

Private Pilot Acronyms to Know

v1.1

“IMSAFE” - Pilot Risk Management

I - Illness (Flying with sinus pressure is a bad idea, you can check the PHAK's Chapter 17 Aeromedical Factors for some information about why)

M - Medication (FAA has a list of approved medications for pilots on their site for operation of aircraft. This does not forbid you from taking products such as NyQuil when you're sick, but the FAA has specific guidelines on how long it must have been after you have taken the last dose before operating an airplane) https://www.faa.gov/pilots/medical_certification/media/OTCMedicationsforPilots.pdf

S - Sleep (8 hours is recommended!)

A - Alcohol (14 CFR 91.17 states you may not operate an aircraft either within 8 hours of consuming alcohol or a BAC above 0.04%)

F - Fatigue (This is a personal judgement—if you do not feel the flight can be successfully completed, simply do not fly)

E - Eating / Emotions (It is not the best idea if you fly right after a major traumatic life event and it is important to remember safety is the number one priority in the aircraft)

“PAVE” - Risk Management

P - Pilot (This consideration loops back to the “IMSAFE” checklist, ask yourself if you are healthy, legal, proficient and current, to go on this flight)

A - Aircraft (Are there any particular aircraft quirks? Have you flown this specific one before? Do you understand the avionics installed? Is there any maintenance issues? Ask yourself all about the risk associated with the aircraft itself and its configuration)

V - EnVironment (Weather is a crucial part of whether or not you can make a flight, as are runway lengths and widths as well as runway conditions)

E - External Factors / Pressures (Are passengers or “the mission” pressuring you to complete a flight that is outside of your capabilities? Make sure to stay within your realm of skills and focus on the safe outcome, even if that means scrapping a good plan, rather than succumbing to “get-there-itis”)

****The FAA has a personal minimums checklist that is a PDF and meant to be physically filled out, for check rides and your own personal minimums writing them down and reassessing them as your skills increase is important to show safety oriented flying as well as gradual skill improvements as your personal minimums change [https://www.faa.gov/files/gslac/courses/content/28/212/Personal Minimums Checklist.pdf](https://www.faa.gov/files/gslac/courses/content/28/212/Personal%20Minimums%20Checklist.pdf)**

“NWKRAFT” - Preflight Planning (14 CFR 91.103)

N - NOTAMs (The information provided in various types of NOTAMs is critical to safety of flight. These can be as simple as a 200' tall tower 3.2 NM from your departure location, or as critical as all the runways at your destination being completely closed)

W - Weather (The significance of weather is kind of obvious, this can be as simple as wind or delve into the complexity of clouds, visibility, how that affects the definition of VFR conditions, and risks of icing)

K - Known ATC Delays (Not uncommon due to weather, or traffic and emergencies, all of which can even lead to airport closures, these can be checked on the FAA website) <https://www.fly.faa.gov/flyfaa/usmap.jsp?legacy=true>

R - Runway Lengths and Conditions (These can be located in Foreflight under the “runway” tab or also under the AFD (airport facilities directory) since you may need more runway for a given day than is even available!)

A - Alternates Available (If by chance an airplane lands before you and has an accident, closing the runway at the airport you intended for destination, planning for an alternate might be a good idea for fuel requirements and knowing that the runway is an appropriate length for your airplane)

F - Fuel Requirements (14 CFR 91.151 for VFR) (Do you need lots or a little bit of fuel for your mission? 91.151 states during the day a 30 minute fuel reserve at a cruise power setting is required for planning purposes, and 45 minutes for VFR night even after you have calculated to get to your destination)

T - Takeoff and Landing Distances (Calculated with the performance tables and charts located in your aircrafts POH it might be good to know that your airplane can safely get off the ground and clear obstacles at the end of the runway)

“AV1ATE” - Airworthiness

A - Annual Inspection (Every year all aircraft get an inspection known as an annual inspection which is done by an A&P / IA mechanic to approve condition and airworthiness of the aircraft)

V - Very High Frequency Omni-Directional Range (VOR) Check (IFR Only) (Bench tested by a maintenance shop or in flight tested by a pilot, every 30 days for IFR flying a VOR check must be completed on an aircraft with a VOR system)

1 - 100 Hour Inspection (For aircraft for hire, like our flight school rentals, every 100 hours the aircraft must get inspected by an A&P mechanic (NOT IA) for condition and overall airworthiness of the aircraft, most often 100 hour inspections coincide with oil changes)

A - Altimeter / Static Inspection (IFR Only) (Every 24 calendar months an aircraft for IFR flight must undergo a static system inspection to be approved for IFR flight which is done by an approved repair station)

T - Transponder Inspection (Anytime a transponder is used in an aircraft it must be inspected every 24 calendar months by an approved repair station)

E - Emergency Locator Transmitter (ELT) Inspection (The ELT battery is inspected or replaced either every 12 calendar months, 1/2 the battery half life, or 1 hour of cumulative use)

“ARROW” - Required Documents

A - Airworthiness (Stored inside the aircraft, airworthiness certificates are issued by the manufacturer when the aircraft is built and do not have a specific expiry date—they are only invalid when the aircraft is not appropriately maintained to an airworthy state)

R - Registration (Valid for 7 years federally, the registration certificate is issued by the FAA and stored inside the airplane—it is important to note that on top of the national registration that some states as well have registration for aircraft to compliment the national one)

R - Radio Station Certificate (Not required unless flying internationally, most flight school airplanes do not have radio station permits—however these do not expire and are also inside the aircraft)

O - Operating Limitations (This is the POH and often GPS supplement as well is inside the aircraft during its operation this is meant to be used for emergencies or if there are technical problems in flight. Both of these manuals are specific to the serial numbers / aircraft tail number and cannot be changed around with another document from another aircraft of the same type)

W - Weight and Balance (This is the official aircraft weight and balance performed by putting the airplane on scales and actually weighing it. This is done by an approved maintenance station and has no expiry date, but when major repair is done to an airplane it is ideal to have the aircraft re-weighed since adding and removing equipment can heavily impact the weight and CG of an aircraft)

“SAFETY” - Passenger Briefing

S - Seats and Seatbelts (Let your passengers know how to adjust their seats, their seatbelts and what phases of flight are required to wear the seatbelt (taxi, takeoff and landing))

A - Air Vents (Inform passengers how to adjust environmental so they do not bother you during critical phases of flight)

F - Fire Extinguisher (Inform the passenger of the position and usage of the aircraft's fire extinguisher if you have one, this way they can be some help in a cabin fire emergency while you the PIC maintain control of the aircraft)

E - Emergency Exits (Depending on the model of airplane, the doors may operate differently and there might only be one emergency exit for your passengers to use. Inform them of how to use the doors and windows in case of an accident where you the PIC might be incapacitated)

T - Traffic and Talking (During the critical phases of flight (taxi, takeoff and landing))

Y - Your Questions (Make sure to tell the passenger it is okay to ask questions as often the flight environment will drive passengers to be quiet and not mention concerns or questions they have)

“MCPRAWN” - Special Use Airspaces

M - Military Operating Areas (MOA) (These areas are denoted by a magenta toothed line on the VFR sectional chart and are specially noted to separate IFR traffic from various military operations—this is critical since the military may be performing aerobatic and low altitude high speed maneuvers that may be a hazard. As a VFR pilot you may enter them without permission, however it is important to be aware of the types of hazard that you might encounter in these areas)

C - Controlled Firing Areas (CFA) (CFAs are entirely uncharted, and dangerous to aircraft as for they are areas the military uses for firing artillery and other weaponry. These ranges have aircraft spotters, which call for ceasefires when aircraft enter their areas)

P - Prohibited (Exactly like it sounds, a prohibited area is one that an aircraft strictly cannot enter, they are blue with blue diagonal lines through them on the VFR sectional and will have a code next to them which can be researched to figure out why that area is prohibited, in short, do not fly into a prohibited area)

R - Restricted (Restricted areas are noted on the VFR sectional by a blue toothed line, and are labeled restricted. You can fly into these areas, with permission from the agency which controls it typically ahead of time—the controlling agency of the specific area is on the side of the sectional chart)

A - Alert Areas (Alert areas are very common in the United States, and they have the same sectional marking as a MOA, the magenta toothed line, however they are labeled as Alert Areas instead. These can involve all sorts of activities, some as simple as high levels of flight training in a specific area, and the information for each can be found on the side of the sectional chart)

W - Warning Areas (Warning areas are labeled like a restricted area on the VFR sectional, with the blue toothed line. Most often they are located off the coastline and can be seen out over the water. Most often due to the glide range of small GA aircraft, these are not a hazard to you, the private pilot—but it is important to know what occurs inside this type of airspace. They contain military jets performing high speed aerobatics at all altitudes including flight at excess of mach 1. Air to surface and surface to surface engagements with live ammunition, as well as

electronic warfare equipment that may adversely affect your aircraft. You take the responsibility of confirming if this area is hot or not before entering it—ATC does not help vector you through this area)

N - National Security (Marked with a thick dashed magenta line, national security areas are as simple as you can imagine and they are to protect classified, sensitive areas of the US.

Typically they are accompanied by a magenta box noting some special information about flying through the area—which usually includes a “request” to fly above a certain altitude)

“ATOMATOF LAMES” - Required VFR Day Equipment (14 CFR 91.205 (b))

A - Altimeter (All aircraft are required to have an altimeter)

T - Tachometer (Measuring engine RPM)

O - Oil Pressure (All aircraft with engines with oil systems (electric aircraft excluded) are required to have an oil pressure gauge)

M - Manifold Pressure (Uniquely, aircraft defined as having “altitude engines” by 91.205 must have a manifold pressure gauge—an altitude engine is one that has either a turbo or supercharger, which is why our C172s do not have manifold pressure gauges)

A - Airspeed (All aircraft are required to have an airspeed indicator, even if as rudimentary as a float ball and tube positioned on the wing)

T - Temperature (Liquid Cooled Engines) (For a liquid cooled engine, a temperature gauge must be installed)

O - Oil Temperature (Just like an oil pressure gauge, the aircraft with an oil system must have an oil temperature gauge)

F - Fuel Indicators (There must be some sort of fuel indicator on all airplanes, regardless of style of fuel gauge for each tank)

L - Landing Gear Position Indicator (If the aircraft has retractable gear, some sort of indicator is required to indicate the position of the gear—this is most often installed as lights on the panel for each landing gear noting green lights when down and locked)

A - Anti-Collision Lights (For small airplanes certificated after March 11, 1996 the aircraft must have either a red or aviation white anti-collision light system)

M - Magnetic Compass (Magnetic compass must be instrument panel mounted—not one of the survival style ones you can keep in your pocket)

E - Emergency Locator Transmitter (ELT) (Must be installed and operational in GA airplanes like ours at the flight school)

S - Safety Belts (Seatbelts with metal to metal connections are required to be worn for any occupant above the age of 2, aircraft manufactured after July 18, 1978 must have a shoulder harness system for both of the front seats)

“FLAPS” - Required VFR Night Equipment (14 CFR 91.205 (c))

F - Fuses (Or Circuit Breakers) (Either a spare set total or three of each type is required of fuses which must be accessible to the pilot in flight, however if the aircraft only has circuit breakers no fuses are required)

L - Landing Light (If For Hire) (A landing light is required if the aircraft is for hire—which is why flight schools must have operational landing lights to fly at night since the aircraft, being rented to you, is for hire)

A - Anti-Collision Lights (These can be the same anti-collision lights as listed in ATOMATOF LAMES)

P - Position Lights (These are the green light located on the right wingtip, the red light located on the left wingtip, and the white light located usually on the bottom of the vertical stabilizer)

S - Source of Power (Generator or Alternator Usually) (Whatever source of power is being used it must be enough for all the electrical equipment installed as well as the aircraft's radios)

****FLAPS** is in addition to the ATOMATOFLAMES acronym, so for VFR at night (the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time—typically this is about 30~minutes after sunset) you need both the ATOMATOFLAMES + FLAPS acronyms of equipment to be legal for flight

“ATAPERPDLL” - Inoperative Equipment Flow

A - Airworthiness (Specific to the aircraft does the airworthiness issuance specify if the inop equipment must be operational for the airworthiness to be valid)

T - Type Certificate Data Sheet (TCDS) (Does the TCDS of the aircraft require equipment to be operational? Example: the TCDS may say flaps travel from 0 to 40 degrees, therefore to be airworthy the flaps almost must be able to travel from 0 to 40 degrees)

A - Airworthiness Directive (ADs) (Aircraft have ADs issued from the FAA—they are complied with by maintenance and noted in the logbooks. Does the equipment discovered as inop need to be operational to comply with an AD?)

P - Pilots Operating Handbook (POH) (Is there anything in the POH that states that the equipment must be operational to be airworthy for the type of flight being done?)

E - Equipment List (or Kinds of Equipment List (KOEL)) (Is there anything in the EL or KOEL that states that any specific piece of equipment is needed for the type of flight?)

R - Regulations (What do the regulations for the type of flight say? For example, day VFR, we comply with 91.205 aka ATOMATOFLAMES)

P - Placard (Label the equipment “INOP”)

D - Deactivate (Turn it off, or pull the appropriate breaker)

L - Log (Add it to the aircraft maintenance logbooks that this equipment is no longer operational, this is to be signed and dated with your pilot certificate number)

L - Legal (The aircraft is now legal for flight)

****This flow** is to be followed in order to determine for the type of flight being made, VFR day, night or IFR, if a piece of equipment is located as broken or not working what to use to determine if the airplane is still legal, and how to address it appropriately

“ABCDE” - Engine Out Emergency Checklist

A - Airspeed (What is best glide for your airplane? Shoot for that airspeed, it is denoted as V_g , and fly at that since it will prolong your distance you are able to travel over the ground as well as time in the air to troubleshoot the airplane to try and restore your engine)

B - Best Place to Land (Where are you going to land? There are a few different perspectives to this, but the number one choice that you should have is some sort of runway. You can spot outside and try and see a runway visibly, or you can use the “nearest” function on the GPS. Foreflight can help with this too! If that is not an option, a flat open field near civilization is a good idea—NOT A ROAD. Roads have invisible hazards that you cannot get away from until far too late, such as, power lines, do not forget that this landing is one you cannot make a go-around from. You get one shot at this. Roads also have cars, and as a driver, you look left and right at a stop sign but think about how often you look up for airplanes landing off field)

C - Checklist (To troubleshoot your engine there is some you can do, the GAS memory flow is one, but if above 1000' AGL break out the physical emergency checklist and run it to try and recover the airplane. In the checklist assuming the engine cannot be restarted, there is an “off-field landing” checklist as well)

****GAS Memory Flow** (Use in lieu of the physical checklist when at or below 1000' AGL)

D - Declare Emergency (Declaring an emergency occurs on frequency 121.5—aka guard—which is monitored by ATC as well as a majority of airliners in flight, this can help with getting emergency services to your location before you even touchdown at your selected field)

E - Emergency Locator Transmitter (ELT) (Activate the ELT in flight, the switch is often on the instrument panel and has either an “arm” or “on” position which allows you to turn on the ELT which broadcasts a tone over 121.5 as well as makes a loud sound inside the aircraft, so your position can be located after the accident)

“GAS” - Engine Troubleshoot Memory Flow

G - Gas (In small GA airplanes, there are not many items in the cockpit that you can change to affect the flow of fuel to the engine, but there are typically 3 you can change, mixture full, fuel pump (if installed) on, and or switch fuel tanks)

A - Air (How much air is the engine getting? Is it enough for it to run? You can check the throttle for airflow to the engine, as well as turn on carb heat or alternate air in case of possible induction icing)

S - Spark (Check the magnetos, there is a chance that the airplane can fly on the left or right magneto—and maybe not both so cycle them and see)

****The items on this memory flow are the main things that cause problems with the engine in flight, as for if we have gas air and spark the engine will run**

*****This is a memory item checklist that works often for a majority of engine related issues in the aircraft even as extreme as a total failure, it is especially useful at low altitudes at and below 1000’ AGL when you may not have the time to break out the physical checklist**

“D-ICED” - Structural Ice Memory Flow

D - Declare Emergency (In our small GA aviation airplanes, Flight Into Known Icing known as FIKI is strictly prohibited due to our aircrafts lack of anti ice systems—because of this, as soon as you see or experience ice accumulating onto the wings of your aircraft it becomes an emergency)

I - Instruments (In the Cessna or Grumman, you have little anti-icing for the instruments, in this instance, you turn on the pitot heat)

C - Change Something (Typically when you enter icing conditions, climbing or descending, or turning around, whatever is most appropriate to exit the icing conditions asap)

E - Evaluate Engine (If you think you are experiencing carburetor or induction icing, it is important to consider using carb heat or alternate air. This is only an evaluate because using carb heat or alternate air can sacrifice some of your engine performance which may be a detriment when you have structural icing interfering with lift over the wings)

D - Defrost (Before the windscreen of the airplane becomes frosted over, use the defrost for the windscreen and the heat in the cockpit)

“LHAND” - Engine Specifics

L - Lycoming (This is the brand of engine in the airplane)

H - Horizontally Opposed (This means the cylinders of the engine are positioned horizontally from one another, two on the left and two on the right and oppose one another)

A - Air Cooled (Unlike modern cars, the airplane's engine is air-cooled meaning the air that is coming through the nose of the airplane and over the cylinders and cooling fins are providing the cooling to the airplane's engine)

N - Normally Aspirated (This notes that the aircraft is not turbo or supercharged—meaning the airplane breathes air without it being pressurized)

D - Direct Drive (There is no transmission or gearing to our engines, the propeller is mounted directly to the crankshaft and the engine spins as fast as the propeller does)

“PARE” - High Wing Spin Recovery

P - Power Idle (When in a spin, the aircraft is at a high rate of descent while still in a stall. Accelerating the high rate of descent with engine power is a bad idea, so first you reduce the power to idle in order to slow your descent rate down)

A - Ailerons Neutral (The ailerons not being neutral in a stall are likely what happened to get you into a spin in the first place, neutralize ailerons or else you will prolong and provoke continued spinning (check AFH for a good explanation aerodynamically of a spin to understand why))

R - Rudder Opposite (With both wings stalled, you cannot use the ailerons in order to get yourself out of the stall therefore you need to use the control you still have authority of, yaw which is controlled with the rudder, to decrease the rate of the spin and break the rotation)

E - Elevator Down (Pushing the elevator down will allow you to force the wing to start flying again, however, it is important to recognize that you will create an accelerated dive situation and the descent will increase, but once in a stable dive the recovery is slowly to pull out)

“DVMONA” - Compass Errors

D - Deviation (Various electronic equipment in our airplane creates its own magnetic field, which therefore affects the magnetic compass even while in flight. This is combated by using a compass card, usually on the panel of the airplane, showing how the headings on the compass may be inaccurate from actual magnetic north (it might say FOR heading 360 FLY 354))

V - Variation (We know that true north and magnetic north are not in the same geographic location, because of this on the VFR sectional we use magenta dashed lines that run randomly across the map as a way to factor this in. These lines are called isogonic lines, there is one running vertically through the center of Galveston Bay for 2 degrees E. Since “east is least west is best” we would subtract 2 degrees from a TRUE heading to get a MAGNETIC heading. Example, if we wanted to fly due east at 090, we would subtract 2, to get 088, and fly that with the compass in the airplane)

M - Magnetic Dip (Due to the direction of magnetic flux lines, the further toward the poles we are the more severely we experience magnetic dip, the compass will always try and point toward the bottom of the pole—even when it is under the earth. So when turning, you need to anticipate the dip of the compass card pointing toward the pole which is downward below you, so you overshoot or undershoot your target heading)

O - Oscillation (Compasses should be full of fluid, not discolored and without bubbles, this fluid is to help minimize oscillation—its a combination of other errors causing the card to bounce to vary from a specific heading, so just use an average of where the compass is lying)

N - Northerly Turning Errors (The vertical component of the earths magnetic field pulls the compass card when in a turn, causing the turn to either lag or lead the actual aircraft heading UNOS acronym)

A - Acceleration Errors (Since there is as weight, as compensation for magnetic dip, on the north side of a compass card it causes inertial issues when accelerating and decelerating. If on a heading of 090 or 270 for example, and the airplane accelerates, the compass will show a turn to the north until the speed stabilizes. ANDS acronym)

“ANDS” and “UNOS” - Acceleration and Northerly Turning Errors for Magnetic Compasses

A - Accelerate

N - North

D - Decelerate

S - South

****When you decelerate or slow down in the airplane, the compass will show a slight southerly turn, and will show a slight northerly turn when you accelerate or gain speed.**

U - Undershoot

N - North

O - Overshoot

S - South

****When making a turn toward a more southerly or more northerly heading it is important to know on the compass if you should overshoot or undershoot your target heading. If turning from 090 to 180, you would overshoot this heading (overshoot south). How much may you ask? There is a small formula, $1/2 \text{ latitude} + 15 = \text{overshoot number}$. Example, here in Houston we are about on the 30 degree North latitude, meaning $1/2 \text{ of } 30 = 15, + 15 = 30 \text{ degrees to be overshoot}$. If you turn to 180, you will have to turn the airplane to the heading of 210, before the compass stabilizes once you are level and will show 180 again.**

“GUMPS” - Before Landing Memory Flow Abeam 1000’ers

G - Gauges (Confirm that you want to see in front of you, check your gauges and confirm good indications)

U - Undercarriage (Gear down, locked confirming 3 greens—in the Cessna we cannot move the gear, however, undercarriage also denotes the flap system so be sure to add flaps in now)

M - Mixture (Full rich for best power and landing)

P - Prop or Power (Full forward on the blue prop lever, and adjust throttle as necessary)

S - Seatbelts (Locked and secure for landing)

“DECIDE” - Aeronautical Decision Making Process

D - Detect (Discover that there is a problem and find out what that is specifically)

E - Estimate (Do you need to counter this issue or interact with it)

C - Choose (Pick a desired outcome)

I - Identify (Consider some actions to control or manage the detected problem or change)

D - Do (Perform or execute the chosen plan)

E - Evaluate (Recognize the outcome of the desired change)

“CCCCC” - Six C’s for Lost Procedure

C - Circle (It is best to stay in the area which you have recognized you have become lost at. Flying further off course will not help you orient yourself if you get away from recognizable VFR points you might know)

C - Confess (Admit to yourself you might be lost and need some assistance from an outside party. Make sure to write down the time you have become lost, and avoid stressing out and convincing yourself you might be lost when in actuality you are not)

C - Climb (With extra altitude comes extra visibility, as well as better radio reception to try and get ahold of ATC or utilize some sort of NAVAID)

C - Conserve (Fuel and time are your friend here, lean your mixture and fly at an RPM for best fuel economy to preserve the amount of time you have to reorient yourself—be sure to note the amount of fuel you have on board at time of recognizing you are lost so you do not risk running out of fuel)

C - Communicate (Try and reach ATC in the area, they can vector you to an area you might be familiar with. You can use all channels and NAVAIDS. If really needed, squawk 7700 (being lost is an emergency) and make a “PAN-PAN PAN-PAN” report on frequency 121.5)

C - Comply (If you contact ATC and request their assistance, comply with all their instructions you do not risk a midair collision with other traffic)

“CCCC” - Four C’s for Go-Arounds

C - Cram (First step to recovering from a bad landing is go full power, no ifs, ands or buts—be sure to maintain positive control of the airplane since with full flaps in, the nose will pitch up significantly and quickly put the aircraft into or near a stall while close to the ground)

C - Climb (Once you’re flying forward and no longer sinking to the ground—establish a SLIGHT climb attitude)

C - Clean (Bring up the first 10 degrees of flaps and continue to climb—once established in a POSITIVE rate of climb on the VSI you can bring up the remaining flaps to return to flaps 0)

C - Call (Whether in a towered environment or an un-towered one, make it known that you are going around from your landing)

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