

FAA PART 107 Drone Notes KRAUS

↳ [REGULATIONS]

Find At [eCFR: Gov]

PART 107 → Fly a UAS as a non-recreational Pilot

All under title 14:

"Calendar Month" - End of the last day of the month expiration

To take exam → 14 yrs old

To hold Certificate → 16 yrs old

When do you need remote Pilot Certificate?

- Not Flying For Fun (Anything but Fun)
- Over 250 grams And Not recreational
- Earning \$

Small unmanned Aircraft must be under 55 lbs (54.9 or less)

↳ Flying Sub 250g Drone For 107 purposes must be registered

Visual observer → person designated to Assist the Pilot (Assistant)

rPIC → Remote pilot in Command, person manipulating Flight-Control or supervisor (in charge of operation)

Falsification of records → revenue cost / civil penalty

rPIC must hold ▶ Remote Pilot Cert

▶ Source of IDENTIFICATION (Drives)

▶ Renewal info, current docs, paperwork

Docs must be Available to FAA, NTSB, law-officers, TSA

Accidents → Must be reported Within 10 Calendar Days ⚡

- IF Serious injury or loss of Consciousness

- IF Damage exceeds 500 (to others)

Drones over 250g need registration but as long as they are recreational they don't require a Part 107 license 🍷

Operating Rules of UAS

▶ You have a Certificate or are being Watched by a Cert holder who has Immediate Control! (one at a time)

- Store next to, buddy box or RTL Switch

All markings must be displayed on Aircraft (REG.#) FA####

↳ Drones are registered for 3 years

No PIC / Visual observer allowed to be Sick Phys / Mental

[rPIC] must be designate and has Final decisions

↳ Your the guy to ensure no - Undue Hazard is created

IN FLIGHT EMERGENCY

▶ May deviate from rules and Submit "Why" if requested

107.23 (a) → Careless / Reckless Don't Do it

▶ NOT Allowed to operate UAS From Car/boat etc
↳ unless in a sparse area!

Not Allowed to Operate Planes / UAS Drugs / Alc

▶ Within 8 hrs of Drinking (min) "8hrs bottle to Throttle"

▶ Drunk

▶ BAC of 0.04% or higher (half of Cars!!)

(Crew members are 4hrs)

Remote PIC is Final Authority regardless of who is on Controls!

↳ No med cert for sUAS

Always Alert FAA (usually upon rec) of issues, not ATC

Flying at night regulation (107.3)

"Night" - 30 mins or 30 APTs → light needed

Night | Civil twilight | Day ops | Civil twilight | Night

To operate at night D traffic test
↳ Flashing light (3 statute miles)

Visual line of Sight Requirement (107.31)

↳ See without visual aids No binoculars!

You must visual observer need to see to know

- location
- Altitude
- Air traffic
- Safety

Turn down night light if it is safe
and need to do so

FPV must have a Visual observer (In general VO's are not req)

You can only Fly 1 UAS at a time

Operating near Air-Craft

- You Always give way to manned Aircraft

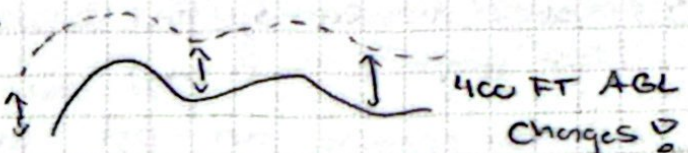
Not Allowed to Fly in Class B C D or E2 Controlled Airspace

↳ Need ATC Clearance! (This of course includes Airports, just don't inf)

PreFlight checks → up to you to check!
↳ Airspace, people, weather, hazards

You can Fly 400 FT AGL

We Follow Topography of Terrain!

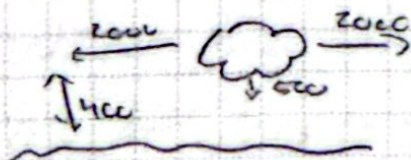


If you need to Fly higher in uncontrolled Airspace

You can but within 400 ft radius of Tower



Fly 500 FT below clouds or 2000 FT Above haze



[Minimum Visibility is 3 statute miles] Critical Info
[Speed limit 100 mph 87 knots]

Automations - must be able to take over

A note on recency - every 2 years - 30 days change of Address

↳ Recurrent training / aeronautical test (FAA safety.gov)
↳ If you miss your deadline for recurrent
you can fly only as a Rec Pilot until you pass!

Class at 700 FT? → Can fly higher than 200 FT

Dates to exercise is 2 years from Day you

PASS not when you get the Cert

[OOP] - operations over people (4 cats of Aircraft)

You can fly over people if your drone is cat 1, 2, 3, 4

Sustained Flight: Hovering, Flying back/forth circling above ppl

↳ Does not include a short transition over people "Transiting"

Open Air - Assembly - people outside, crowds, groups, size density etc
ex. packed beach
Rally, Auditing etc

Cat 1 - Small, need prop guards + Remote ID

Cat 2 - If it hits, is less than 11A-1b No exposed rotating
(labeled as cat 2 has FAA paperwork from man) + Remote ID

Cat 3 - labeled as Cat 3, FAA documented Must not be
near people!

↳ To operate over ppl, at restricted Access Site + Above
or under closed structure

Very close to
ppl + Aircraft

↳ Under 25 ft - 1b kinetic energy, closed props

Cat 4 - Needs Airworthiness Cert under pt 21 (By Manufacturer)
Remote ID

	Cat 1	Cat 2	Cat 3
Weight	0.55 lbs or less	less than 55	less than 55 lbs
Eligibility Req.	No exposed	Rotating 11 ft 10	parts that cause harm 25 ft 10
MoC/Doc	No	Yes	
Label	No	CAT 1	CAT 2
Open Air Assembly large groups	RID, Yes	RID, Yes	<u>No!</u> (Not even transitory too big)

"Rotating Props" how to qualify → guards / motor steps

Closed / restricted Access Areas → must ensure people can be blocked / put on notice
 → use written notices

Minimum distances over people

↳ There is no specific minimum distance so its up to you to ensure no reckless operation

▷ Consider trajectory, bullets, motor wind etc

Flying over moving vehicles → All same req, remain within closed site and tell people?

Try not to maintain sustained flight over highway
 (must be cat 1 2 3) not 4? (Transit)

Vehicle - bike, car, truck etc

Can't fly over vehicles if they don't have notice

Cat 4 OWNER must hold maintenance records

[LOOK AT ROCKETSTEM.ORG]

Waivers For Drones (Waive regulations, prove its safe)

107.31 → Visual line of sight? (BVLOS)

107.41 → Operation in Restricted Airspace

Waivers Online + Info At FAA DRONE ZONE

Need to register Drone if over 13 (+ Display #)

↳ ONLY \$5, ONLY AT FAA DRONE ZONE DONT GET SCAMMED

Update Registration within 14 Days of Incident

↳ Address change, Sell, etc.

Registration is good for exactly 3 years

↳ Reg # FAXXXXX

How TO COMPLY W/ REMOTE ID

▶ Buy with RID on it

▶ Use RID Module

IF you are flying under 107 and under 55 lbs, RID

IF you are flying Rec. and under 250g No RID

(All public safety → need RID AETHER)

[Geometric Data is in RID] (GPS Alt. Sence)

↳ Casts time, lat/long, Alt / Velocity

Serial #'s

Sometimes safety signal (if integrated in Drone)

General public AND FAA can use Apps to See RID message?

↳ FAA is gatekeeper of personal data

Messages broadcast From takeoff to landing

Add the module Serial Number to your registration (Add on manual)
(Standard ID craft is integrated)

FRIA - Recognized areas where you need no ID
(need VLOS)

(NTSB Requirements)

↳ What Does the NTSB Say about Accidents, Report if

Report Immediately {
↳ Death or Serious injury (Hospital Pays, Bones, organs etc)
↳ In Flight Time
↳ Air craft collisions
↳ Damage over \$25,000

Quick Notes

Again Registration is not Calendar like the rest, It's to the day exact!

RID are the duty of the operator

Responsibility → Cat 4 craft (closest to real planes)

DOC, (Declaration of Compliance) → Cats 1, 3

Flight Control failures go straight to NTSB!

Find out if a drone is compliant using DOC list not DroneZone

Cat 4 Craft need a type cert under part 21.

Destroy your drone beyond repair (Any value) Remove DroneZone registration
↳ (Within 14 Days make any changes)

Out of Country Registration needs to be re-validated with DOT

Airport Operations CH 14

Types of Airports (Areas For Takeoff) tending)

Civil Airports → public (with Fees & curfew)

Military → Not open, Do not fly

Private → Need owners permission

Towered Airports

- ▷ Have ATC
- ▷ Help with Flow
- ▷ Closures are required

Non-Towered

- ▷ Lower traffic freq
- ▷ Uni-Com freq to chat
- ▷ Radio cons not req

True & magnetic NORTH

True → North as TOP of earth

Magnetic → Earths Magnetic north (changes over time)

Instruments Work on magnetic North

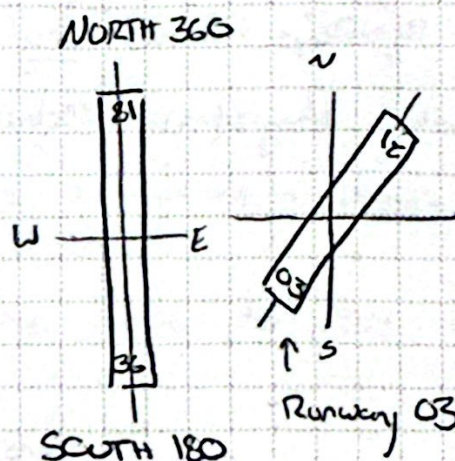
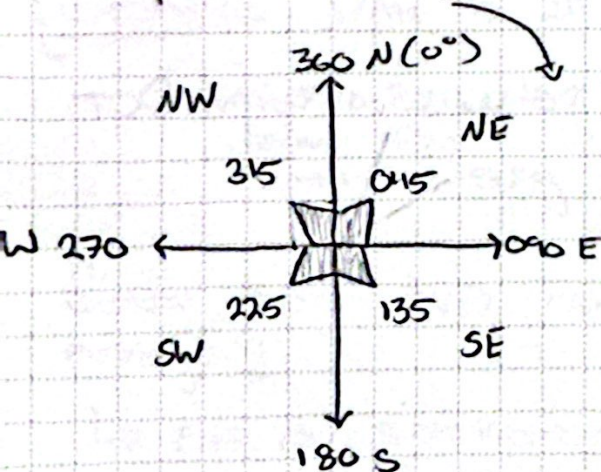
↳ Diff between the 2 is called Variation (EAST/WEST)

TO CONVERT WE ADD/SUBTRACT VARIATION

"EAST is least (-)" "West is best (+)"

Runway orientation → Based on Magnetic #

Compass Rose (mag)



Runway Orions to
HEADING DROP LAST DIG

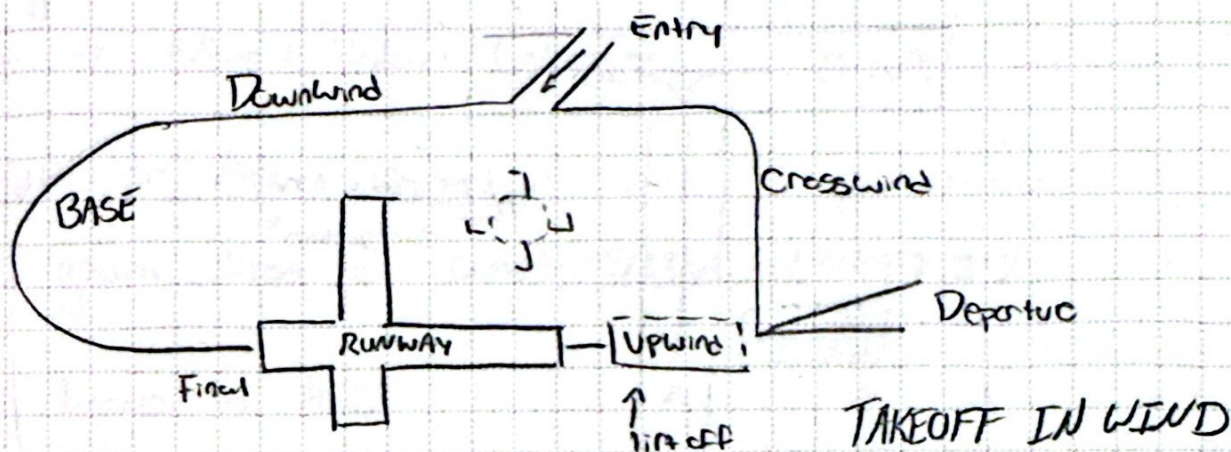
Parallel Runways Add Tags (Right, Center, left etc)

Runways w/ Closes are closed x x x

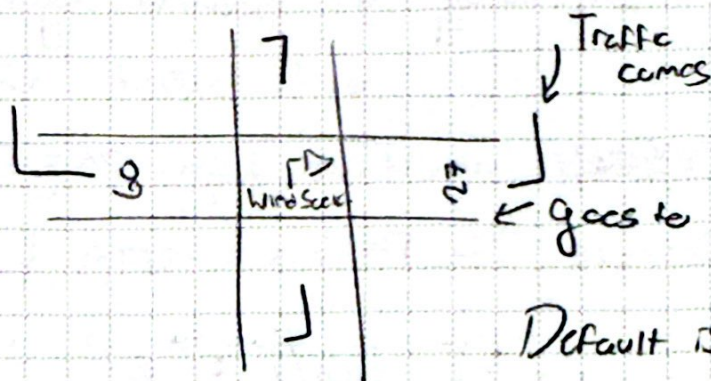
(TRAFFIC PATTERNS)

MOSTLY BETWEEN 0 and 1000ft AGL

Call in From 10 miles to 1000ft At Airport (manned)



SEGMENTED CIRCLE

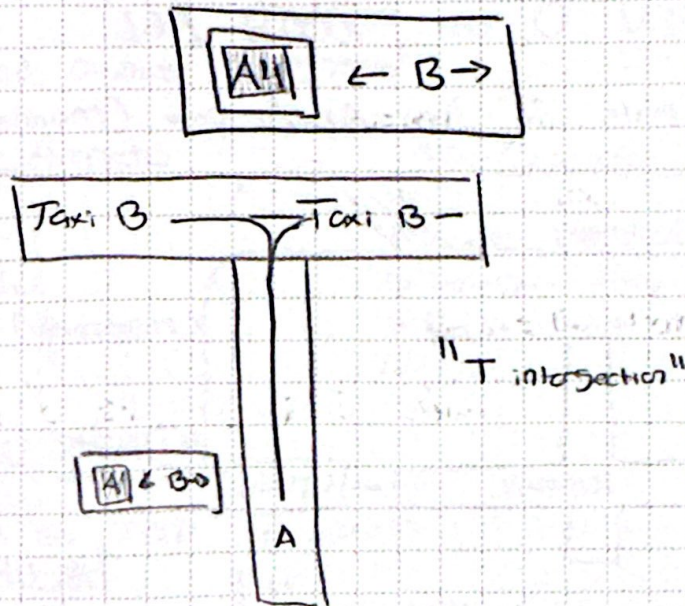


Taxiway Markings & Signs

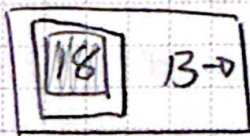
Black background → Current loc.

Arrow on Yellow → Direction to Taxiway

On Alpha
End is Bravo

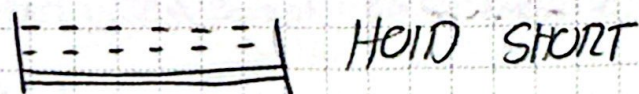


Taxiways have Letters Runways Digits



On Runway 18, Bravo to Right

[Hold Short line] Stop line From Taxi → Runway
↳ you need clearance TO PASS



Airport Beacons - For night or low vis

↳ Available Sun Set to Sunrise or below VFR Minimums

Civilian → White + Green

Water → White + Yellow

Military → White + White + Green

Helipad → White + Yellow, Green

Operation on Airport Property

Certain ground Areas are called SEDA (NEED ID)

Report Lasers to ATC

Note Thermal Plumes (They create problems ⚡)

look for BIRDAM or Unmanned Balloons

Sources For Airport Data

[Chart Supplements] 9 regions of USA AFD-NE

↳ FAA.gov / AFD-NE

How to use chart Supplement

↳ IF it doesn't specify Right traffic pattern its default left

NOTAM → Notice to Airman

Temporary info check All notams before Flying

↳ rockets obstacles Volcanic Ash - Ashram
military birds
 ↳ BIRDAM

Types →

Notam (D)

- ▷ Taxiway closures
- ▷ Personnel
- ▷ Lighting

FDC Notams

- ▷ Charts preadvise airspace usage

↳ Hold TFR's

ATIS - Automated Term inform Serv. (Weather)

↳ given recordings on freq of Weather

Sometimes Ceiling + Vis not said (Means over 5sm all good)

Airport becomes on during Day - VFR below minimums

[RAIDO COMMUNICATIONS] 14.22 14.23

▷ What to listen - To to gain info FRA radio and procedure

▷ Listen to Atc radio → (live ATC.net) ☺

- Drone should NOT be talk on radio Just listen
▷ only emergency!!

Say All 4500 Ft → Four Thousand 500 Ft

10500 Ft → One Zero Thousand 500 Feet

18 → one eight

below 18000 Ft, Spell out

Above 18000 Ft "flight level" 20,000 Flight level two Zero

▷ Call signs tail number FULL or Initial
Short or back

Airports - Untowered Position Reports

THREE Ways to talk at Untowered

- ↳ Unicom operator UNICOM
- Self Announce Broadcast CTAF

Unicom Freq

- Public Airport info
- Request Weather/Winds

CTAF - Common Traffic Advisory

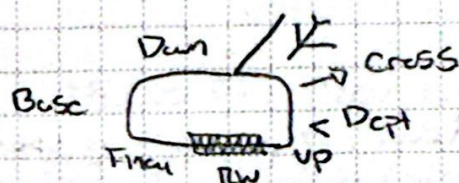
- Position at untowered
- Made on tower Freq / Unicom Freq
- Universal is 122.9
(multicom)

When no CTAF

CALL at 10 miles out

(Ex) "Sedona Traffic Cessna 123 Bravo Foxtrap is 10 miles south inbound for landing. Sedona Traffic"

Entering the pattern, mid-field, left downwind for runway nine



Towered Airports - Always read back to Controller

Can Find Freqs on the charts CTAF: XXX Unicom: XXX

CT = Control tower ☆: Part time tower © CTAF

Correct method of stating 4500 Ft MSL to ATC is

Four Thousand 500

10,500 Ft

One Zero Thousand 500 Ft

Freqs with a circled © is CTAF

[Airspace]

General information

▷ Primary purpose is to prevent Collision and Stay Safe

Types of Airspace 1) Controlled Airspace ATC Sourced

Levels of Controlled Airsp. → Class A
B
C
D
E } Clearance is required to Fly in this Airspace

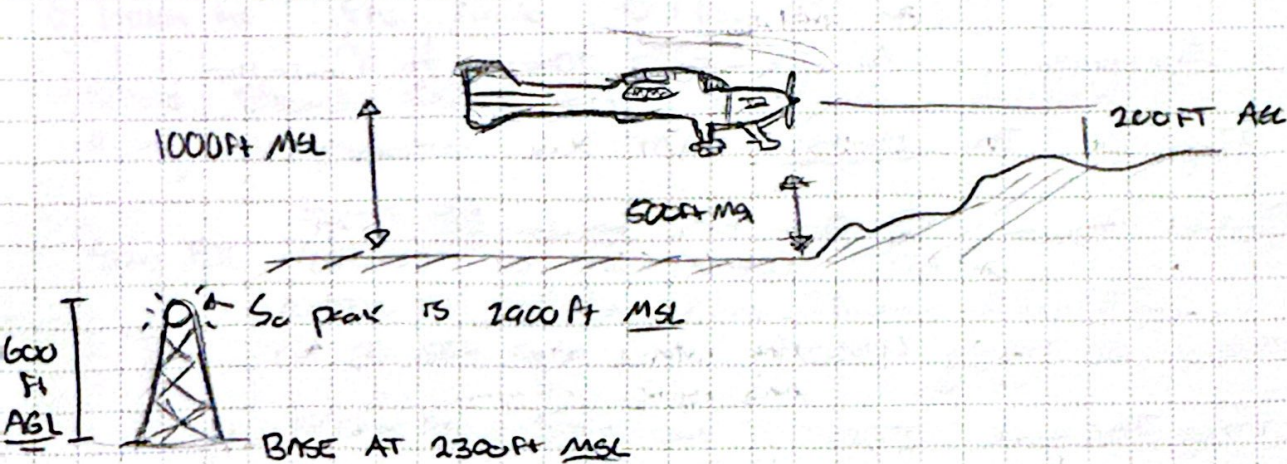
Uncontrolled Airspace } Class G "GuIF"
▷ No ATC
▷ No Approval needed

Special use Airspace → Usually Govn't reasons

TFR, Wildlife etc.

TERMS DEFINED →

Altitudes AGL - Above ground level } Can be 2 diff Values
MSL - Mean Sea level

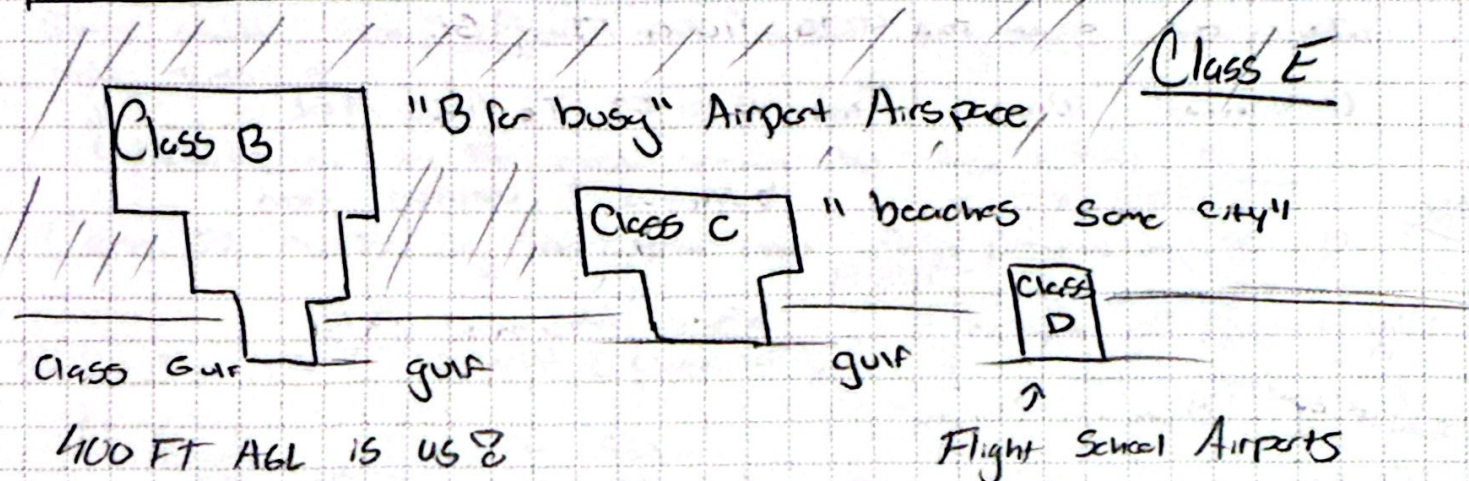


VFR - Visual Flight Rules; reference to ground goes down

IFR - Instrument Flight Rules; ref to Inst

VMC - Visual Meteorological Conditions (Fly VFR or IFR)
IMC - Instrument Conditions (UAS CANNOT Fly) } Cons

Class A (Ultra high) 18000 FT → 60,000 CNR CHARTS



↳ We only worry about B touching ground
C touching ground + Some E
D touching ground

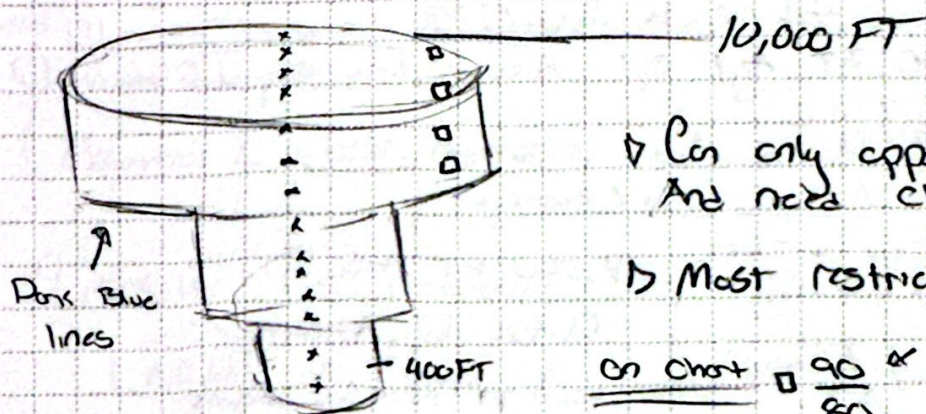
CLASS A/B

Class A is at 18,000 FT. You won't fly here ever.

Class B "For busy" - Setup around busiest Airports in the nation

↳ LARGE AIRCRAFT

Generally From Ground to 10,000 MSL



↳ Most restrictive type

On Chart $\square \frac{90}{80}$ at End 9,000 FT MSL
R Start at 8,000 FT

↳ $\frac{90}{80}$ - Peak
SFC - Surface

[WWW.SKYVECTOR.COM For CHARTS]

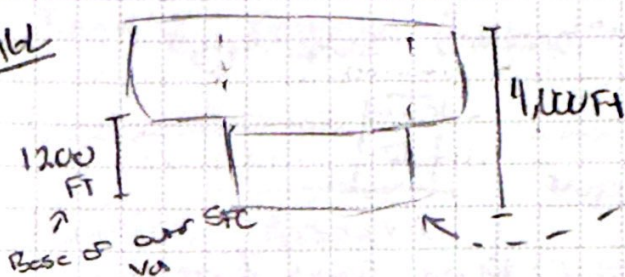
Class C Airports

↳ Setup around towered Airports of less density than B

Inner cyl 5 nm rad SFC to 4000 FT AGL

Outer cyl 10 nm From 1200 FT To 4000 AGL

AGL



↳ Manned & unmanned need Approval

↳ Solid Magenta AGL

CHART Always shows MSL so a city 5300 FT Above Sea has contour volume $\frac{94}{SFC}$

So 4000 FT MSL to surface is 4,000 FT AGL to SFC

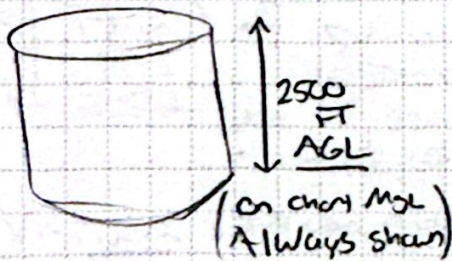
Mode C veil is the ultrathin Magenta (no effect on VAS Pilot say Mode C)

I & Higher Airspace on top of the class C space, Top is the bottom of the other space of Differing space

2 Airspaces of same class merge



[Class D] - Single 2500 FT AGL cyl Around Day only TOWERED



↳ Manned And Unmanned Need Authorization / Approval



7,500 FT MSL

CLASS D AIRSPACE

(5000 FT From Sea level

And 2500 FT AGL)

DASHED BLUE

To see how high up an airport is Above Sea level look at chart # w/ XXXX*L $\swarrow$ MSL

All displayed Airspace is Always MSL

Class E (most voluminous)

↳ Everything That is Controlled but not A B C or D

Starts around 1200 FT and exist almost everywhere. ABCD Eat into class E

↳ 1200 FT is by far most common but AISC = 700 FT

• - SFC

Class E2 is the only one you need Avn (unmanned only)?

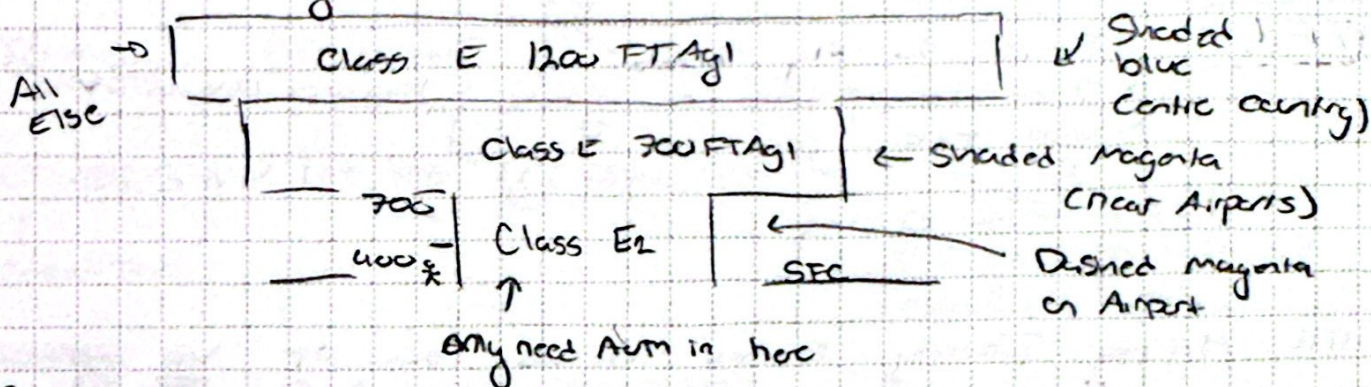
↳ Surface of Airport

Shaded blue line All around (Class E)

↳ Always 1,200 FT Agl

Shaded magenta line Class E Starts at 700 FT Agl

↳ Dashed magenta, class E From surface up (Airports)
(this is the only one we need clearance for)



↳ No Avn in Dashed magenta attached to a dashed Blue (class D) Airspace Since this is a class D extension (called class E1)

↳ Extension to class C (Solid magenta) is E3 no approval needed

2 methods For Approval For Controlled Airspace

LAANC → Instant Approval (near Airports)

↳ use App like Kittyhawk / Skyward

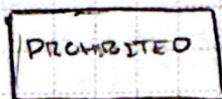
Class G $\rightarrow$ Nothing else its class G (Gulf)

$\rightarrow$ Fills all the rest, not marked

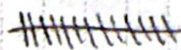
$\rightarrow$ Starts at Surface and goes up to next marked Airsp

Special Use Airspace (Don't enter)

Prohibited
(Always)



Restricted
(Not on)

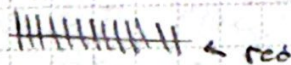


$\rightarrow$ Blue

Warning (usually
out on coast)

W

MOA (military) EXTREME CAUTION



$\leftarrow$ red

Alert Area - Pilot training / Aerobatic ALERT

CFA - Controlled Firing (has its own Spotters not charted)

TFR's

$\rightarrow$ Temp No Fly Zones

$\rightarrow$ Prohibits people on ground

$\rightarrow$ VIP TFR, pres

ISSUED BY NOTAMS

{TFR.Faa.gov}

MTR - Military Training routes - Below 1500 FT VR $\rightarrow$ ~~VR~~

Not Allowed to Fly in Wilderness Areas / Nat. Parks



[Typical FAA Questions]

When class D Towered Closes for Te day $\rightarrow$
Reverts to class E

Warning shown is class Gulf until class E

Combed blue line = Restricted Areas

[Charts] PHACK 16-2

Charts are valid 56 days

Sectional → Larger scale

Terminal → Zoomed Into Busy Class B

World Area → State-Sized, Very large

} Types

Left Side Shows Symbols, Arsp. Effective Dates, Freqs MSL

MEF - Highest MSL height in a region

12⁵
↑

13⁰
↑

08
↑

12,500

13,000

8000

Controlled Airports → BLUE (X)

Un-Controlled Airport → Magenta (1)

⊗ Airfield (R) private ⊕ Fuel

CT -125.3 * ← Port time
↑
Control TWR

(C) CTAF Talk Freq

RP 3R

↑
Right Portion of 3R
(Standard is left)

⬢ VOR (ground based waypoints)

Straight line Segments From VOR To VOR → Victor Airways

└ 8 miles wide (Blue shaded lines extending radially)

SYMBOLS



Class E Starts 1200 FT AGL
All else below Class G

A Above 2000 FT AGL

Λ Above 1000 FT AGL

MH group

⚡ High intensity light

2049 ← height MSL

1149 ← height AGL

◆ Stadium

-A-A- Powerline

Typical FAN

① Why is $\sqrt{}$ Important? $\rightarrow$ Indicates VFR Checkpoint, high Volume

② What Kind of Airport is $\bigcirc$? Any but hard surface Airprt

③ Airports w/ Control Wdr B C D E $\rightarrow$ BLUE

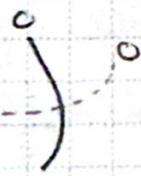
Untowered $\rightarrow$ Magenta

LATITUDE / LONGITUDE - Aero Charts $29^{\circ} 32' 5'' N \rightarrow 21.52$

60 min per degree 60 Sec per min

180° error Side

England is Meridian - Latitude



(West is Always America)

(Since meridian is the eng town Greenwich)

lines of longitude span $|||||$

lines of latitude span $|||$

} lines spaced 30 mins out

IF YOU HAVE DECIMALS its base 10, of deg Convert to base 60

Remember Weather is AWOS (untowered) or
ATIS (towered)

Weather Theory [Pmax ch 12]

Aircraft Perform differently Based on Temp / Pressure

▷ Avg Temp goes down 2°C every 1000 FT

Uneven heating of earth creates Convection

- ① Warm air Rises
- ② Cold air Sinks (Denser)

Atm Pressure (at Sea level) $1\text{atm} = 14.7\text{ psi} = 29.92\text{ inHg}$

"Standard Day"

- ① ATM (1)
- ② Sea level
- ③ 15°C
- ④ (29.92 Pressure)

Variation From Standard
= Different performance

Pressure is lost 1 inch for every 1000 FT from Sea level

Always Calculate The Feet line

Pressure Alt. is always in reference to Sea level

(Pressure - Altitude - Corrected For non-standard Pressure)

When temp is in the mix $\rightarrow$ Density Altitude

↳ Alt at what drone feels like

To get the Feet line Steps are ① Pressure Alt
② Density Alt

Note Calc of Pressure Alt is a Step
to getting to Density Alt - The Alt that matters

↳ must be calculated to find perf

Vant to be at a lower density Altitude

[Aircraft Performance]

▷ Pressure - higher is better

▷ Temperature - lower is better

▷ Humidity - lower is better

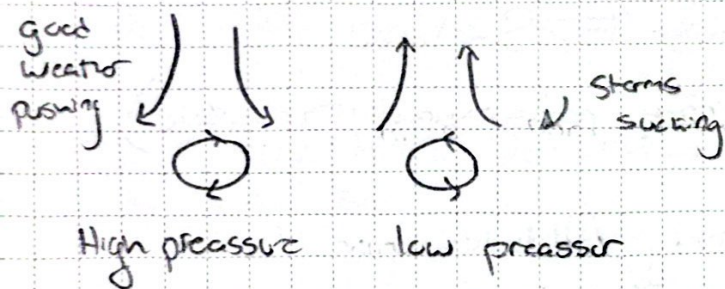
Higher density Altitude → longer takeoff / landing
Shallower rate of climb
Can't fly as high
Payload decreased
Worse controllability

[Wind Theory]

← Wind →

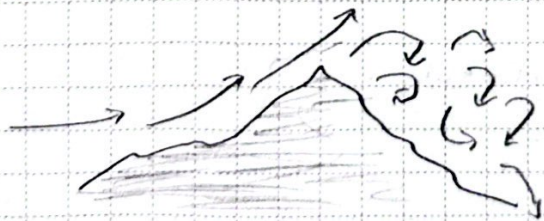
↑
Convective
current
↓

like Topo maps we have Isobar maps



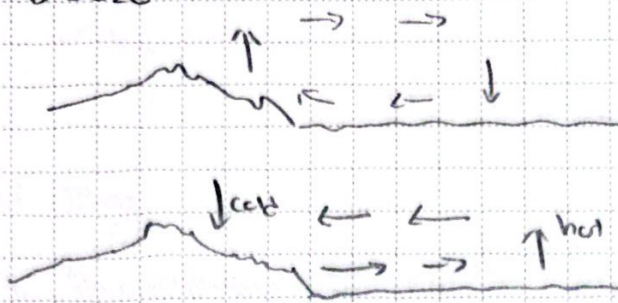
Heat causes current, over rocks/sand, bumpy turbulence currents
over Trees / grass less convection pockets

Mountains and buildings channel wind!



Circulation Patterns

▷ Sea breeze



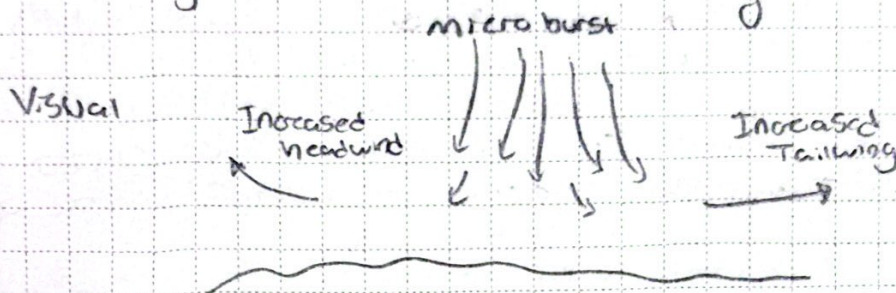
DAY

(Land hotter than Water here)

Night (opposite)

Low-Level Windshear ~

▷ Sudden change in wind direction (during Thunderstorms)



Temp / Dew Point - Visibility

Dew point, - Saturation of Air mass (Reported in ATIS / AWOS)
(Temp of chilling for Dew)

Closer Dew point is to temp, better chance for poor visibility and weather issue

↳ Frost if dew point is below freezing

Air gets Saturated When we cool an Air mass to a set dew temp

Fog is cloud on ground

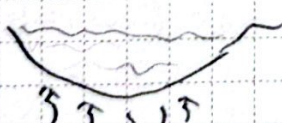
RADIATION
FOG

(valley fog)

low Airflow

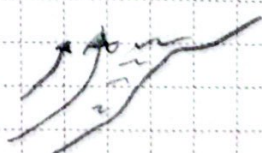
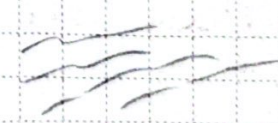
Advection
FOG

(Sea Fog)



ICE FOG
(-25°F)

upslope fog
(cooling off w/ Alt)

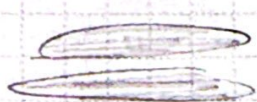


Clouds How to predict weather

Types of clouds are formed by stability of air mass

[Nimbus = rain cloud]

[Cumulonimbus → Rain + Turbulence Worst conditions]



Lenticular Cloud (Almond shape)

↳ Fast air moves

Advection → happens when an air mass moves (NEED wind in land from the coast in winter like upslope)

low level turbulence can occur and icing can be core
Hazardous in → Steam Fog

Clouds That indicate Convective turbulence

Ceiling (How many clouds)

Clear → CLR / SKC

Few → FEW

Scattered → SCT

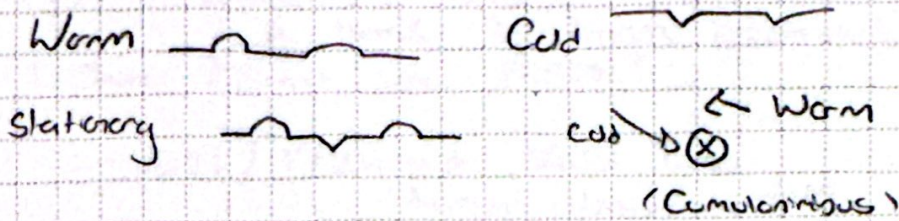
{ Broken → BKN
Overcast → OVC }

only these are ceiling levels

Visibility is horz distance

Stratiform clouds and Fog are Stable Air (Just bad vis)

Multi-State Sized Air Masses - Fronts



Structural icing

↳ Fly Through Visible Moisture (Don't Do It)

Stable Air = Stratiform Clouds

Begin Mature Stage = rainfall

Unstable Air = good SFC visibility

Change in Wind Direction = Flying across a Front

mature stage = Thunderstorm peak intensity

Cumulus stage of Thunderstorm = updrafts

Characteristics of Stable Air = Poor Vis + Steady precip

Weather Services [PHACK 13]

Two Forms → Report (Current) Forecast (to come)

		Ceiling	Visibility
OK {	VFR	> 3000ft	> 5 SM
	MVFR	1-3,000ft	3-5 SM
Ab {	IFR	< 1,000ft	< 3 SM

aviationWeather.gov / Kittyhawk / 1-800-WX-Brief

FSS Weather Briefs

Standard - Full day

Abbreviated - More current

Surface Weather Observations

▷ AWOS ▷ ASOS (Automated report of Small Area)

↳ out of this

[METAR] Standardized Meteorological report

EX KPRC 161853Z 20016G22KT 10SM CLR
19/M15 A3003 RMK A02 SLP103
TO1891150

KPRC → Airport Identifiers (K is America)

161853Z → 18:53 Zulu time on 16th Day of Month

200 16G 22KT ← Knots (max) (ALWAYS TRUE N)
↑ ↑
Wind direction gusting 16 (steady)

10SM → VIS

CLR → Ceiling

} VIS + Ceiling

→ BKN 000 (accrpt)

* 19 / M15 * Temp + Dew

↑ ↑
deg C° -15° DEW point

A 3003 * 3003 set

↑
Altimeter setting

RMK = Remarks, A02 = Precipitation SLP, Sea level pressure

[-SN Snow

[\$ Station needs repair, be Careful!

[5 G 17 KT → Wind Steady At 5 gusts to 17 KT

TAF - LARGER AIRPORTS 4-Times A Day

L Same Format AS METAR

1621 / 1724 & Valid Time

Note VFR is less Than 5sm and BKN or OVC Ceilings 3010

P = greater Than

First # 1218 / 1324 & is "Valid Period"

[ADM - Aeronautical decision Making]

Decision making process required to make a/c decisions

80% OF accidents are human factors
50% OF accidents are takeoff / landing

STEPS

- ① Identify personal attitudes
- ② Learn techniques to modify behavior
- ③ Learn to recognize and cope w/ stress
- ④ Develop risk assessment skills
- ⑤ USE All available resources
- ⑥ Evaluate the effectiveness of your ADM skills

Crew resource management - effective use of All resources

Single pilot resource management use

- ADM
- Risk Management
- Task Management
- Automation Management
- Situational Awareness

Hazard → Something happens (Neutral)

Risk → Assigned Value of a hazard

Attitudes (negative) + Antidote

- | | | |
|-------------------|--------------------------------|---|
| ① Anti-Authority | • Do not like to be told rules | • Follow Rules |
| ② Impulsivity | • Need to operate quick | • Slow down |
| ③ Invulnerability | • Won't happen to me | • Acknowledge it can |
| ④ Macho | • Prove you can do it | • Don't take chances |
| ⑤ Resignation | • What's the use attitude | • Fly that reckage to the ground. <u>Never</u> lose hope. |

RISK

USE ACRONYM

- ① Assess
- ② Mitigate

IMSAFE

- I - Illness Am I sick?
- M - Medication Am I OK to Fly?
- S - Stress Am I happy/OK?
- A - Alcohol
- F - Fatigue
- E - Emotional

4 Fundamental Principles - Practice naturalist decision making

- Accept no unnecessary risk
- Make risks at your experience level
- Weigh risk/danger cost benefits
- Integrate risk management into all you do

Operational Pitfalls

- ↳ Peer pressure
- Mindset, Tunnel vision
- Flying outside envelope
- loss of Situational Awareness
- apps w/out battery
- Checklists

Stress is Cumulative!

Common Accident Factors

- ① Plan & Pre-Flight
- ② Mismanagement of fuel/batt

Typical Questions For ADM

Always consider "Risk Management"

To Impress others "Macho"

Develop Standards of Safety (non-specific)

Recognize hazardous thoughts

Use checklists

Physiological factors PHACK CH17

The remote PIC is in charge of Their own Medical Judgement!

▷ NO Alc 0.04% or within 8 hrs

Hypo-ventilation

▷ high-stress over breathing / pass out, Slow YOUR BREATH

↳ Restore CO₂ levels by re-breathing Air

Keep mindful of fatigue - rest + Food

Dehydration + Heat Stroke

↳ Wind temp, humidity, Caffeine? (Diuretics)
To prev heat st drink 1qt per hour

▷ Anti-Allergy

▷ "Do not Oppose" drugs → use IMSAFE

DO NOT Fly on Hangovers

Vision - Scan From left to right, Stop for a sec to pick up movement

↳ Back (Away) to Front (10°, 1 Sec each)

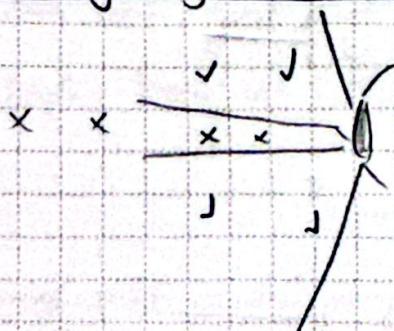
Haze makes Things Seem Further, Be Careful

Night Operations 107 (No Waiver)

▷ lighted high-bright 3sm Anti-Coll light

Vision → primary method of orientation (80%?)

During night USE PERIPHERAL VISION! Red eye Cornea!



Side of the eye to see better

[Dark Adaptation]

↳ eyes take 7-8 mins to Adjust

↳ best night vis is 25-30m

Do not look at bright lights as this resets the process

Use red light to do preflight check

Coping w/ night stressors, illusions

Depth and distance is worse & be aware

▷ Autokinisis (Bright light / Dark background) Appears moving
↳ Don't stare for too long

▷ False Horizon - lights of city don't line up, Can make you swat

Planes, red on left
green on right

Height to return at
to also avoid obstacles

Tips: Always Plan, Set a RTH Alt, Brief for emergency
Continue to monitor for LA and learn how it works
Traffic

losing VLOS - stop moving
- Verify connection
- Climb
- Listen
- Use RTH

Request To Fly at Night in Controlled Airspace E2, B, C, D

→ Determine What The Airspace is After Tower Closes
(LA Stan = Port time Tower)

→ Get Approvals From FAA drone Zone, look at Asp Kitty Hawk
(LAANC) (Air Traffic Control)

Most midair Collision Accidents occur during Clear Days

To Fly at night Submit a LAANC request *

Steady White and Flashing red, Aircraft Flying Away From you
↑
Flashing red for rear, steady for left!

Again - Military Airport, 2 white flashes between green
[Maintenance & Inspection] study guide Appx C (no Annex)

Recommendations Not regulation

Develop a maintenance inspection programme For

- Mods - Software - Repairs - overhaul - Additions } logbook

Document times between repairs and repairs done

↳ Made to Find trends & Flight time logging (may be req in Future)

PreFlight Check

- ① Visual
 - powerplants
 - registration
 - control station
- ② Energy + loading
 - Battery / gas
 - Calibrate compass
 - transceivers OK
- ③ Control Surfaces
 - check movement
 - Flight RTH System / Alt
 - check envelope
 - GPS Acquired (4 min)
- ④ Preps + Flight
 - inspect balance / vibration
 - heading / telem info
 - check interference

Emergency Procedures

- ▷ Plan For the Worst Contingency
- ▷ Brief All in the operation

Lithium battery Fires (Hot Conditions) Cool Your Cells! ^{Never ICE!}
Use Fire ext. Then Water
↓
kill cool

Most UAS on 2.4 & 5.8 GHz

When should you establish a maintenance protocol?
▷ when not provided by Manufacturer

Always look at Manufac. Guidance! , Inspect each Flight