified area.

(f) A NOTAM issued under this section will be issued at least 30 days in advance of an aerial demonstration or a major sporting event, unless the FAA finds good cause for a shorter period and explains this in the NOTAM.



(g) When warranted, the FAA Administrator may exclude the following flights from the provisions of this section:

- (1) Essential military.
- (2) Medical and rescue.
- (3) Presidential and Vice Presidential.
- (4) Visiting heads of state.
- (5) Law enforcement and security.
- (6) Public health and welfare.

[Doc. No. FAA-2000-8274, 66 FR 47378, Sept. 11, 2001]

**14 CRR §99.7 Special security instructions.**

Each person operating an aircraft in an ADIZ or Defense Area must, in addition to the applicable rules of this part, comply with special security instructions issued by the Administrator in the interest of national security, pursuant to agreement between the FAA and the Department of Defense, or between the FAA and a U.S. Federal security or intelligence agency.

**§107.49 Preflight familiarization, inspection, and actions for aircraft operation.**

Prior to flight, the remote pilot in command must:

(a) Assess the operating environment, considering risks to persons and property in the immediate vicinity both on the surface and in the air. This assessment must include:

- (1) Local weather conditions;
- (2) Local airspace and any flight restrictions;
- (3) The location of persons and property on the surface; and
- (4) Other ground hazards.

(b) Ensure that all persons directly participating in the small unmanned aircraft operation are informed about the operating conditions, emergency procedures, contingency procedures, roles and responsibilities, and potential hazards;

(c) Ensure that all control links between ground control station and the small unmanned aircraft are working properly;

(d) If the small unmanned aircraft is powered, ensure that there is enough available power for the small unmanned aircraft system to operate for the intended operational time; and



(e) Ensure that any object attached or carried by the small unmanned aircraft is secure and does not adversely affect the flight characteristics or controllability of the aircraft.

#### **§107.51 Operating limitations for small unmanned aircraft.**

A remote pilot in command and the person manipulating the flight controls of the small unmanned aircraft system must comply with all of the following operating limitations when operating a small unmanned aircraft system:

(a) The groundspeed of the small unmanned aircraft may not exceed 87 knots (100 miles per hour).

(b) The altitude of the small unmanned aircraft cannot be higher than 400 feet above ground level, unless the small unmanned aircraft:

(1) Is flown within a 400-foot radius of a structure; and

(2) Does not fly higher than 400 feet above the structure's immediate uppermost limit.

(c) The minimum flight visibility, as observed from the location of the control station must be no less than 3 statute miles. For purposes of this section, flight visibility means the average slant distance from the control station at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

(d) The minimum distance of the small unmanned aircraft from clouds must be no less than:

(1) 500 feet below the cloud; and

(2) 2,000 feet horizontally from the cloud.

### **Subpart C—Remote Pilot Certification**

#### **§107.53 Applicability.**

This subpart prescribes the requirements for issuing a remote pilot certificate with a small UAS rating.

#### **§107.57 Offenses involving alcohol or drugs.**

(a) A conviction for the violation of any Federal or State statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances is grounds for:

(1) Denial of an application for a remote pilot certificate with a small UAS rating for a period of up to 1 year after the date of final conviction; or

(2) Suspension or revocation of a remote pilot certificate with a small UAS rating.

(b) Committing an act prohibited by §91.17(a) or §91.19(a) of this chapter is grounds for:

(1) Denial of an application for a remote pilot certificate with a small UAS rating for a period of up to 1 year after the date of that act; or



(2) Suspension or revocation of a remote pilot certificate with a small UAS rating.

**§107.59 Refusal to submit to an alcohol test or to furnish test results.**

A refusal to submit to a test to indicate the percentage by weight of alcohol in the blood, when requested by a law enforcement officer in accordance with §91.17(c) of this chapter, or a refusal to furnish or authorize the release of the test results requested by the Administrator in accordance with §91.17(c) or (d) of this chapter, is grounds for:

- (a) Denial of an application for a remote pilot certificate with a small UAS rating for a period of up to 1 year after the date of that refusal; or
- (b) Suspension or revocation of a remote pilot certificate with a small UAS rating.

**§107.61 Eligibility.**

Subject to the provisions of §§107.57 and 107.59, in order to be eligible for a remote pilot certificate with a small UAS rating under this subpart, a person must:

- (a) Be at least 16 years of age;
- (b) Be able to read, speak, write, and understand the English language. If the applicant is unable to meet one of these requirements due to medical reasons, the FAA may place such operating limitations on that applicant's certificate as are necessary for the safe operation of the small unmanned aircraft;
- (c) Not know or have reason to know that he or she has a physical or mental condition that would interfere with the safe operation of a small unmanned aircraft system; and
- (d) Demonstrate aeronautical knowledge by satisfying one of the following conditions:
  - (1) Pass an initial aeronautical knowledge test covering the areas of knowledge specified in §107.73(a); or
  - (2) If a person holds a pilot certificate (other than a student pilot certificate) issued under part 61 of this chapter and meets the flight review requirements specified in §61.56, complete an initial training course covering the areas of knowledge specified in §107.74(a) in a manner acceptable to the Administrator.

**§107.63 Issuance of a remote pilot certificate with a small UAS rating.**

An applicant for a remote pilot certificate with a small UAS rating under this subpart must make the application in a form and manner acceptable to the Administrator.

- (a) The application must include either:
  - (1) Evidence showing that the applicant passed an initial aeronautical knowledge test. If applying using a paper application, this evidence must be an airman knowledge test report showing passage of the knowledge test; or
  - (2) If a person holds a pilot certificate (other than a student pilot certificate) issued under part 61 of this chapter and meets the flight review requirements specified in §61.56, a certificate of completion of a part 107 initial training course.



(b) If the application is being made pursuant to paragraph (a)(2) of this section:

(1) The application must be submitted to a Flight Standards District Office, a designated pilot examiner, an airman certification representative for a pilot school, a certificated flight instructor, or other person authorized by the Administrator;

(2) The person accepting the application submission must verify the identity of the applicant in a manner acceptable to the Administrator; and

(3) The person making the application must, by logbook endorsement or other manner acceptable to the Administrator, show the applicant meets the flight review requirements specified in §61.56 of this chapter.

**§107.64 Temporary certificate.**

(a) A temporary remote pilot certificate with a small UAS rating is issued for up to 120 calendar days, at which time a permanent certificate will be issued to a person whom the Administrator finds qualified under this part.

(b) A temporary remote pilot certificate with a small UAS rating expires:

(1) On the expiration date shown on the certificate;

(2) Upon receipt of the permanent certificate; or

(3) Upon receipt of a notice that the certificate sought is denied or revoked.

**§107.65 Aeronautical knowledge recency.**

A person may not operate a small unmanned aircraft system unless that person has completed one of the following, within the previous 24 calendar months:

(a) Passed an initial aeronautical knowledge test covering the areas of knowledge specified in §107.73(a);

(b) Passed a recurrent aeronautical knowledge test covering the areas of knowledge specified in §107.73(b); or

(c) If a person holds a pilot certificate (other than a student pilot certificate) issued under part 61 of this chapter and meets the flight review requirements specified in §§61.56, passed either an initial or recurrent training course covering the areas of knowledge specified in §107.74(a) or (b) in a manner acceptable to the Administrator.

**§107.67 Knowledge tests: General procedures and passing grades.**

(a) Knowledge tests prescribed by or under this part are given by persons and in the manner designated by the Administrator.

(b) An applicant for a knowledge test must have proper identification at the time of application that contains the applicant's:

(1) Photograph;



(2) Signature;

(3) Date of birth, which shows the applicant meets or will meet the age requirements of this part for the certificate and rating sought before the expiration date of the airman knowledge test report; and

(4) Permanent mailing address. If the applicant's permanent mailing address is a post office box number, then the applicant must also provide a current residential address.

(c) The minimum passing grade for the knowledge test will be specified by the Administrator.

**§107.69 Knowledge tests: Cheating or other unauthorized conduct.**

(a) An applicant for a knowledge test may not:

(1) Copy or intentionally remove any knowledge test;

(2) Give to another applicant or receive from another applicant any part or copy of a knowledge test;

(3) Give or receive assistance on a knowledge test during the period that test is being given;

(4) Take any part of a knowledge test on behalf of another person;

(5) Be represented by, or represent, another person for a knowledge test;

(6) Use any material or aid during the period that the test is being given, unless specifically authorized to do so by the Administrator; and

(7) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) An applicant who the Administrator finds has committed an act prohibited by paragraph (a) of this section is prohibited, for 1 year after the date of committing that act, from:

(1) Applying for any certificate, rating, or authorization issued under this chapter; and

(2) Applying for and taking any test under this chapter.

(c) Any certificate or rating held by an applicant may be suspended or revoked if the Administrator finds that person has committed an act prohibited by paragraph (a) of this section.

**§107.71 Retesting after failure.**

An applicant for a knowledge test who fails that test may not reapply for the test for 14 calendar days after failing the test.

**§107.73 Initial and recurrent knowledge tests.**

(a) An initial aeronautical knowledge test covers the following areas of knowledge:

(1) Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation;



(2) Airspace classification, operating requirements, and flight restrictions affecting small unmanned aircraft operation;

(3) Aviation weather sources and effects of weather on small unmanned aircraft performance;

(4) Small unmanned aircraft loading;

(5) Emergency procedures;

(6) Crew resource management;

(7) Radio communication procedures;

(8) Determining the performance of small unmanned aircraft;

(9) Physiological effects of drugs and alcohol;

(10) Aeronautical decision-making and judgment;

(11) Airport operations; and

(12) Maintenance and preflight inspection procedures.

(b) A recurrent aeronautical knowledge test covers the following areas of knowledge:

(1) Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation;

(2) Airspace classification and operating requirements and flight restrictions affecting small unmanned aircraft operation;

(3) Emergency procedures;

(4) Crew resource management;

(5) Aeronautical decision-making and judgment;

(6) Airport operations; and

(7) Maintenance and preflight inspection procedures.

**§107.74 Initial and recurrent training courses.**

(a) An initial training course covers the following areas of knowledge:

(1) Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation;

(2) Effects of weather on small unmanned aircraft performance;

(3) Small unmanned aircraft loading;



- (4) Emergency procedures;
- (5) Crew resource management;
- (6) Determining the performance of small unmanned aircraft; and
- (7) Maintenance and preflight inspection procedures.

(b) A recurrent training course covers the following areas of knowledge:

- (1) Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation;
- (2) Emergency procedures;
- (3) Crew resource management; and
- (4) Maintenance and preflight inspection procedures.

**§107.77 Change of name or address.**

(a) *Change of name.* An application to change the name on a certificate issued under this subpart must be accompanied by the applicant's:

- (1) Remote pilot certificate with small UAS rating; and
  - (2) A copy of the marriage license, court order, or other document verifying the name change.
- (b) The documents in paragraph (a) of this section will be returned to the applicant after inspection.

(c) *Change of address.* The holder of a remote pilot certificate with small UAS rating issued under this subpart who has made a change in permanent mailing address may not, after 30 days from that date, exercise the privileges of the certificate unless the holder has notified the FAA of the change in address using one of the following methods:

- (1) By letter to the FAA Airman Certification Branch, P.O. Box 25082, Oklahoma City, OK 73125 providing the new permanent mailing address, or if the permanent mailing address includes a post office box number, then the holder's current residential address; or
- (2) By using the FAA Web site portal at [www.faa.gov](http://www.faa.gov) providing the new permanent mailing address, or if the permanent mailing address includes a post office box number, then the holder's current residential address.

**§107.79 Voluntary surrender of certificate.**

- (a) The holder of a certificate issued under this subpart may voluntarily surrender it for cancellation.
- (b) Any request made under paragraph (a) of this section must include the following signed statement or its equivalent: "I voluntarily surrender my remote pilot certificate with a small UAS rating for cancellation. This request is made for my own reasons, with full knowledge that my certificate will not be reissued to me unless I again complete the requirements specified in §§107.61 and 107.63."



## Subpart D—Waivers

### §107.200 Waiver policy and requirements.

- (a) The Administrator may issue a certificate of waiver authorizing a deviation from any regulation specified in §107.205 if the Administrator finds that a proposed small UAS operation can safely be conducted under the terms of that certificate of waiver.
- (b) A request for a certificate of waiver must contain a complete description of the proposed operation and justification that establishes that the operation can safely be conducted under the terms of a certificate of waiver.
- (c) The Administrator may prescribe additional limitations that the Administrator considers necessary.
- (d) A person who receives a certificate of waiver issued under this section:
  - (1) May deviate from the regulations of this part to the extent specified in the certificate of waiver; and
  - (2) Must comply with any conditions or limitations that are specified in the certificate of waiver.

### §107.205 List of regulations subject to waiver.

A certificate of waiver issued pursuant to §107.200 may authorize a deviation from the following regulations of this part:

- (a) Section 107.25—Operation from a moving vehicle or aircraft. However, no waiver of this provision will be issued to allow the carriage of property of another by aircraft for compensation or hire.
- (b) Section 107.29—Daylight operation.
- (c) Section 107.31—Visual line of sight aircraft operation. However, no waiver of this provision will be issued to allow the carriage of property of another by aircraft for compensation or hire.
- (d) Section 107.33—Visual observer.
- (e) Section 107.35—Operation of multiple small unmanned aircraft systems.
- (f) Section 107.37(a)—Yielding the right of way.
- (g) Section 107.39—Operation over people.
- (h) Section 107.41—Operation in certain airspace.
- (i) Section 107.51—Operating limitations for small unmanned aircraft.

## PART 830—NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND



# OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS

## Subpart A—General

### §830.1 Applicability.

This part contains rules pertaining to:

(a) Initial notification and later reporting of aircraft incidents and accidents and certain other occurrences in the operation of aircraft, wherever they occur, when they involve civil aircraft of the United States; when they involve certain public aircraft, as specified in this part, wherever they occur; and when they involve foreign civil aircraft where the events occur in the United States, its territories, or its possessions.

(b) Preservation of aircraft wreckage, mail, cargo, and records involving all civil and certain public aircraft accidents, as specified in this part, in the United States and its territories or possessions.

[60 FR 40112, Aug. 7, 1995]

### §830.2 Definitions.

As used in this part the following words or phrases are defined as follows:

*Aircraft accident* means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. For purposes of this part, the definition of "aircraft accident" includes "unmanned aircraft accident," as defined herein.

*Civil aircraft* means any aircraft other than a public aircraft.

*Fatal injury* means any injury which results in death within 30 days of the accident.

*Incident* means an occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations.

*Operator* means any person who causes or authorizes the operation of an aircraft, such as the owner, lessee, or bailee of an aircraft.

*Public aircraft* means an aircraft used only for the United States Government, or an aircraft owned and operated (except for commercial purposes) or exclusively leased for at least 90 continuous days by a government other than the United States Government, including a State, the District of Columbia, a territory or possession of the United States, or a political subdivision of that government. "Public aircraft" does not include a government-owned aircraft transporting property for commercial purposes and does not include a government-owned aircraft transporting passengers other than: transporting (for other than commercial purposes) crewmembers or other persons aboard the aircraft whose presence is required to perform, or is associated with the performance of, a governmental function such as firefighting, search



and rescue, law enforcement, aeronautical research, or biological or geological resource management; or transporting (for other than commercial purposes) persons aboard the aircraft if the aircraft is operated by the Armed Forces or an intelligence agency of the United States. Notwithstanding any limitation relating to use of the aircraft for commercial purposes, an aircraft shall be considered to be a public aircraft without regard to whether it is operated by a unit of government on behalf of another unit of government pursuant to a cost reimbursement agreement, if the unit of government on whose behalf the operation is conducted certifies to the Administrator of the Federal Aviation Administration that the operation was necessary to respond to a significant and imminent threat to life or property (including natural resources) and that no service by a private operator was reasonably available to meet the threat.

*Serious injury* means any injury which: (1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

*Substantial damage* means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

*Unmanned aircraft accident* means an occurrence associated with the operation of any public or civil unmanned aircraft system that takes place between the time that the system is activated with the purpose of flight and the time that the system is deactivated at the conclusion of its mission, in which:

- (1) Any person suffers death or serious injury; or
- (2) The aircraft has a maximum gross takeoff weight of 300 pounds or greater and sustains substantial damage.

[53 FR 36982, Sept. 23, 1988, as amended at 60 FR 40112, Aug. 7, 1995; 75 FR 51955, Aug. 24, 2010]

## **Subpart B—Initial Notification of Aircraft Accidents, Incidents, and Overdue Aircraft**

### **§830.5 Immediate notification.**

The operator of any civil aircraft, or any public aircraft not operated by the Armed Forces or an intelligence agency of the United States, or any foreign aircraft shall immediately, and by the most expeditious means available, notify the nearest National Transportation Safety Board (NTSB) office,<sup>1</sup> when:

<sup>1</sup>NTSB headquarters is located at 490 L'Enfant Plaza SW., Washington, DC 20594. Contact information for the NTSB's regional offices is available at <http://www.ntsb.gov>. To report an accident or incident, you may call the NTSB Response Operations Center, at 844-373-9922 or 202-314-6290.

- (a) An aircraft accident or any of the following listed serious incidents occur:
  - (1) Flight control system malfunction or failure;



(2) Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness;

(3) Failure of any internal turbine engine component that results in the escape of debris other than out the exhaust path;

(4) In-flight fire;

(5) Aircraft collision in flight;

(6) Damage to property, other than the aircraft, estimated to exceed \$25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

(7) For large multiengine aircraft (more than 12,500 pounds maximum certificated takeoff weight):

(i) In-flight failure of electrical systems which requires the sustained use of an emergency bus powered by a back-up source such as a battery, auxiliary power unit, or air-driven generator to retain flight control or essential instruments;

(ii) In-flight failure of hydraulic systems that results in sustained reliance on the sole remaining hydraulic or mechanical system for movement of flight control surfaces;

(iii) Sustained loss of the power or thrust produced by two or more engines; and

(iv) An evacuation of an aircraft in which an emergency egress system is utilized.

(8) Release of all or a portion of a propeller blade from an aircraft, excluding release caused solely by ground contact;

(9) A complete loss of information, excluding flickering, from more than 50 percent of an aircraft's cockpit displays known as:

(i) Electronic Flight Instrument System (EFIS) displays;

(ii) Engine Indication and Crew Alerting System (EICAS) displays;

(iii) Electronic Centralized Aircraft Monitor (ECAM) displays; or

(iv) Other displays of this type, which generally include a primary flight display (PFD), primary navigation display (PND), and other integrated displays;

(10) Airborne Collision and Avoidance System (ACAS) resolution advisories issued when an aircraft is being operated on an instrument flight rules flight plan and compliance with the advisory is necessary to avert a substantial risk of collision between two or more aircraft.

(11) Damage to helicopter tail or main rotor blades, including ground damage, that requires major repair or replacement of the blade(s);

(12) Any event in which an operator, when operating an airplane as an air carrier at a public-use airport on land:

(i) Lands or departs on a taxiway, incorrect runway, or other area not designed as a runway; or



(ii) Experiences a runway incursion that requires the operator or the crew of another aircraft or vehicle to take immediate corrective action to avoid a collision.

(b) An aircraft is overdue and is believed to have been involved in an accident.

[53 FR 36982, Sept. 23, 1988, as amended at 60 FR 40113, Aug. 7, 1995; 75 FR 927, Jan. 7, 2010; 75 FR 35330, June 22, 2010; 80 FR 77587, Dec. 15, 2015]

#### **§830.6 Information to be given in notification.**

The notification required in §830.5 shall contain the following information, if available:

(a) Type, nationality, and registration marks of the aircraft;

(b) Name of owner, and operator of the aircraft;

(c) Name of the pilot-in-command;

(d) Date and time of the accident;

(e) Last point of departure and point of intended landing of the aircraft;

(f) Position of the aircraft with reference to some easily defined geographical point;

(g) Number of persons aboard, number killed, and number seriously injured;

(h) Nature of the accident, the weather and the extent of damage to the aircraft, so far as is known; and

(i) A description of any explosives, radioactive materials, or other dangerous articles carried.

### **Subpart C—Preservation of Aircraft Wreckage, Mail, Cargo, and Records**

#### **§830.10 Preservation of aircraft wreckage, mail, cargo, and records.**

(a) The operator of an aircraft involved in an accident or incident for which notification must be given is responsible for preserving to the extent possible any aircraft wreckage, cargo, and mail aboard the aircraft, and all records, including all recording mediums of flight, maintenance, and voice recorders, pertaining to the operation and maintenance of the aircraft and to the airmen until the Board takes custody thereof or a release is granted pursuant to §831.12(b) of this chapter.

(b) Prior to the time the Board or its authorized representative takes custody of aircraft wreckage, mail, or cargo, such wreckage, mail, or cargo may not be disturbed or moved except to the extent necessary:

(1) To remove persons injured or trapped;

(2) To protect the wreckage from further damage; or

(3) To protect the public from injury.



(c) Where it is necessary to move aircraft wreckage, mail or cargo, sketches, descriptive notes, and photographs shall be made, if possible, of the original positions and condition of the wreckage and any significant impact marks.

(d) The operator of an aircraft involved in an accident or incident shall retain all records, reports, internal documents, and memoranda dealing with the accident or incident, until authorized by the Board to the contrary.

## **Subpart D—Reporting of Aircraft Accidents, Incidents, and Overdue Aircraft**

### **§830.15 Reports and statements to be filed.**

(a) *Reports.* The operator of a civil, public (as specified in §830.5), or foreign aircraft shall file a report on Board Form 6120. ½ (OMB No. 3147-0001)<sup>2</sup> within 10 days after an accident, or after 7 days if an overdue aircraft is still missing. A report on an incident for which immediate notification is required by §830.5(a) shall be filed only as requested by an authorized representative of the Board.

<sup>2</sup>Forms are available from the Board field offices (see footnote 1), from Board headquarters in Washington, DC, and from the Federal Aviation Administration Flight Standards District Offices.

(b) *Crewmember statement.* Each crewmember, if physically able at the time the report is submitted, shall attach a statement setting forth the facts, conditions, and circumstances relating to the accident or incident as they appear to him. If the crewmember is incapacitated, he shall submit the statement as soon as he is physically able.

(c) *Where to file the reports.* The operator of an aircraft shall file any report with the field office of the Board nearest the accident or incident.

[53 FR 36982, Sept. 23, 1988, as amended at 60 FR 40113, Aug. 7, 1995]



# 65 Sample FAA Part 107 Knowledge Exam Questions:

Using the ACS This Remote Pilot ACS includes Areas of Operation and Tasks for the issuance of a Remote Pilot Certificate with an sUAS rating and the recurrent knowledge testing requirements in accordance with 14 CFR part 107, section 107.65. Tasks that apply to recurrent testing are marked with an asterisk (\*), all Tasks apply to certification testing. Each Task in the ACS is coded according to a scheme that includes four elements.

For example: UA.I.B.K10:

UA = Applicable ACS (Unmanned Aircraft Systems)

I = Area of Operation (Regulations)

B = Task (Operating Rules)

K10 = Task element Knowledge

10 (Visual line of sight (VLOS) aircraft operations)

Knowledge test questions are linked to the ACS codes, which will ultimately replace the system of Learning Statement Codes (LSC). After this transition occurs, the Airman Knowledge Test Report (AKTR) will list an ACS code that correlates to a specific Task element for a given Area of Operation and Task. Each LSC provides the applicant with information that will assist in future test taking.

There are a total of 65 questions in here. This makes it realistic because you might receive some sample test questions on the real exam that don't count towards your score.

The breakdown of questions in here is:

I 16

II 12

III 6

IV 4

V 27

You have actually two options with the questions: (1) create an initial knowledge test or (2) create a recurrent knowledge test.

If you want to skip the work, I have an online version of both:

- [Practice Initial Knowledge Test](#)
- [Practice Recurrent Knowledge Test](#)



Here is the percentage breakdown for the two tests.

#### Initial Knowledge Test Breakdown

Area	Percentage
I - Regulations	15-25%
II- Airspace	15-25%
III- Weather	11-16%
IV- Loading & Performance	7-11%
V - Operations	35-45%

#### Recurrent Knowledge Test Breakdown

Area of Operation	Task	Percentage of Items on Test
I	A. General (1 Question)	30-40%
	B. Operation Rules (14 Questions)	
	C. Remote Pilot Certification with an sUAS rating (1 Question)	
	D. Waivers	
II	A. Airspace Classification (7 Questions)	30-40%
	B. Airspace Operational Requirements (3 Questions)	
V	B. Airport Operations (11 Questions)	20-30%
	C. Emergency Procedures (3 Questions)	
	D. Aeronautical Decision-Making (6 Questions)	
	F. Maintenance & Inspection Procedures (3 Questions)	

## How to Make A Realistic Test.

Like baking a cake, we need the proper percentages of ingredients.

- For an INITIAL knowledge test, leave out 2 questions from Area II below and leave out 3 from Area V.
- For a RECURRENT knowledge test, leave out all of Area III and Area IV questions below. Do not test on V. A Radio Communications Procedures and V.E Physiology. This leaves 23 questions left in Area V. You need to pick 12 questions to test yourself on (Area 1 = 16, Area II = 12, Area V = 12)=40 Questions. I left too many in to allow you study more.

**Need more practice questions than the ones below?** I've been creating online training courses for the sister company [Rupprecht Drones](#). All the material you need to pass the remote pilot knowledge exam is in this document. Some people want to learn quicker or don't have to read so I created online courses to meet their needs that are on Rupprecht Drones. I'm planning on creating many more online courses to help individuals quickly learn the material for the remote pilot knowledge exam so frequently check in. These courses also are great for company training and recurrent training to keep the pilots and crew proficient. The courses on Rupprecht Drones are:



**Part 107 Regulations Online Training Course** (test prep, waiver compliance, recurrent training, etc.)  
40 videos and 35 quizzes of over **100 questions!** Remember that the area of regulations makes up 15-25% of the initial exam!

## I. Regulations (Initial 15-25%. Recurrent 30-40%)

### A. General (\*)

**UA.I.A.K4 A small UA causes an accident and your crew member loses consciousness. When do you report the accident?**

- A) No accidents need to be reported.
- B) When requested by the UA owner. [You might be confused. If there is a deviation from the regulations, only upon request from the FAA, do you need to provide a report. 107.21 says, “(b) Each remote pilot in command who deviates from a rule under paragraph (a) of this section must, upon request of the Administrator, send a written report of that deviation to the Administrator.”]
- C) Within 10 days of the accident. [ § 107.9 Accident reporting. “No later than 10 calendar days after an operation that meets the criteria of either paragraph (a) or (b) of this section[.]”]

### B. Operating Rules (\*)

**UA.I.B.K1 Registration requirements for small unmanned aircraft systems. Under what condition would a small UA not have to be registered before it is operated in the United States?**

- A. When the aircraft weighs less than .55 pounds on takeoff, including everything that is on-board or attached to the aircraft.
- B. When the aircraft has a takeoff weight that is more than .55 pounds, but less than 55 pounds, not including fuel and necessary attachments. [This is weight range for Part 48. Remember that Part 47 is for the 55lbs and heavier drones!]
- C. All small UAS need to be registered regardless of the weight of the aircraft before, during, or after the flight. [ Nope.]

**UA.I.B.K1 Registration requirements for small unmanned aircraft systems. According to 14 CFR part 48, when must a person register a small UA with the Federal Aviation Administration?**

- A. All civilian small UAS weighing greater than .55 pounds must be registered regardless of its intended use. [See 48.1 and 48.15.]
- B. When the small UA is used for any purpose other than as a model aircraft.
- C. Only when the operator will be paid for commercial services.

**UA.I.B.K1 Registration requirements for small unmanned aircraft systems.  
According to 14 CFR part 48, when would a small UA owner not be  
permitted to register it?**

- A. The owner is less than 13 years of age. [48.25 says, “(b) A small unmanned aircraft must be registered by its owner using the legal name of its owner, unless the owner is less than 13 years of age. If the owner is less than 13 years of age, then the small unmanned aircraft must be registered by a person who is at least 13 years of age.”] Keep in mind that they are trying to make you know Part 48. There are other answers as to why a person could not register via Part 47 such as being a foreign citizen.]
- B. All persons must register their small UA.
- C. If the owner does not have a valid United States driver's license. [Part 48 doesn't require this and Part 47 doesn't require it either.]

**UA.I.B.K6a A small UA must be operated in a manner which**

- A) does not endanger the life or property of another. [Just looking at this. If you knew you one of these was correct, this is the most important of all 3 of them.]
- B) requires more than one visual observer. [You don't need a visual observer unless you are doing something special like over in 107.31 such as FPV racing].
- C) never exceeds 200 feet AGL

**UA.I.B.K6b You plan to release golf balls from your small UA at an altitude of 100 feet AGL. You must ensure the objects being dropped will**

- A) not create an undue hazard to persons or property. [Section 107.23 says, “No person may: ... (b) Allow an object to be dropped from a small unmanned aircraft in a manner that creates an undue hazard to persons or property.”]
- B) land within 10 feet of the expected landing zone.
- C) not cause property damage in excess of \$300.

**UA.I.B.K8 After having dinner and wine, your client asks you to go outside to demonstrate the small UAs capabilities. You must**

- A) pass a self-administered sobriety test before operating a small UA.
- B) not operate a small UA within 8 hours of consuming any alcoholic beverage. [8 hours bottle to throttle. Doesn't matter if you aren't even buzzed or if the alcohol has got into your system yet.]**
- C) ensure that your visual observer has not consumed any alcoholic beverage in the previous 12 hours.

**UA.I.B.K9 Daylight operation. According to 14 CFR part 107, what is required to operate a small UA within 30 minutes after official sunset?**

- A. Use of anti-collision lights.** [§107.29(b) says, (b) No person may operate a small unmanned aircraft system during periods of civil twilight unless the small unmanned aircraft has lighted anti-collision lighting visible for at least 3 statute miles. The remote pilot in command may reduce the intensity of the anti-collision lighting if he or she determines that, because of operating conditions, it would be in the interest of safety to do so. (c) For purposes of paragraph (b) of this section, civil twilight refers to the following: (1) Except for Alaska, a period of time that begins 30 minutes before official sunrise and ends at official sunrise; (2) Except for Alaska, a period of time that begins at official sunset and ends 30 minutes after official sunset[.]"]]
- B. Must be operated in a rural area.
- C. Use of a transponder.

**UA.I.B.K14 During a flight of your small UA, you observe a hot air balloon entering the area. You should**

- A) yield the right-of-way to the hot air balloon.** [107.37 says, "(a) Each small unmanned aircraft must yield the right of way to all aircraft, airborne vehicles, and launch and reentry vehicles. Yielding the right of way means that the small unmanned aircraft must give way to the aircraft or vehicle and may not pass over, under, or ahead of it unless well clear."]
- B) ensure the UA passes below, above, or ahead of the balloon.
- C) expect the hot air balloon to climb above you altitude.



**UA.I.B.K16 Prior authorization required for operation in certain airspace.  
According to 14 CFR part 107, how may a remote pilot operate an  
unmanned aircraft in class C airspace?**

- A. The remote pilot must have prior authorization from the Air Traffic Control (ATC) facility having jurisdiction over that airspace. [You are going to have to have an airspace waiver. §107.41 says, “No person may operate a small unmanned aircraft in 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 Air Traffic Control (ATC).” The FAA is handling those authorizations via a waiver process currently. Let me know if you need one! ]
- B. The remote pilot must monitor the Air Traffic Control (ATC) frequency from launch to recovery. [This is the smart thing to do and maybe also required via the waiver, but it isn’t required per the regulations.]
- C. The remote pilot must contact the Air Traffic Control (ATC) facility after launching the unmanned aircraft. [Um. The idea would be to call before launching, not after.]

**UA.I.B.K16 (Refer to FAA-CT-8080-2H, Figure 78.) You have been hired to use your small UAS to inspect the railroad tracks from Blencoe (SE of Sioux City) to Onawa. Will ATC authorization be required?**



- A) Yes, Onawa is in Class D airspace that is designated for an airport.
  - B) No, your entire flight is in Class G airspace.**
  - C) Yes, you must contact the Onawa control tower to operate within 5 miles of the airport.

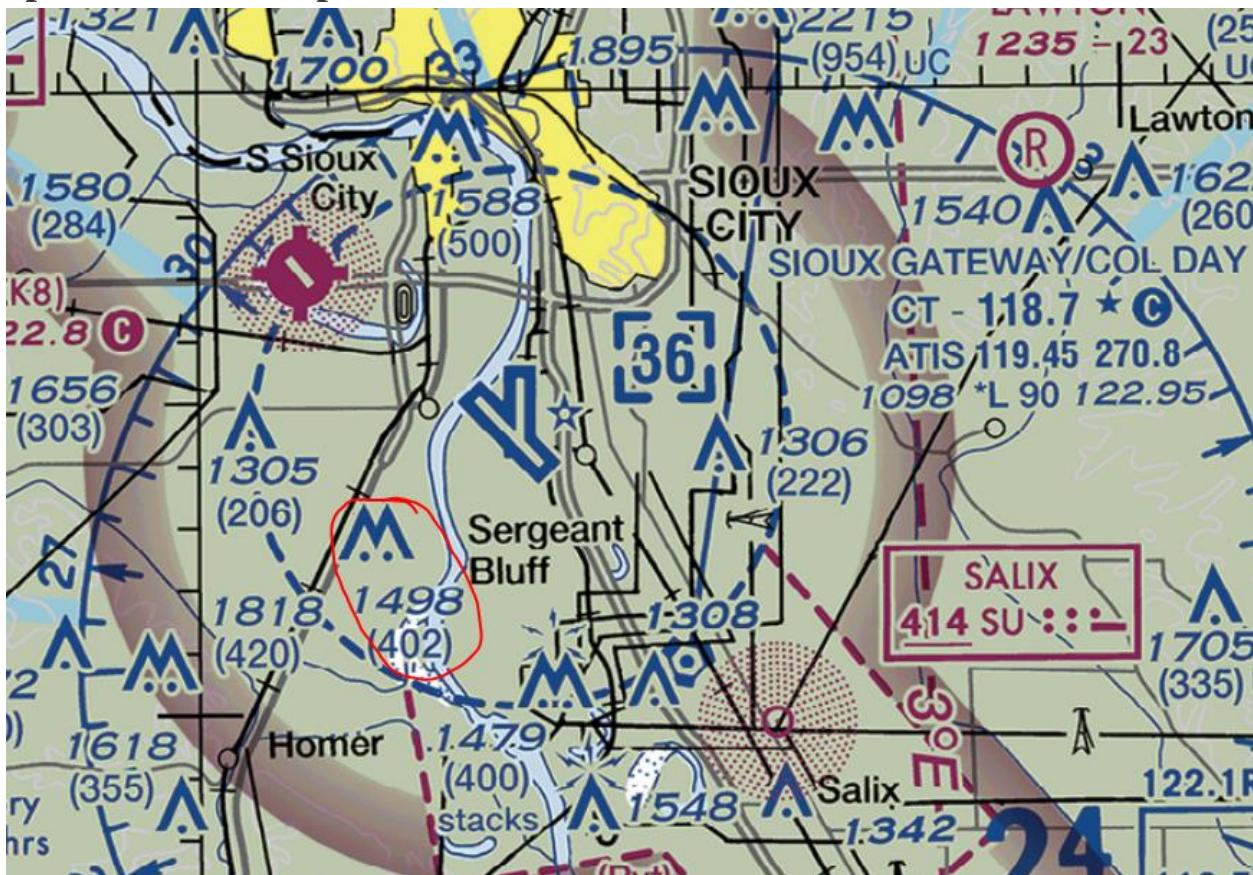
**UA.I.B.K20 Preflight familiarization, inspection, and actions for aircraft operations. According to 14 CFR part 107, who is responsible for determining the performance of a small unmanned aircraft?**

- A. Remote pilot-in-command. [[See 107.19](#). Learn the short version of this regulation. “If anything goes wrong, it is most likely the PIC’s fault.” You shouldn’t let anyone force you into flying somewhere or doing something you feel is unsafe. You are getting the whacking if anything goes wrong, not them.].
- B. Manufacturer.
- C. Owner or operator.

**UA.I.B.K21a According to 14 CFR part 107, what is the maximum groundspeed for a small UA?**

- A) 87 knots. [87 knots is 100 MPH]
- B) 87 mph.
- C) 100 knots. [100MPH, not knots].

UA.I.B.K21b (Refer to FAA-CT-8080-2H, Figure 78.) You have been contracted to inspect towers located approximately 4NM southwest of the Sioux Gateway (SUX) airport operating an unmanned aircraft. What is the maximum altitude above ground level (AGL) that you are authorized to operate over the top of the towers?



A) 400 Feet AGL.

B) 402 feet AGL.

C) 802 feet AGL. [This is Class D airspace and you would have to get a COA to operate here. I have NEVER seen one been given out for over 400ft. Yes, you could technically get a 400ft+ waiver and a COA to exercise it or get a special COA to operate within 400ft of a structure but it is extremely rare. Technically, under 107, if you are within 400ft of the structure you can go up to 400ft above the top of it (402 AGL is what the map says) which makes it 802 AGL.]



**UA.I.B.K22 Upon request by the FAA, the remote pilot-in-command must provide**

- A) a logbook documenting small UA landing currency. [107.7 says, “Any other document, record, or report required to be kept under the regulations of this chapter.” The big word is required. Does 107 require a logbook? No. Is it smart to have? Yes.]
- B) a remote pilot certificate with a small UAS rating. [ § 107.7 Inspection, testing, and demonstration of compliance. (a) A remote pilot in command, owner, or person manipulating the flight controls of a small unmanned aircraft system must, upon request, make available to the Administrator: (1) The remote pilot certificate with a small UAS rating[.]”]
- C) any employer issued photo identification.

**C. Remote Pilot Certification with an sUAS rating (\*)**

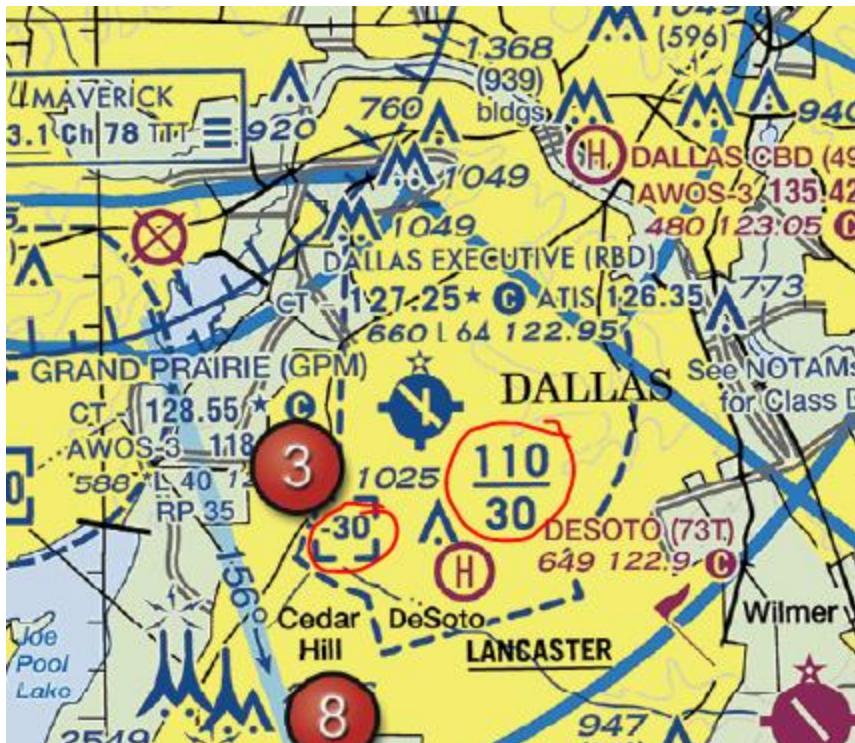
**UA.I.C.K2 The refusal of a remote PIC to submit to a blood alcohol test when requested by a law enforcement officer**

- A) is grounds for suspension or revocation of their remote pilot certificate. [See 107.59]
- B) can be delayed for a period up to 8 hours after the request.
- C) has no consequences to the remote pilot certificate.

## II. Airspace Classification and Operating Requirements (Initial 15-25%. Recurrent 30-40%)

### A. Airspace Classification (\*)

UA.II.A.K1a (Refer to FAA-CT-8080-2H, Figure 25, Area 3.) The floor of Class B airspace at Dallas Executive (RBD) is



- A) at the surface.
- B) 3,000 feet MSL. [Class B airports are huge up side down wedding cakes. The B overhangs the Class D airspace. If you see the Class D top says [-30]. The minus means up to but NOT including 3,000. Right near it you see the 110/30 which means Class B is 3,000-11,000 ft.]
- C) 3,100 feet MSL

**UA.II.A.K1b General airspace: Class C controlled airspace. (Refer to FAA-CT-8080-2H, Figure 23, area 3.) What is the floor of the Savannah Class C airspace at the shelf area (outer circle)?**



A. 1,300 feet AGL. [It is NEVER AGL. There is a lot that can be said here, but if you want to know more, study out barometers and the different types of altitude.]

B. 1,300 feet MSL. [Remember the two zeros are chopped off. SFC means surface. Why is this important? Because you might need to do a job under the Class C shelf. If you don't know this right off the top of your head, you are leaving money on the table. Remember that Class C operations require a waiver (COA). You need to be able to say quickly, "Yes, we can do that job" or "No, we can't do that job and I'll have to file a COA to fly in Class C airspace." If you need help filing a COA in Class C, contact me.]

C. 1,700 feet MSL.

**UA.II.A.K1b General airspace: Class C controlled airspace. According to 14 CFR part 107 the remote pilot in command (PIC) of a small unmanned aircraft planning to operate within Class C airspace**

A. must use a visual observer. [Nope. Only Part 107 FPV racers or 333 operators need a VO.]  
B. is required to file a flight plan. [You don't have to be on a flight plan to fly in Class C.]  
C. is required to receive ATC authorization. [Bingo. Why? Because the FAA ATC wants to make sure you can fly in certain locations. Pro tip: Look at the runway of the Class C airport in Figure 23. The runways are North, South, East, and West. If you are flying in the "doughnut hole," then you better know where the landing and departing traffic will be flying. Keep in mind that for some airports, especially at coastal airports, almost rarely use their northerly or southerly runways because the wind is almost always blowing east or west. You might be able to get a COA for those north or south areas of the airport easier. As always, if you need help getting one, contact me.]

**UA.II.A.K1c (This is a question I created). What type of airport is Pueblo Airport?**



- A. Class B  
B. Class C  
C. Class D

**UA.II.A.K1d (Refer to FAA-CT-8080-2H, Figure 20, Area 1.) The Fentress NALF Airport (NFE) is in what type of airspace?**



- A) Class C.
- B) Class E. [You can tell this based upon the dashed magenta line which indicated E at the surface.]
- C) Class G.

**UA.II.A.K2 Special use within airspace. (Prohibited, restricted, warning, military operations, alert, and controlled firing.) (Refer to FAA-CT-8080-2H, Figure 59, area 2.)** The chart shows a gray line with "VR1667, VR1617, VR1638, and VR1668." Could this area present a hazard to the operations of a small UA?



- A. No, all operations will be above 400 feet.
- B. Yes, this is a Military Training Route from 1,500 feet AGL. [It is extremely important to know this so you can expect low-flying military helicopters flying this route. Some of which may be at 400ft or below. Here is what the AIM says: "(a) MTRs with no segment above 1,500 feet AGL must be identified by four number characters; e.g., IR1206, VR1207. (b) MTRs that include one or more segments above 1,500 feet AGL must be identified by three number characters; e.g., IR206, VR207." What does this mean? They can ALWAYS be flying in your airspace.]
- C. Yes, the defined route provides traffic separation to manned aircraft.

**UA.II.A.K2 (Refer to FAA-CT-8080-2H, Figure 75, Area 6.) During preflight planning, you plan to operate in R-2305. Where would you find additional information regarding this airspace?**



- A) In the Aeronautical Information Manual. [This will have only general information, not specific.]
  - B) In the Charts Supplements U.S. [This is the best answer. There is a section in the Chart Supplement for the Southwest for this specific restricted area.]**
  - C) In the Special Use Airspace area of the chart. [This is an answer but the chart supplement provides more information. The side portion of the sectional chart will give you information regarding altitudes, times, etc.]

**UA.II.A.K2 Special use within airspace. (Prohibited, restricted, warning, military operations, alert, and controlled firing.) (Refer to FAA-CT-8080-2H, Figure 21.) You have been hired by a farmer to use your small UA to inspect his crops. The area that you are to survey is in the Devil's Lake West MOA, east of area 2. How would you find out if the MOA is active?**

A. Refer to the legend for special use airspace phone number. [Ok. This answer is wrong. You won't be getting any telephone numbers here. You'll get VHF frequencies on the side of the map where the MOAs are listed. How do you find the MOAs on the side? This is annoying because most of you guys are using some type of digital map. This is how you find it on Skyvector. You make sure the sectional chart at the top right is clicked and then you move over all the way to the left and you'll see a list of all the MOAs. This MOA is from 4000-17,999. For practice, let's pretend that it goes all the way to the ground. We need to figure out if it is active. The 135.25 frequency won't help because you'll almost never get ahold of anyone with your handheld. This is how to figure out if it is active or not. You can either (1) Check to see if there is an active NOTAM on <https://www.notams.faa.gov/dinsQueryWeb/> which has its own MOA tab, (2) check on <https://pilotweb.nas.faa.gov/PilotWeb/> (3) call up 1-800-WX-BRIEF, or (4) call via phone the ARTCC over the area which would be Minneapolis Center. Here is the FAA web page to find the ARTCC phone numbers. If you are interested in setting up flight programs and want a more comprehensive set of guidelines that includes this information and more, contact me.]

B. This information is available in the Small UAS database. [What? I don't know what this means. There is no such thing.]

C. In the Military Operations Directory. [No such thing.]



P-205	TO BUT NOT INCL 4000	CONTINUOUS	NO A/G
R-4301	TO 27,000	0730-2400 124 HRS IN ADVANCE	MINNEAPOLIS CNTR 118.05 239.0
R-5401	TO 5000	30 DAYS IN ADVANCE 124 HRS IN ADVANCE	MINNEAPOLIS CNTR 124.2 270.3
R-5402	500 AGL TO BUT NOT INCL 10,000	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3
R-5403 A	8000 TO BUT NOT INCL 10,000	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3
R-5403 B	10,000 TO BUT NOT INCL 14,000	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3
R-5403 C, F	12,000 TO BUT NOT INCL FL 180	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3
R-5403 D	10,000 TO BUT NOT INCL 12,000	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3
R-5403 E	12,000 TO BUT NOT INCL 14,000	0700-2000 BY NOTAM 6 HRS IN ADVANCE†	MINNEAPOLIS CNTR 124.2 270.3

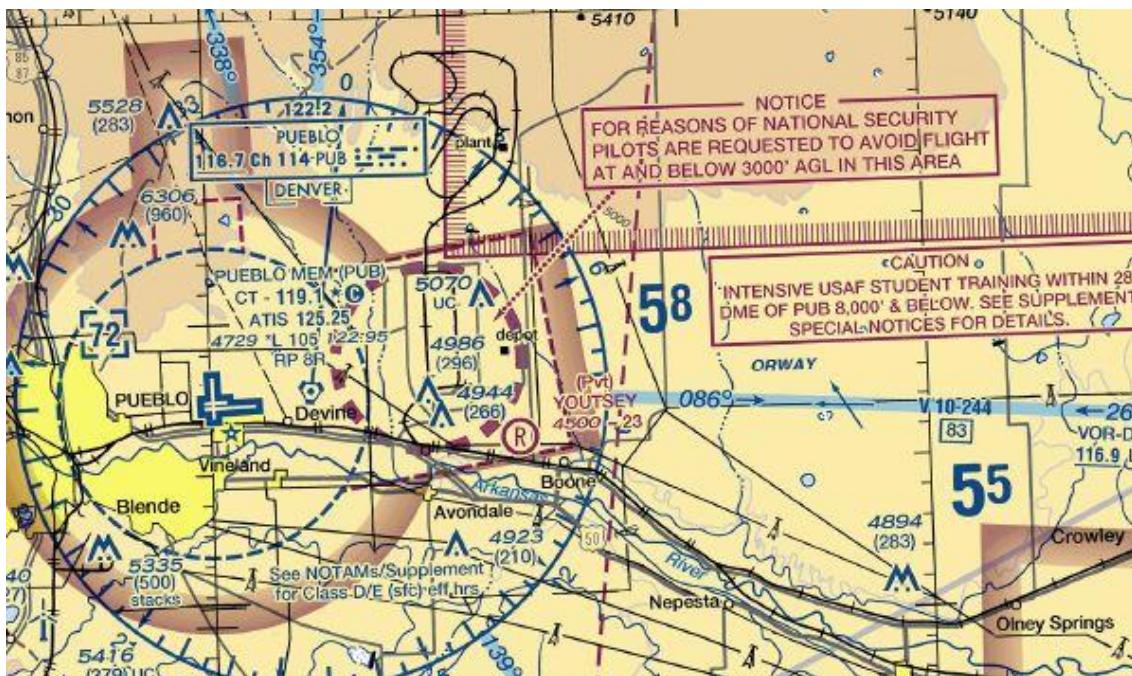
  

MOA NAME	ALTITUDE*	TIME OF USE†	CONTROLLING AGENCY/ CONTACT FACILITY	FREQUENCIES
BEAVER	300 AGL	BY NOTAM 0800-2200 MON-FRI 0800-1600 SAT-SUN	MINNEAPOLIS CNTR	127.9 281.45
DEVILS LAKE EAST	3500	INTERMITTENT BY NOTAM	MINNEAPOLIS CNTR	124.2 270.3
DEVILS LAKE WEST	4000	INTERMITTENT BY NOTAM	MINNEAPOLIS CNTR	135.25 170.3
SNOOPY WEST	6000	BY NOTAM (INTERMITTENT 0800-2200 MON-SAT)	MINNEAPOLIS CNTR	127.9 281.45
TIGER NORTH	300 AGL	INTERMITTENT BY NOTAM	MINNEAPOLIS CNTR	132.15 269.6
TIGER SOUTH	6000	INTERMITTENT BY NOTAM	MINNEAPOLIS CNTR	132.15 269.6

\*Altitudes indicate floor of MOA. All MOAs extend to but do not include FL 180 unless otherwise indicated in tabulation or on chart.

†Other times by DOD NOTAM.

**UA.II.A.K3 (This is a question I created). What is the dashed magenta line in a circle east of the Pueblo Airport represent?**



- A. Class E at the surface airspace.
- B. This is an isogonic line. [While an isogonic is a dashed magenta line. It is a long dashed magenta line. You can actually see one in this picture just east of the national security area and Class E at the surface airspace. Notice all three answers are in this picture to show you the contrast.]
- C. **This is a national security area.** [This is NOT Class E at the surface. The dashed circle is a national security area. The thinner dashed line in the shape of a box is Class E at the surface extension.]

## B. Airspace Operational Requirements (\*)

**UA.II.B.K1 (Refer to FAA-CT-8080-2H, Figure 23, Area 4.) What is the required flight visibility for a remote pilot operating an unmanned aircraft near the Plantation Airport (JYL)?**



A) 5 statute miles.

B) 1 statute mile.

C) 3 statute miles. [I think this is trying to confuse the manned aircraft guys because visibility for Class G operations for manned aircraft is 1 mile of visibility and 3 for E airspace (starts at 700ft AGL around Plantation). Part 107 has visibility at 3 SM of visibility.]

**UA.II.B.K4 (Refer to FAA-CT-8080-2H, Figure 20, area 2.) Why would the small flag at Lake Drummond of the sectional chart be important to a remote pilot?**



**A— This is a VFR check point for manned aircraft, and a higher volume of air traffic should be expected there. [Lots of aircraft means greater chance for mid-air collision.]**

**B— This is a GPS check point that can be used by both manned and remote pilots for orientation.**

**C— This indicates that there will be a large obstruction depicted on the next printing of the chart.**

**UA.II.B.K5 The NOTAM system including how to obtain an established NOTAM through Flight Service. (Refer to FAA-CT-8080-2H, Figure 20, area 5.) How would a remote PIC "CHECK NOTAMS" as noted in the CAUTION box regarding the unmarked balloon?**



- A. By utilizing the B4UFLY mobile application. [That would be a nice feature but I don't know how much money the FAA will put into this app. That app is more like an airspace for dummies app. Learn how to read charts so you know where you can legally fly to make more money.]
- B. By contacting the FAA district office. [Nope. However, you should reach out to meet with these guys sometime. Let them know you are trying to be compliant and professional. Better to "set the stage" with that than if they come after you and remember you as the guy who did \_\_\_\_\_.]
- C. By obtaining a briefing via an online source such as: 1800WXBrief.com. [You could do this. I suggest reading my article on 5 Ways to Prove You Did a Pre-Flight Briefing.]**

### III. Weather (Initial 11-16%. Recurrent 0%.)

#### A. Sources of Weather

**UA.III.A.K2 Aviation routine weather reports (METAR). (Refer to FAA-CT-8080-2H, Figure 12.) What are the current conditions for Chicago Midway Airport (KMDW)?**

[METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15 A2991  
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980 RMK RAB35]

- A. Sky 700 feet overcast, visibility 1-1/2SM, rain. [Time, wind direction and speed, visibility in SM, clouds, Temperature/ dew point, altimeter in inches of mercury. It is almost always the same format. Just go through and find the two wrong answers.]
- B. Sky 7000 feet overcast, visibility 1-1/2SM, heavy rain. [This can quickly be eliminated because it is always two zeros after the end for the altitude of the base of the clouds. It would be 700, not three zeros to make 7000.]
- C. Sky 700 feet overcast, visibility 11, occasionally 2SM, with rain. [Clever. Really clever. Looking at the other material, like LAX above which shows 6SM, that should have clued you in that the value for that place should be a number in statute miles.]

**UA.III.A.K2 Aviation routine weather reports (METAR). (Refer to FAA-CT-8080-2H, Figure 12.) The wind direction and velocity at KJFK is from**

[SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC005 20/18 A3006]

- A.  $180^\circ$  true at 4 knots. [This is how you remember if something is true or magnetic. “If it is in print, it must be true.” The only exceptions are for runways, VOR compass rose, and AWOS/ASOS headings when you call from a phone.]
- B.  $180^\circ$  magnetic at 4 knots.
- C.  $040^\circ$  true at 18 knots.

#### B. Effects of Weather on Performance

**UA.III.B.K1a Weather theory: Density altitude. What effect does high density altitude have on the efficiency of a UA propeller?**

- A. Propeller efficiency is increased.
- B. Propeller efficiency is decreased. [A high density altitude decreases the power output of a normal aspirated engine because there are less air molecules in the combustion. Most drones are electric so I’m taking this out of the equation. There are fewer air molecules flying over the wing (the propeller) which results in a decrease in lift.]
- C. Density altitude does not affect propeller efficiency.

**UA.III.B.K1c Weather theory: Atmospheric stability, pressure, and temperature. What are the characteristics of stable air?**

- A. Good visibility and steady precipitation. [It would be poor visibility].
- B. Poor visibility and steady precipitation. [Yes! stratiform clouds, smooth air, poor visibility in haze and smoke, and continuous precipitation.]**
- C. Poor visibility and intermittent precipitation. [No intermittent is more like unstable air that creates cumulonimbus clouds]

**UA.III.B.K1d Weather theory: Air masses and fronts. What are characteristics of a moist, unstable air mass?**

- A. Turbulence and showery precipitation. [Cumuliform clouds, turbulent air, good visibility, and showery precipitation are all characteristics of unstable air.]**
- B. Poor visibility and smooth air. [Poor visibility and smooth air are characteristics of stable air.]
- C. Haze and smoke. [Haze and smoke are the causes of the poor visibility in stable air!]

**UA.III.B.K1i Weather theory: Fog. You have received an outlook briefing from flight service through 1800wxbrief.com. The briefing indicates you can expect a low-level temperature inversion with high relative humidity. What weather conditions would you expect?**

- A. Smooth air, poor visibility, fog, haze, or low clouds. [A temperature inversion means some warm air on top of some cold air. The cold air underneath on the ground, along with a high relative humidity, means you are expecting fog in the cooler area. You should also check the METARS for the airports in the area as you will most likely have a temperature/dewpoint spread that is low. Example 12/10. The air will be smooth because there is little convection.]**
- B. Light wind shear, poor visibility, haze, and light rain. [The cold air underneath means you are not going to have much convection so light wind shear is a wrong answer.]
- C. Turbulent air, poor visibility, fog, low stratus type clouds, and showery precipitation. [Once again, you are going to have very little convection because of the cold air.]

## IV. Loading and Performance (Initial 7-11%. Recurrent 0%).

### A. Loading and Performance

**UA.IV.A.K1b General loading and performance: Balance, stability, and center of gravity. To ensure that the unmanned aircraft center of gravity (CG) limits are not exceeded, follow the aircraft loading instructions specified in the**

- A. Pilot's Operating Handbook or UAS Flight Manual. [I don't know of any drone manufacturers who have created a manual which allows you to calculate the CG. Manned aviation manuals have ways you can calculate so you don't exceed CG limits. I think some of the reasons why the drone manuals don't have them are because (1) the manufacturers are "toy" manufacturers who know little about aerodynamics, (2) they don't want to waste money on something that isn't required, and (3) the drones they sell can't carry any payload so the CG is static.]
- B. Aeronautical Information Manual (AIM). [Great for general aviation info but bad for specific aircraft info.]
- C. Aircraft Weight and Balance Handbook. [This looks like a great answer but it isn't. This handbook is helpful for studying for the test but won't tell you anything about your specific aircraft.]

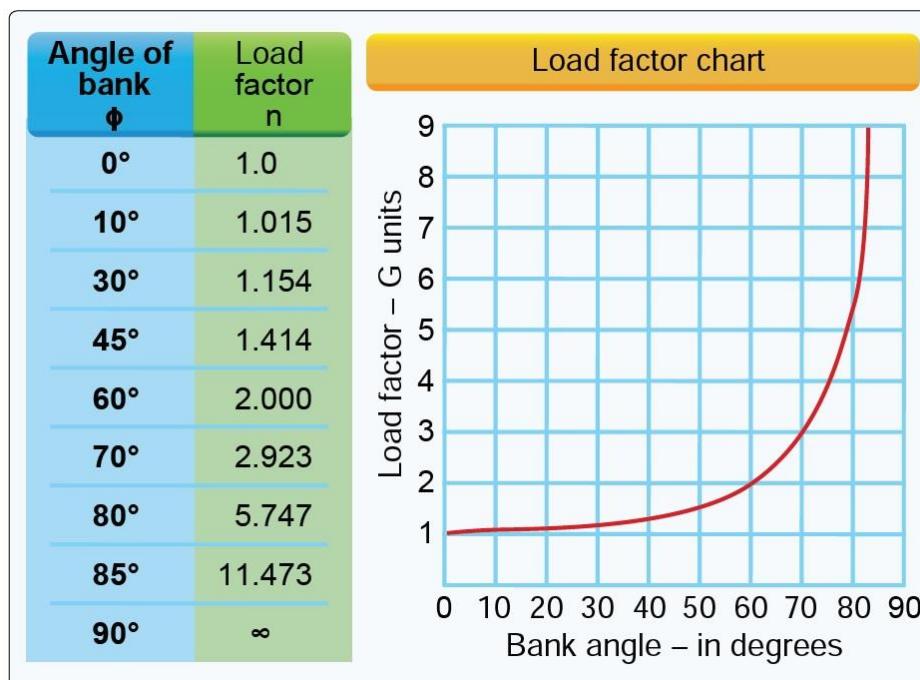
**UA.IV.A.K1b General loading and performance: Balance, stability, and center of gravity. A stall occurs when the smooth airflow over the unmanned airplane's wing is disrupted, and the lift degenerates rapidly. This is caused when the wing**

- A. exceeds the maximum speed. [You won't stall at this speed. Your wings will pop off because of drag.]
- B. exceeds maximum allowable operating weight. [This isn't true. You can fly somewhat overweight all day long (not legally), but it isn't going to cause your wings to stall or pop off. We care about flying overweight in turbulent air or when doing abrupt maneuvers that can over stress the aircraft and break it. This is why we have maneuvering speed in manned aircraft so we know what speed to keep our aircraft below so we don't break it in the event of a full control deflection because the aircraft will stall before it exceeds its category limits for what the aircraft was certificated for. There are no aircraft category G limits like manned aircraft. All Part 107 aircraft are not required to have an airworthiness certificate like manned aircraft. So flying a drone "overweight" isn't the same as flying a certificated manned aircraft over the weight which might exceed category limits in a full control deflection.]
- C. exceeds its critical angle of attack. [You aren't going to be flying if you hit this angle no matter how fast you are going. Here is a great example of a Sukhoi Su-35 Russian jet doing the Cobra maneuver which exceeds its critical angle of attack. ]

**UA.IV.A.K2. The importance and use of performance data to predict the effect on the aircraft's performance of an sUAS. When operating an unmanned airplane, the remote pilot should consider that the load factor on the wings may be increased anytime**

- A. the CG is shifted rearward to the aft CG limit. [This wouldn't increase load factor. If the airplane uses an elevator for pitch, this would actually DECREASE load factor.]
- B. the airplane is subjected to maneuvers other than straight and level flight.**
- C. the gross weight is reduced. [Gross weight reduction would DECREASE load factor.]

**UA.IV.A.K2. The importance and use of performance data to predict the effect on the aircraft's performance of an sUAS. (Refer to FAA-CT-8080-2H, Figure 2.) If an unmanned airplane weighs 33 pounds, what approximate weight would the airplane structure be required to support during a 30° banked turn while maintaining altitude?**



[Explanation: In a turn of 30 degrees of bank and while maintaining level flight (no altitude loss because you slightly pitched up), you will have a 1.154 load factor. This means that in this turn you will be feeling like you are pulling 1.154 G's. 33 pounds x 1.154 = 38.082 pounds].

- A. 34 pounds.
- B. 47 pounds.
- C. 38 pounds.**

## V. Operations (Initial 35-45%. Recurrent 20-30%).

### A. Radio Communications Procedures

**UA.V.A.K3 Recommended traffic advisory procedures. (such as: self-announcing of position and intentions by manned aviation operations and activities.) (Refer to FAA-CT-8080-2H, Figure 26, area 2.) While monitoring the Cooperstown CTAF you hear an aircraft announce that they are midfield left downwind to RWY 13. Where would the aircraft be relative to the runway?**



A. The aircraft is East. [Runway 13 has a magnetic heading of 130. Keep in mind that our VFR sectionals are in true, not magnetic, but VORs and runway headings are magnetic. You know which way the airplane took off by looking at the runway orientation. The runways on the map tend to be pretty close to what they are in real life. The airport pattern in the U.S. goes to the left (because the captain or pilot tends to fly on that side and has a better view of the runway and it is the law). The exceptions to this are if ATC at a tower, visual markings or lights, AFD, or the sectional with an RP symbol next to the airport say otherwise. There is no RP on Cooperstown so it is left. So if airplanes are going left, you should fly on the right hand pattern side right? WRONG! Helicopters are required by law to avoid the flow of fixed-wing aircraft and tend to be lower.]

- B. The aircraft is South.  
C. The aircraft is West.

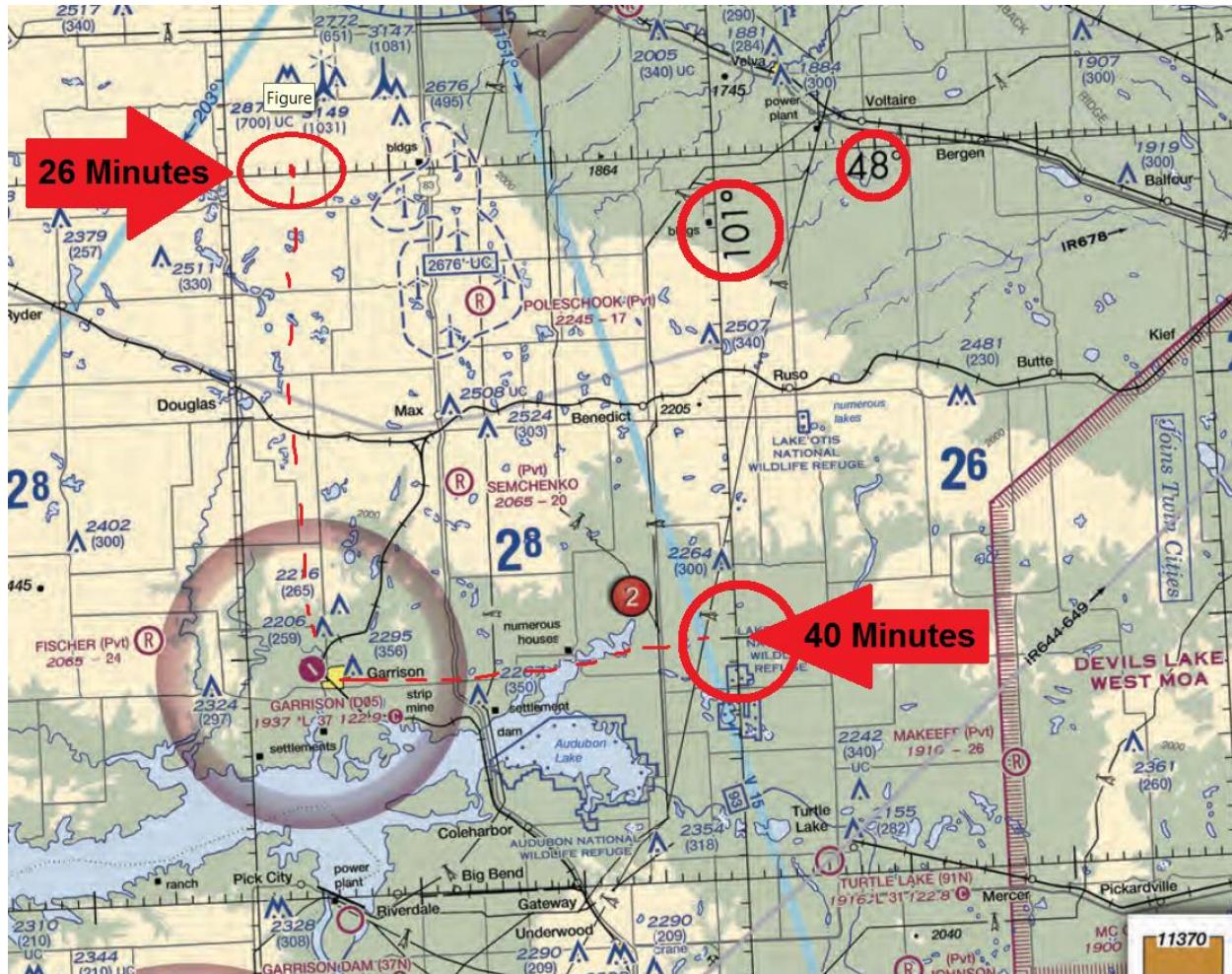
## B. Airport Operations (\*)

**UA.V.B.K2 (Refer to FAA-CT-8080-2H, Figure 21, Area 1.)** After receiving authorization from ATC to operate a small UA near Minot International airport (MOT) while the control tower is operational, which radio communication frequency could be used to monitor manned aircraft and ATC communications?



- A) UNICOM 122.95
- B) ASOS 118.725.
- C) CT-118.2. [This is the control frequency and also is the CTAF frequency.]

**UA.V.B.K6a Sources for airport data: Aeronautical charts. (Refer to FAA-CT-8080-2H, Figure 21.) What airport is located approximately 47 (degrees) 40 (minutes) N latitude and 101 (degrees) 26 (minutes) W longitude?**

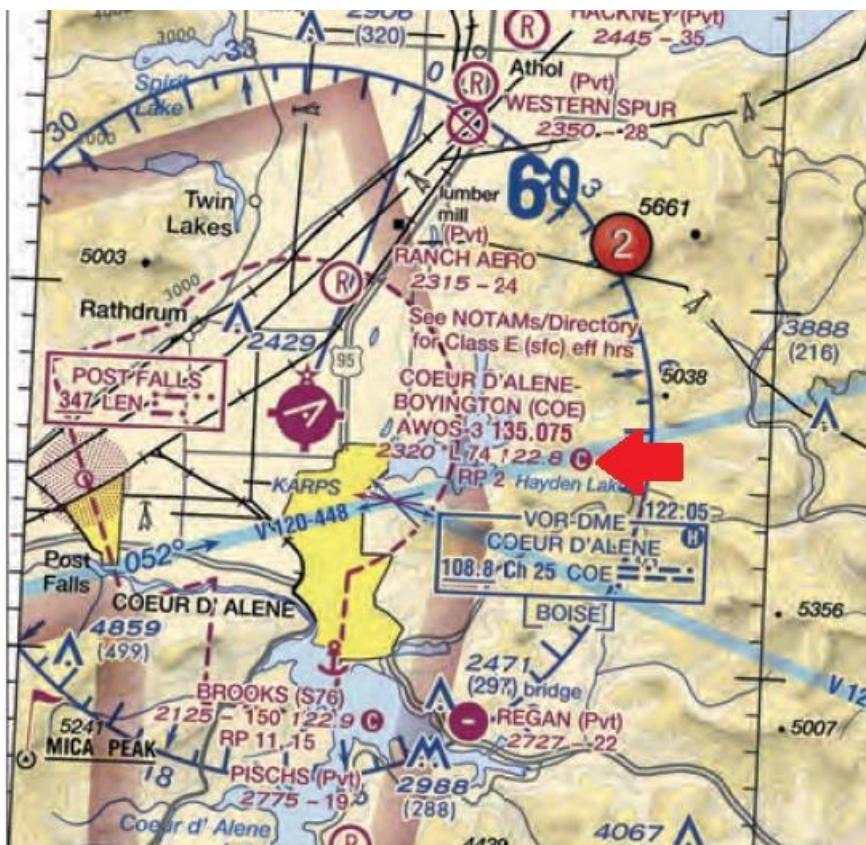


A. Mercer County Regional Airport. [This is definitely not even close. This airport is in the low minutes of 47 degrees North.]

B. Semshenko Airport. [Ah yes, this is a close private airport. You can tell it is private because of the Pvt. Careful measurements will let you know that this is not the airport]

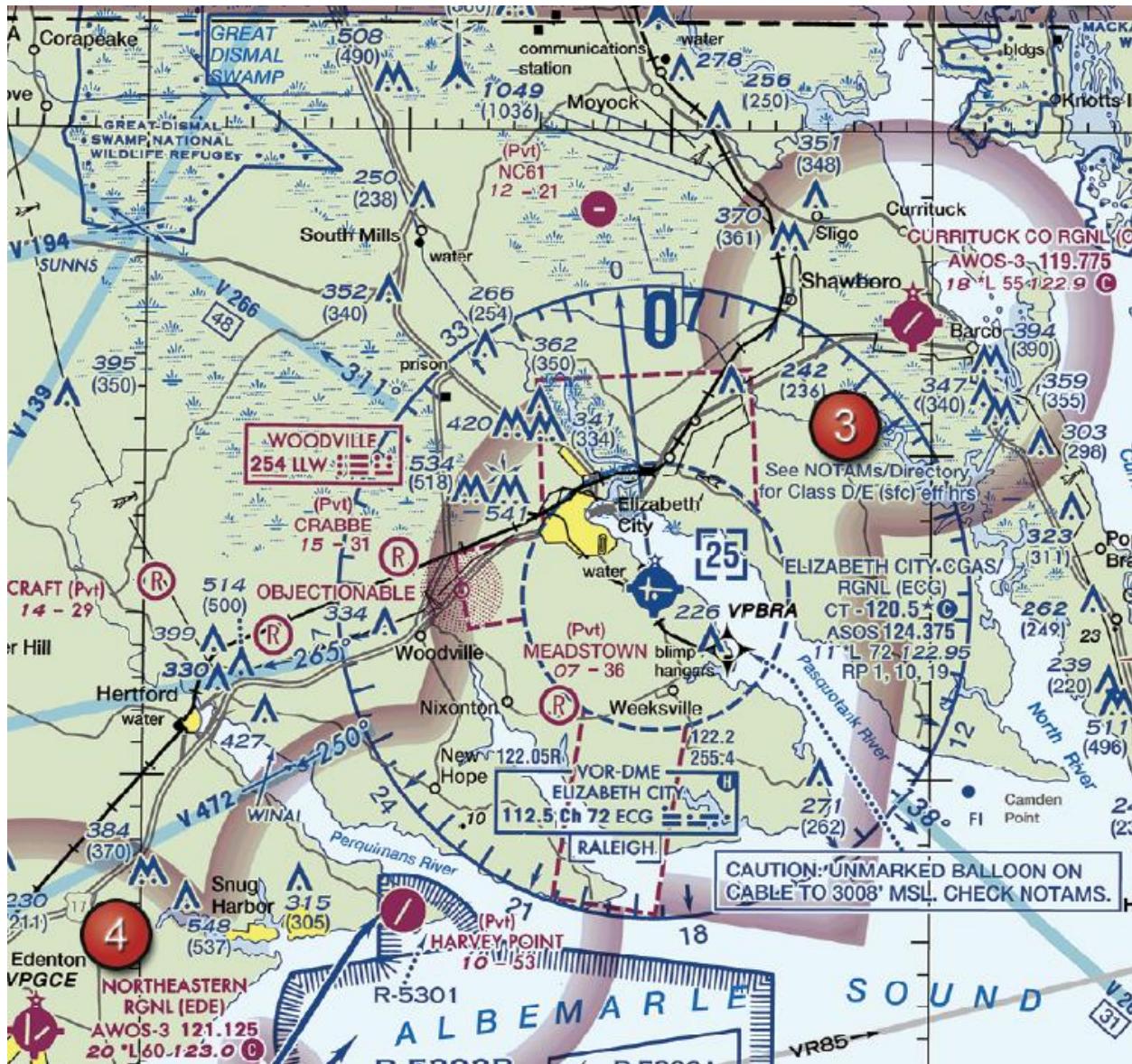
C. Garrison Airport. [Let's make this simple. Ladder sounds kind of like latitude. You climb the ladder going north. (Keep in mind it is north only if you are in the Northern Hemisphere) For minutes, just think of them as tick marks. There is a box with 30 tick marks in it, a line, and then another 30 tick marks. Total you get 60 minutes. For longitude, also called meridians, think of the Prime Meridians running through Greenwich, England. Why is this useful? To figure out if the coordinates of the potential job site are in airspace which requires a COA. I use coordinates all the time when I'm working with my clients to figure out if they need a COA or not. Can your attorney do that?]

UA.V.B.K6a Sources for airport data: Aeronautical charts. (Refer to FAA-CT-8080-2H, Figure 22, area 2.) At Coeur D'Alene which frequency should be used as a Common Traffic Advisory Frequency (CTAF) to monitor airport traffic?



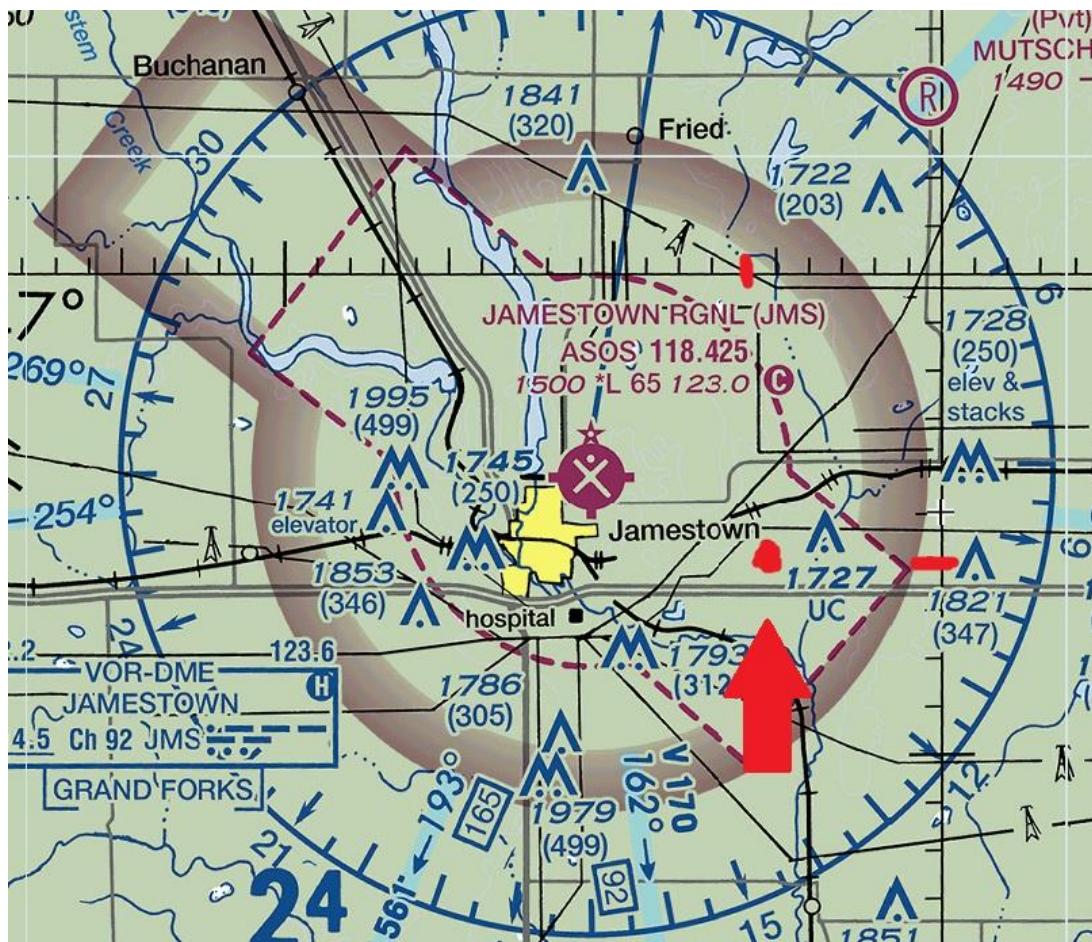
- A. 122.05 MHz. [This is the frequency to contact Boise Flight Service on.]
- B. 135.075 MHz. [This is the AWOS, not the CTAF. You can check out the airport weather on this frequency. Would also be great to find out what the surface winds are blowing at that location.].
- C. 122.8 MHz. [This is the CTAF].

**UA.V.B.K6a (Refer to FAA-CT-8080-2H, Figure 20, Area 4.) A small UA is being launched 2 NM northeast of the town of Hertford. What is the height of the highest obstacle?**



- A) 399 feet MSL.
- B) 500 feet MSL.
- C) 500 feet AGL. [This is a very sneaky question. If you read carefully in the aeronautical chart user's guide on page 12 it says, "Whenever possible, the FAA depicts specific obstacles on charts. However, in high-density areas like city complexes, only the highest obstacle is represented on the chart using the group obstacle symbol to maximize legibility."]

**UA.V.B.K6a Sources for airport data: Aeronautical charts. (Refer to FAA-CT-8080-2H, Figure 26, area 4.) You have been hired to inspect the tower under construction at 46.9N and 98.6W, near Jamestown Regional (JMS). What must you receive prior to flying your unmanned aircraft in this area?**



- A. Authorization from the military. [This isn't military airspace.]
  - B. Authorization from ATC. [This is Class E airspace going to the surface ASSOCIATED with an airport. The magenta dashes indicate this. Read my article on 107.41 for an in-depth discussion on E-extensions and E associated with an airport. The magenta halo indicates Class E airspace starts at 700ft. To convert to decimal points, you divide 60 (The number of tick marks per degree. Remember there are 30 tic marks per quadrant but two quadrants make up a degree.) by 10 and you'll get 6 tick marks per .1 According to Part 107, you'll need authorization to operate within Class E at the surface airspace.]
  - C. Authorization from the National Park Service. [There is no national park here.]

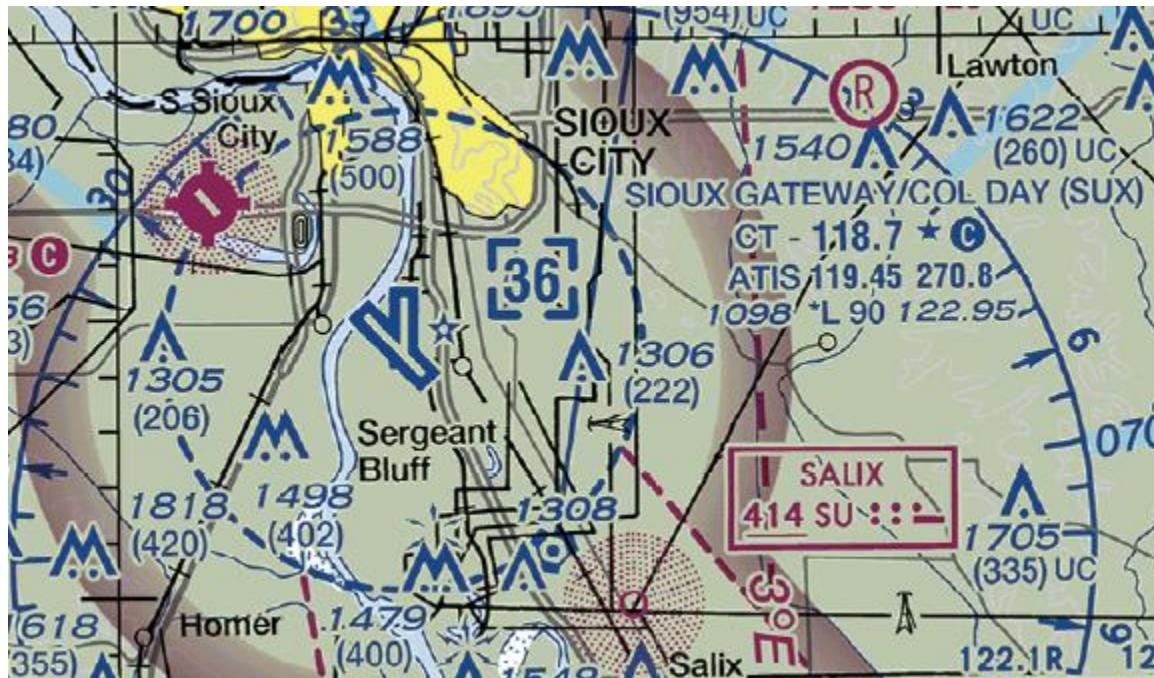
**UA.V.B.K6a (Refer to FAA-CT-8080-2H, Figure 24, Area 3, and Legend 1.)**  
For information about the parachute operations at Tri-County Airport,  
refer to



Parachute Jumping Area  
(See Chart Supplement.)

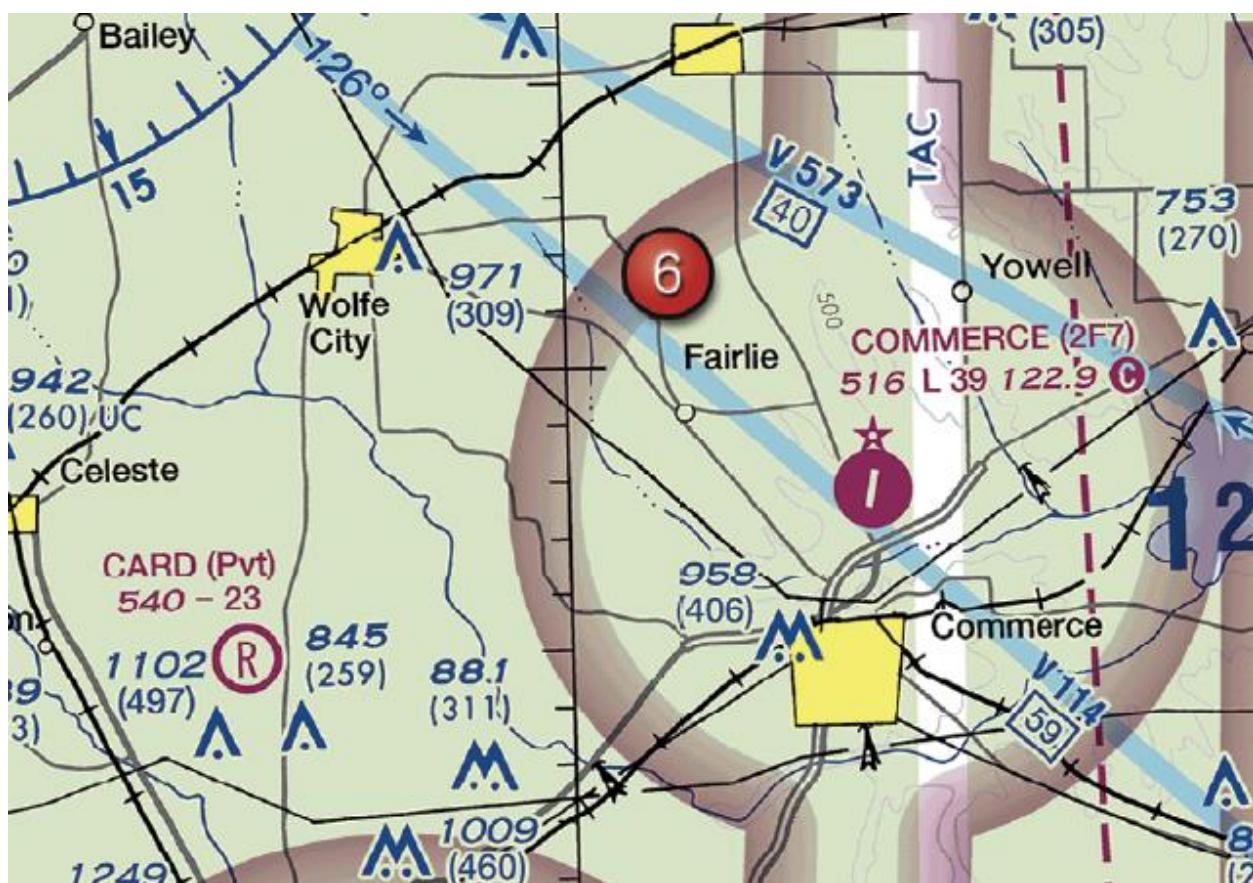
- A) notes on the border of the chart.
- B) Chart Supplements U.S. [The parachute sign is next to the airport. Legend 1 clues you in to look at the chart supplement even.]
- C) the Notices to Airmen (NOTAM) publication.

UA.V.B.K6a (Refer to FAA-CT-8080-2H, Figure 78. Near the center of the figure.) What class of airspace is associated with SIOUX GATEWAY/COL DAY (SUX) Airport?



- A) Class B airspace.
- B) Class C airspace.
- C) Class D airspace. [This is evidenced by the blue dashes. Technically, it also have some E at the surface airspace extensions which are marked by the dashed magenta lines.]

UA.V.B.K6a (Refer to FAA-CT-8080-2H, Figure 24, Area 6.) What type of airport is Card Airport?



- A) Public towered.  
B) Public non-towered.  
C) Private non-towered. [It is private because it has a big R on it. You can tell it is not towered because it is magenta and not blue.]

**UA.V.B.K6a Sources for airport data: Aeronautical charts. (Refer to FAA-CT-8080-2H, Figure 20, area 3.) With ATC authorization, you are operating your small unmanned aircraft approximately 4 SM southeast of Elizabeth City Regional Airport (ECG). What hazard is indicated to be in that area?**



- A. High density military operations in the vicinity.
- B. Unmarked balloon on a cable up to 3,008 feet AGL. [It says MSL right on the sectional. Even if it didn't, it would have to be MSL because pilots flying don't have an accurate way of determining AGL and are using their aneroid barometers which is trying to put out an indicated altitude ball parkish to MSL.]
- C. Unmarked balloon on a cable up to 3,008 feet MSL. [Keep in mind that if you are flying 4SM from the airport, you are within 4 nautical miles from the airport. Class D airports generally have a radius of 4NM. You would need an airspace waiver to operate in this area. Contact me if you need one! ]

**UA.V.B.K6a Sources for airport data: Aeronautical charts. (Refer to FAA-CT-8080-2H, Figure 26.) What does the line of latitude at area 4 measure?**



- A. The degrees of latitude east and west of the Prime Meridian. [This is partially true. It is correct to say degrees of latitude but incorrect to say west. Latitude goes north & south like you are climbing a latter.]
- B. The degrees of latitude north and south from the equator. [Like you are climbing a latter going up or down. Just remember which hemisphere you are in. 99% of you guys aren't going below the equator so it will be north most of the time.]
- C. The degrees of latitude east and west of the line that passes through Greenwich, England. [Just answer A repackaged.]

**UA.V.B.K6b Sources for airport data: Chart Supplements U.S. (formerly Airport/facility directory) The most comprehensive information on a given airport is provided by**

- A. the Chart Supplements U.S. (formerly Airport Facility Directory). [This will tell you all sorts of things. Ever wonder how you get the phone number of the airport manager to make phone calls if you are flying recreationally within 5nm of an airport? This is how!]
- B. Notices to Airmen (NOTAMS). [Um no. These will tell you SOME things about the airport.]
- C. Terminal Area Chart (TAC). [This map is a 2x zoomed in version of the sectional.]

### **C. Emergency Procedures (\*)**



**UA.V.C.K1 Emergency planning and communication. When using a small UA in a commercial operation, who is responsible for briefing the participants about emergency procedures?**

- A. The FAA inspector-in-charge. [Um. No. The FAA inspector is the person who investigates your goof up.]
- B. The lead visual observer. [Nope. But this person is great for doing the “coffee & doughnuts” briefing.]
- C. The remote PIC. [Bingo! Being the pilot in command means you are responsible. Period. For everything. For example, if you don’t properly brief your VO and a FAA inspector ramp checks and the VO doesn’t know what is going on, you get in trouble. It’s like being at the bottom of a gutter, all the garbage will flow your way.]

**UA.V.C.K1 Emergency planning and communication. To avoid a possible collision with a manned airplane, you estimate that your small UA climbed to an altitude greater than 600 feet AGL. To whom must you report the deviation?**

- A. Air Traffic Control. [If you are flying without an [airspace waiver](#), 600ft isn’t even in controlled airspace so you wouldn’t be contacting ATC. It might be wise to just quickly mention on the CTAF where you are if you were flying near a Class G airport and you had to do an emergency deviation up to 600ft.]
- B. The National Transportation Safety Board. [See [What Do I Do After a Drone Crash?](#)]
- C. Upon request of the Federal Aviation Administration. [See [What Do I Do After a Drone Crash?](#)]

**UA.V.C.K2 What precautions should a remote PIC do to prevent possible inflight emergencies when using lithium-based batteries?**

- A) Store the batteries in a freezer to allow proper recharging. [Cold temperature really goofs up charging and use of LIPO batteries. It would have been better for them to create a risk question and highlight that your flight times using a cold LIPO batter are much lower than in warmer conditions.]
- B) Follow the manufacturer’s recommendations for safe battery handling. [This is a “No-duh” type of answer.]**
- C) Allow the battery to charge until it reaches a minimum temperature of 100 ° C. [If CHARGING is making your batteries really warm, you should stop and try and figure out why they are getting this hot as you might have some type of failure that might lead to a failure. You also should consider charging your batteries in a safe place where if they catch on fire, you don’t goof up everything.]



## D. Aeronautical Decision-Making (\*)

**UA.V.D.K1 Aeronautical Decision Making (ADM). Safety is an important element for a remote pilot to consider prior to operating an unmanned aircraft system. To prevent the final "link" in the accident chain, a remote pilot must consider which methodology?**

A. Crew Resource Management. [“Crew resource management (CRM). The application of team management concepts in the flight deck environment. It was initially known as cockpit resource management, but as CRM programs evolved to include cabin crews, maintenance personnel, and others, the phrase “crew resource management” was adopted. This includes single pilots, as in most general aviation aircraft. Pilots of small aircraft, as well as crews of larger aircraft, must make effective use of all available resources; human resources, hardware, and information. A current definition includes all groups routinely working with the flight crew who are involved in decisions required to operate a flight safely. These groups include, but are not limited to pilots, dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers. CRM is one way of addressing the challenge of optimizing the human/machine interface and accompanying interpersonal activities.”]

B. Safety Management System. [“SMS is the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk.”]

C. Risk Management. [This is the part of the decision making process which relies on situational awareness, problem recognition, and good judgment to reduce risks associated with each flight.]

**UA.V.D.K1 Aeronautical Decision Making (ADM).** A local TV station has hired a remote pilot to operate their small UA to cover breaking news stories. The remote pilot has had multiple near misses with obstacles on the ground and two small UAS accidents. What would be a solution for the news station to improve their operating safety culture?

- A. The news station should implement a policy of no more than five crashes/incidents within 6 months. [But why 5? 5 crashes a year? A month? This is just a standard with no data behind it.]
- B. The news station does not need to make any changes; there are times that an accident is unavoidable. [There is not enough information to know they do not need to make any changes. Maybe they have identified all the risks and attempted to mitigate them. Generally, you could and should be trying to do something to increase safety.]
- C. The news station should recognize hazardous attitudes and situations and develop standard operating procedures that emphasize safety. [The hazardous attitudes would be an easy fix with the crew to help identify any hazards in the group. The SOP helps prevent pilots from forgetting things. SOPs are great at managing risk. What gets measured gets managed. There needs to be data gathered after the flights to find out how to best optimize the SOPs. Over time, the SOPs will be improved by identifying risks, implementing mitigations in the SOPs to counter those risks, and measuring the effectiveness of those mitigations. SOPs aren't stagnant.]

**UA.V.D.K2 Crew Resource Management (CRM).** When adapting crew resource management (CRM) concepts to the operation of a small UA, CRM must be integrated into

- A. the flight portion only. [This is wrong because the pre-flight portion and post flight portion need attention also for safety. Who checked on TFRs, weather, etc? Who charged the batteries? Who is going to charge the batteries and log the before and after voltages?]
- B. all phases of the operation. ["All groups routinely working with the flight crew who are involved in decisions required to operate a flight safely. These groups include, but are not limited to pilots, dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers."]
- C. the communications only. [Nope. Into everything when people are involved.]

**UA.V.D.K2 When a remote pilot-in-command and a visual observer define their roles and responsibilities prior to and during the operation of a small UA is a good use of**

- A) Crew Resource Management. [CRM is really the effective use of all available resources: human, hardware, and information. This is highlighting the human portion.]
- B) Authoritarian Resource Management. [This isn't even an FAA term.]
- C) Single Pilot Resource Management [This doesn't even make sense in light of this question.]

**UA.V.D.K4 Hazardous attitudes. Identify the hazardous attitude or characteristic a remote pilot displays while taking risks in order to impress others?**

- A. Impulsivity. [This is doing something quickly without thinking it out.]
- B. Invulnerability. [This is doing something dumb but you think an accident won't happen to you. Please see the many dumb people on YouTube flying their aircraft over streets in urban areas.]
- C. Macho. [You act macho to impress others.]

**UA.V.D.K4 Hazardous attitudes. You have been hired as a remote pilot by a local TV news station to film breaking news with a small UA.**

**You expressed a safety concern and the station manager has instructed you to “fly first, ask questions later.” What type of hazardous attitude does this attitude represent?**

- A. Machismo. [It isn't this one because you aren't trying to prove yourself to be awesome.]
- B. Invulnerability. [Close. But it isn't right. Invulnerability recognizes that the accident CAN happen, “but not to me.” Here there is NO recognition of the possibility of an accident being possible.]
- C. Impulsivity. [From PHAK, “This is the attitude of people who frequently feel the need to do something, anything, immediately. They do not stop to think about what they are about to do, they do not select the best alternative, and they do the first thing that comes to mind.”]

## **E. Physiology**

**UA.V.E.K2 Drugs and alcohol use. Which is true regarding the presence of alcohol within the human body?**

- A. A small amount of alcohol increases vision acuity. [No, you may think that but it isn't true.]
- B. Consuming an equal amount of water will increase the destruction of alcohol and alleviate a hangover. [No, it just means you are going to be a drunk who has to go to the bathroom.]
- C. Judgment and decision-making abilities can be adversely affected by even small amounts of alcohol. [Yes, being drunk can result in all sorts of poor life choices such as getting involved in Pokemon.]

**UA.V.E.K5 Stress and fatigue.** You are a remote pilot for a co-op energy service provider. You are to use your UA to inspect power lines in a remote area 15 hours away from your home office. After the drive, fatigue impacts your abilities to complete your assignment on time. Fatigue can be recognized.

- A. easily by an experienced pilot. [An experienced pilot should recognize that fatigue can creep up on them and they shouldn't trust themselves.]
- B. as being in an impaired state. [You should give your body proper rest so as to function optimally. Commercial pilots have rest requirements for a reason. You should also.]
- C. by an ability to overcome sleep deprivation. [This isn't fatigue. This is Redbull.]

**UA.V.E.K6 Factors affecting vision. Which technique should a remote pilot use to scan for traffic? A remote pilot should**

- A. systematically focus on different segments of the sky for short intervals. [From the AIM 8-1-6. (c), "Because the eyes can focus only on this narrow viewing area, effective scanning is accomplished with a series of short, regularly spaced eye movements that bring successive areas of the sky into the central visual field. Each movement should not exceed 10 degrees, and each area should be observed for at least 1 second to enable detection. Although horizontal back-and-forth eye movements seem preferred by most pilots, each pilot should develop a scanning pattern that is most comfortable and then adhere to it to assure optimum scanning.]
- B. concentrate on relative movement detected in the peripheral vision area. [Bad idea. From [AC 90-48D 4.2.5](#), "It is essential to remember, however, that if another aircraft appears to have no relative motion, it is likely to be on a collision course with you. If the other aircraft shows no lateral or vertical motion, but is increasing in size, take immediate evasive action."]
- C. continuously scan the sky from right to left. [What about up and down also!? Additionally, you need some time to focus on a particular segment of sky.]

## F. Maintenance and Inspection Procedures (\*)

**UA.V.F.K1 Basic maintenance. Under what condition should the operator of a small UA establish scheduled maintenance protocol?**

- A. When the manufacturer does not provide a maintenance schedule. [Yes, because you should know what the mean time between failures is or have an idea on what are the typical problems certain drones encounter so you can PREVENT crashes.]
- B. UAS does not need a required maintenance schedule. [I can hear it now from some of the droners "Maintenance.....We don't need no stinkin maintenance."]
- C. When the FAA requires you to, following an accident. [It is cheaper to do maintenance on the front end rather than on the pieces on the backend.]

## **UA.V.F.K1 What actions should the operator of an sUAS do if the manufacturer does not provide information about scheduled maintenance?**

A) The operator should contact the FAA for a minimum equipment list. [The reason the FAA delegated inspecting the drone to the remote pilot in command is the FAA can't keep up to speed on the drones. They aren't going to have some MEL.]

**B) The operator should establish a scheduled maintenance protocol. [If you read AC 107-2 you would see they had a whole section on maintenance which should have clued you into this being a potential candidate for the correct answer]**

C) The operator should contact the NTSB for component failure rates for their specific sUAS. [I guess you could do this but it seems like B is a way better answer.]

## **UA.V.F.K2 Preflight inspection. According to 14 CFR part 107, the responsibility to inspect the small UAS to ensure it is in a safe operating condition rests with the**

A. remote pilot-in-command. [107.19 says, “(b) The remote pilot in command is directly responsible for and is the final authority as to the operation of the small unmanned aircraft system. (c) The remote pilot in command must ensure that the small unmanned aircraft will pose no undue hazard to other people, other aircraft, or other property in the event of a loss of control of the aircraft for any reason” How are you going to do that without doing an inspection on the aircraft and being familiar with it? § 107.49 says, “(c) Ensure that all control links between ground control station and the small unmanned aircraft are working properly; (d) If the small unmanned aircraft is powered, ensure that there is enough available power for the small unmanned aircraft system to operate for the intended operational time; and (e) Ensure that any object attached or carried by the small unmanned aircraft is secure and does not adversely affect the flight characteristics or controllability of the aircraft.” ]

B. visual observer. [No responsibility here but it would be smart to have the VO checking things also.]

C. owner of the small UAS. [Smart but not required.]



## Rupprecht Law's Aviation Law Services:

- **Applying for a Certificate of Waiver / Authorization (COA).** Commercial drone operators operating outside of Part 107 as well as government agencies operating drones both need COAs according to the FAA. Also, sometimes operators need greater flexibility than what their current COAs provide. We can assist in the amendment of COAs.
- **Petitioning for a Section 333 Exemption for Commercial Drone Operations.** In July 2016, the [FESSA](#) changed what is allowed under the Section 333 exemptions. While Part 107 will replace the need for many of the 333 operations, there are very good reasons to have a Section 333 exemption going into the future.
- **Outside Counsel.** Are your attorneys wasting too much time on trying to figure out how to navigate the Federal Aviation Regulations? Rupprecht Law, P.A. can help assist your general counsel to get through difficult problems because the firm specifically focuses on aviation and drone law. Your legal counsel can get accurate answers to the many details and complexities of this area with Rupprecht Law, P.A.'s advice.
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- **Setting-up Drone Enterprise Operations inside a Company.** Developing the manuals to scale out a nationwide program is an important task. Rupprecht Law, P.A. is currently working with companies now on concepts of operations, putting those concepts in a manual, and then integrating those manuals into employee flight instruction operations.
- **Defense in FAA Enforcement Actions** – Sometimes the FAA chooses to start an investigation against unauthorized commercial drone operations or there is a violation of the regulations or exemption restrictions. If this is the case, please contact the firm for assistance.
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- **Helping Government Agencies Obtain a Public COA.** This can include drafting and seeking approval of a public aircraft operator declaration letter, filing the COA application through the portal, or providing guidance on whether proposed operations fall within public aircraft operations.
- **Assistance in Registering the Drones with the FAA via the Part 47 Paper-Based Method.** While many operations will continue to use the Part 48 electronic method of registration, not all aircraft operations can register via Part 48 and must register via Part 47. This process can be difficult for some individuals, but not if you use Rupprecht Law, P.A.
- **Other**– The firm gets all sorts of “odd-ball” types of questions relating to drones and law. If you have a legal question regarding drones, just call and ask.

Now that you know what we can do, ASK! Send an email to [jon@jruppprechtlaw.com](mailto:jon@jruppprechtlaw.com)



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# 24 Super Insanely Hard Sample Part 107 Practice Exam Questions

These practice Part 107 test questions are designed to be **very** hard. The questions are the "fill in the blank" type to force you to study. These questions are designed to be taken AFTER you have studied those other 65 questions.

This is a great opportunity for you and your study buddies to dig around and find these answers .The answers are there, you just have to find them. :) I would highly suggest going back to the resources listed in the [Free Part 107 Test Study Guide For FAA Remote Pilot Airmen Certificate](#). Ctrl + F, appendix, index, table of contents, etc. are your friends.

This is like what baseball players do before they go to bat. They practice with a heavy weight on the bat. The same thing applies here. You most likely will not get all the questions below. I would be happy if you just get like 5 of them. That is OK. **Do not get discouraged.**

*The point of this test is to force you to get familiar with searching for answers.*

1. Give an example of where you can fly in Class E without a waiver or authorization.
  
2. You are flying in Alaska. How long can you fly after sunset provided you have the proper equipment? How long can you fly after sunset if you are operating under a 333 exemption?  
(Hint: [see my article on this](#)). Which is better?
  
3. To fly in civil twilight in Alaska, you want to use a strobe that is visible for 3 nautical miles. The light is powered by a 2<sup>nd</sup> separate LiPo battery from the main drone. Is this legal?

4. Explain the differences between the three completely different dashed magenta lines. What do they mean?



5. Part 107.39 says, “No person may operate a small unmanned aircraft over a human being 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.” The FAA gave 4 specific examples of people directly involved in the operation of the unmanned aircraft in the preamble to the final rule. Can you legally fly over the gimbal operator? What about an actor who has consented?

6. What does the AHP stand for?



7. You'll see this picture somewhere on the legend in your sectional charts. What is the significance of 8,069? Why are some airports outlined while others are in a circle?



Hard-surfaced runways greater than 8069' or some multiple runways less than 8069'



Hard-surfaced runways 1500' to 8069'

8. How long are sectional charts good for?

9. How long are chart supplements valid?

10. What is the difference between a chart supplement and an airport facility directory?

11. If you call up 1800-WX-BRIEF and ask for a standard briefing, they can give you the NOTAMS. What NOTAMS will they NOT give you unless you specifically ask for them?

12. You are supervising a person flying your drone and you are operating under Part 107. He does not have a remote pilot

certificate. Give me an example of where it would not be legal and three where it WOULD be legal.

13. Following on question 12, can the person flying the drone under the supervision of the remote pilot be 15 years old?

14. How high can you fly the drone above these towers? **Why?**



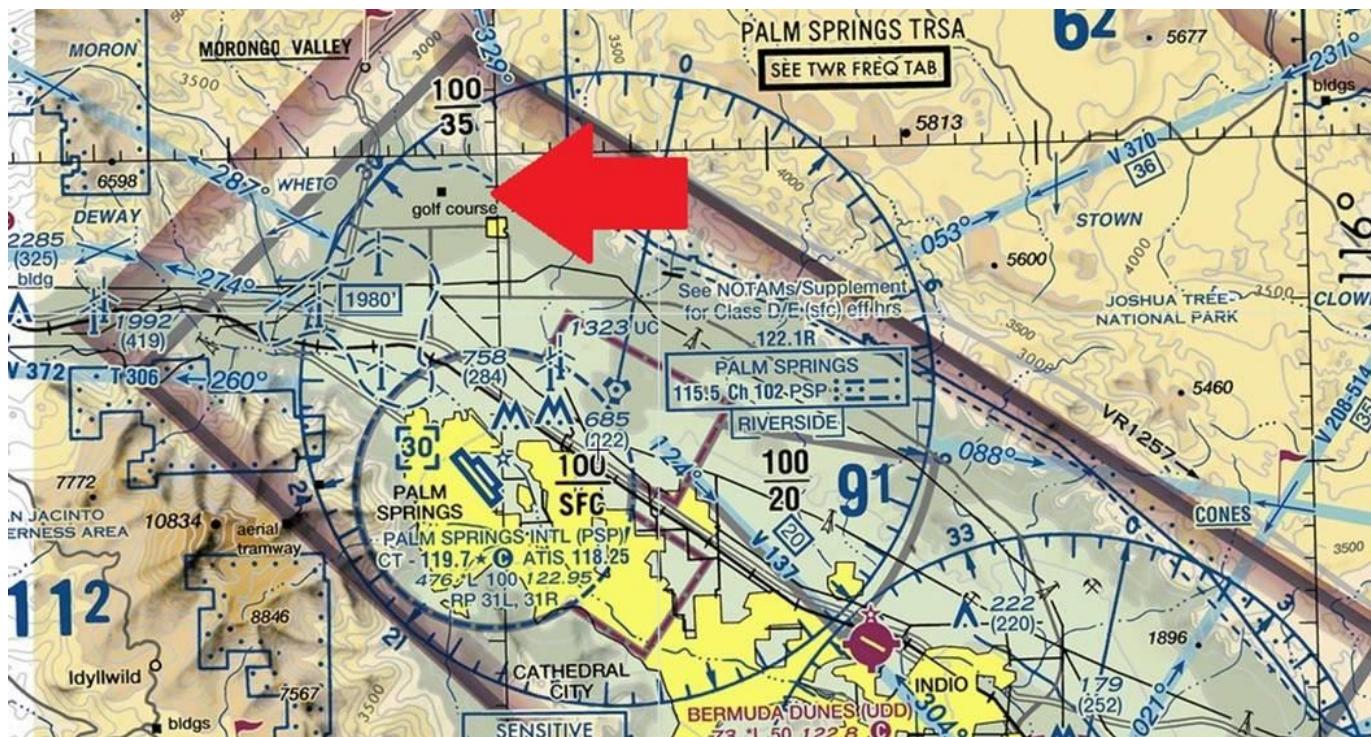
15. You want to fly a drone that weights exactly 55 pounds (not 55.001). Can you do this under Part 107?

16. You registered your drone via Part 48 and made sure you selected the commercial registration. You get a phone call from your buddy to go to Canada, Bahamas, etc. Can you do this?

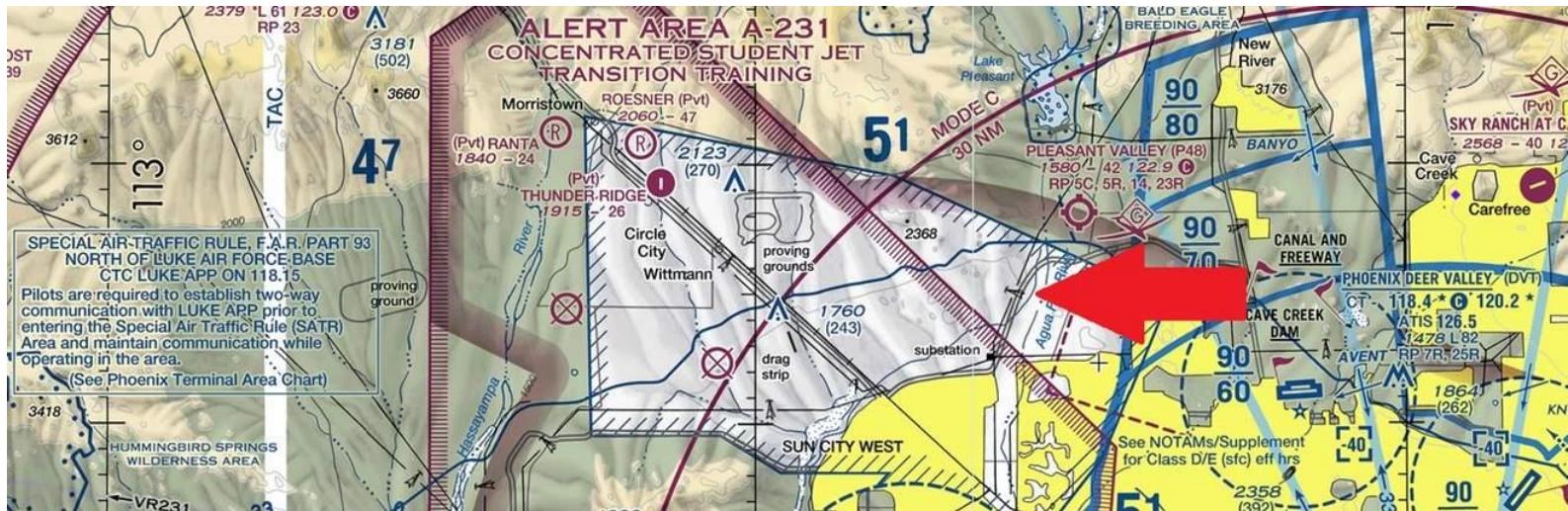
17. You get a call from a potential client who wants you to do a shoot at the red star tomorrow night. You don't have an airspace authorization or airspace waiver. You obviously don't have enough time to obtain one. You have a night waiver. The client is open to shooting the video at night. How can you legally do this? What do you do and when?



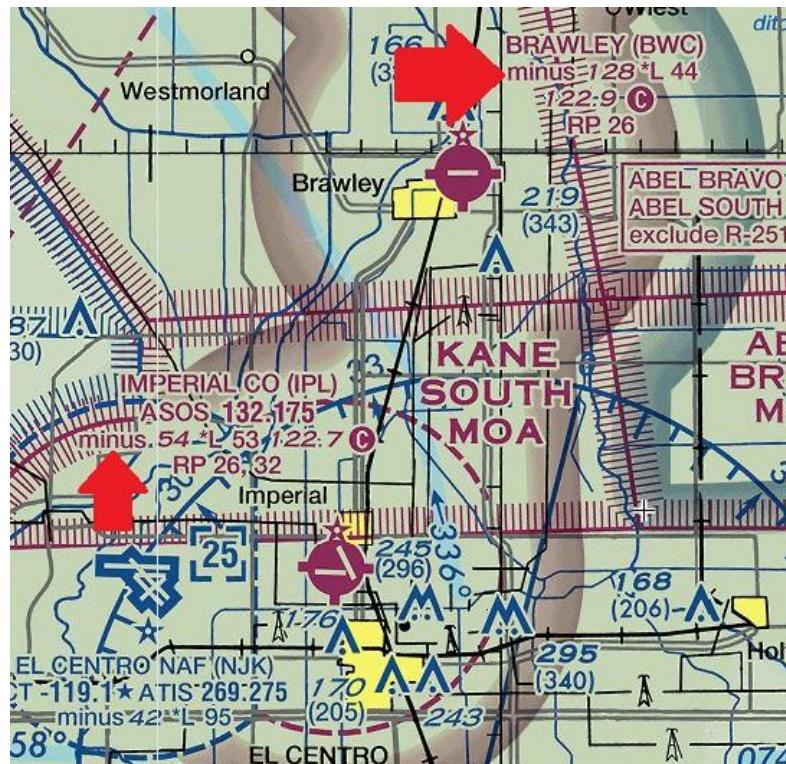
18. A golf course calls you up and wants you to take some pictures. You look at the map and see that it is in some dark grey box surrounding the whole area. Do you need an airspace authorization to fly here?



19. The utility company calls up and wants you to check out some of their power lines at a substation. Here is the location. Can you immediately head out to the field and inspect the lines?



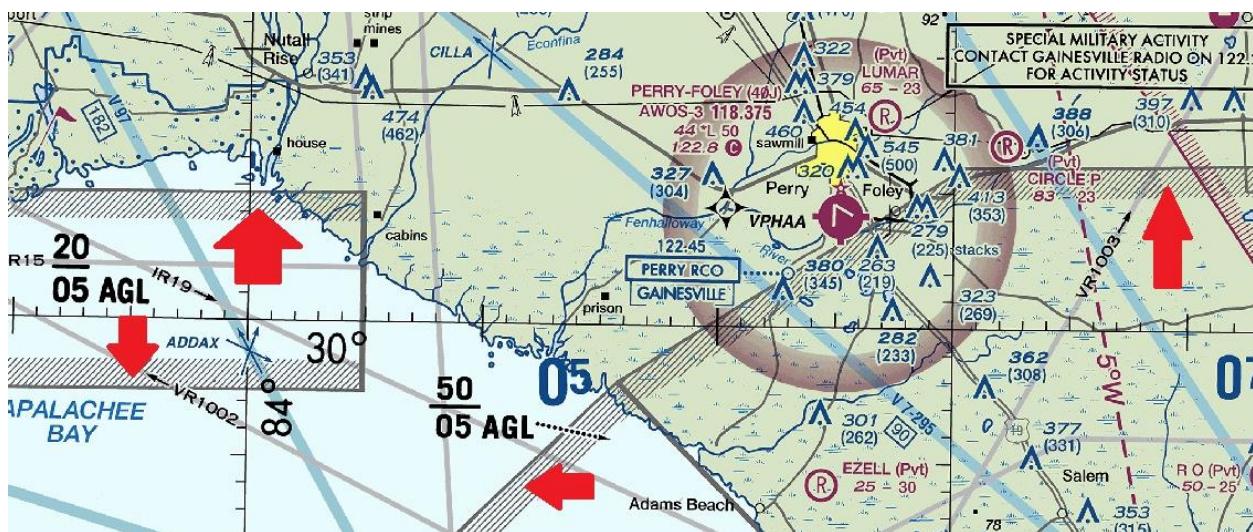
20. What does “minus” stand for?



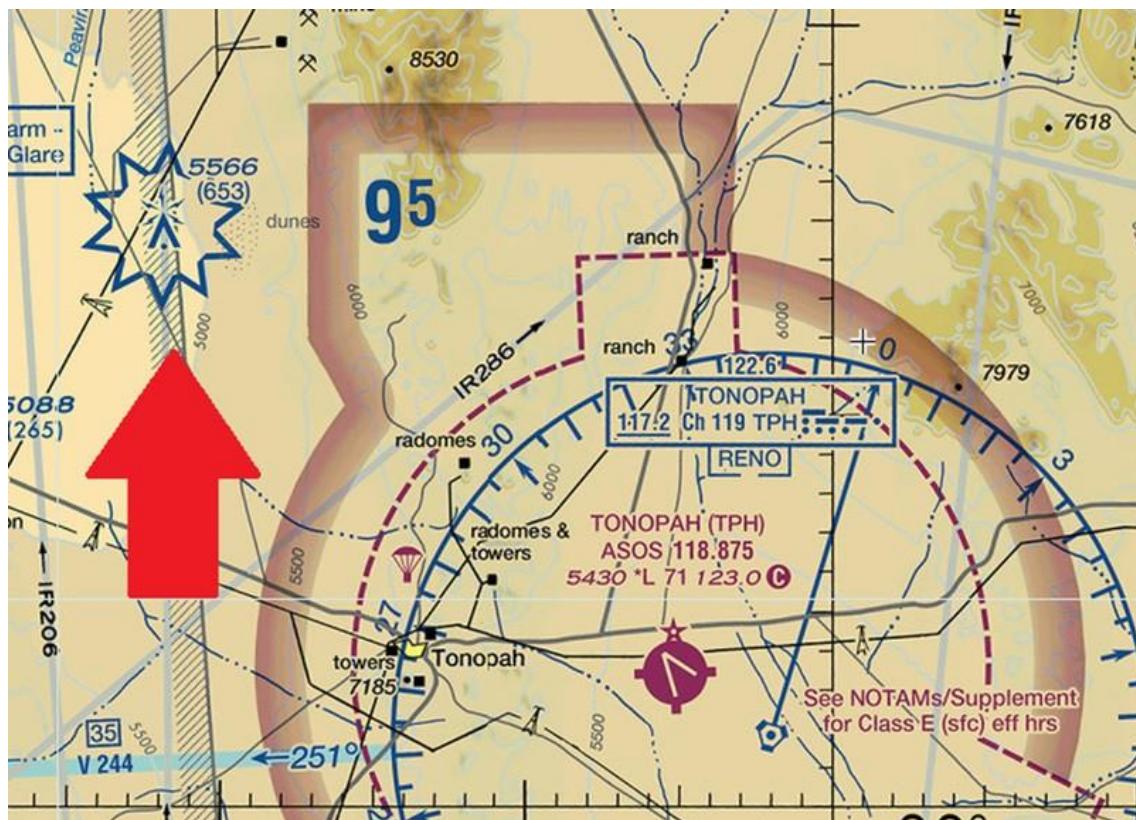
21. What does this glider symbol with UA stand for? No, it does not stand for gliders.



22. What does this grey shading mean?



23. What in the world is going on with that tower? What's it supposed to be - like some old Batman cartoon where he just *BAM!* built a tower?



24. What does the UC stand for?

