HOLLADAY AVIATION

AQP4GA

Advanced Qualification Program

For General Aviation

What Is AQP4GA? Serious Fun!

At Holladay Aviation, we believe that serious, safety focused flight training can and should be fun. Our instructors don't rubber-stamp endorsements or sugar coat poor performance just to make pilots feel better. We encourage our pilots to demand better of themselves, to bring everything they've got to each and every flight. You don't have to be a Top Gun to earn our respect, but humility and self awareness goes a long way. We emphasize risk management and good decision making. When we're safe, we have fun!

It doesn't matter whether you're a 20-hour student pilot on your first solo flight, or a 2,000-hour commercial pilot on a trip across the country with your family. The Pilot In Command is responsible for the safe outcome of the flight, no matter what happens.

Train like your life depends on it. Because it does!

History of AQP

The airlines and most charter operators of large aircraft design and implement their own training and testing programs under an FAA program called AQP, or Advanced Qualification Program. For more information about the FAA and AQP see https://www.faa.gov/training_testing/training/aqp or visit FAA.gov and search for AQP. Under AQP, each operator gets to determine the content of their training program, as well as how testing is conducted.

According to the FAA, "The primary goal of AQP is to achieve the highest possible standard of individual and crew performance. In order to achieve this goal, AQP seeks to reduce the probability of crew-related errors by aligning training and evaluation requirements more closely with the known causes of human error."

In other words, the FAA has a system in place that allows air carrier operators to evaluate and address their own safety concerns in a way that fits their operation. This is exactly what AQP for General Aviation seeks to accomplish.

Fatal Accident Data: GA vs. Airlines

The airlines historically have had an enviable safety record compared to general aviation, largely due to these data-driven AQP training protocols. Most general aviation accidents are due to pilot error, and could be prevented with more appropriate training protocols. For example, the airlines focus on stall prevention, whereas general aviation tends to focus on stall recognition and recovery.

The following is a side-by-side comparison of accident rates in General Aviation (GA) versus the Airlines (part 121) from 2011 through 2018.

YEAR	All GA Accidents	Fatal GA Accidents	All GA Accidents Per 100K Flt Hrs	Fatal GA Accidents Per 100K Flt Hrs	Total GA Fatalities	Part 121 Fatalities
2011	1469	266	6.121	1.202	448	0
2012	1473	273	7.039	1.302	440	0
2013	1224	221	6.258	1.118	390	0
2014	1223	225	6.229	1.299	424	0
2015	1210	230	5.851	1.098	378	0
2016	1267	213	5.934	0.984	386	0
2017	1233	203	5.672	0.935	331	0
2018	1275	225	5.876	1.029	381	1
				TOTAL FATALITIES	**3,178**	**1**

For more information see:
https://www.ntsb.gov/news/press-releases/Pages/NR20191114.aspx

How Can We Do Better?

At Holladay Aviation, we view flight training as an opportunity to improve flight safety by emphasizing those knowledge and skills areas where industry data shows general aviation pilots tend to struggle the most:

- Little to no awareness of aircraft takeoff and landing performance charts, runway required for takeoff, and runway length available (91.103)
- Inability to recognize and respond to poor aircraft performance or a loss of thrust on takeoff (rejected takeoff)
- Distractions and loss of control while maneuvering during the departure and arrival phases of flight (traffic, wind, birds, clouds, ATC communications)
- Little to no planning for a loss of thrust or complete engine failure immediately after takeoff (Is a landing straight ahead on the runway or airport property even possible? Where to land off airport property? At what altitude is a turn back to the runway feasible and how to execute this maneuver safely?)
- Improper crosswind landing technique and subsequent loss of control during landing
- Improper go-around technique and subsequent loss of control
- Poor understanding of aerodynamics and aircraft behavior, especially with regard to angle of attack, ground effect, and adverse yaw
- Failure to visually clear the area before turning or maneuvering in the traffic pattern
- Failure to apply back pressure on the yoke during taxi, takeoff and landing, resulting in excessive front end vibration and nose wheel shimmy (wear and tear on the airframe)
- Poor understanding of aircraft systems
- Poor understanding of the factors that contribute to the formation of carburetor ice, and how to recognize carburetor ice formation

These areas are emphasized in ALL of our training programs including:

- Flight reviews and aircraft rental checkouts for certificated pilots
- Instrument proficiency checks
- Student pilot solos
- Practical test preparation for all certificates and ratings

The FAA Airman Certification Standards are *minimum government standards.* Passing a check ride does not mean you are going to be a safe pilot. Flight safety is a lifestyle, a mental paradigm, perhaps even a religion. You've probably heard the old phrase, half of the people graduated in the bottom 50 percent of their class. Don't be that pilot. Just barely passing is not acceptable when lives are on the line.

Demand Better Of Yourself.

Train Until You Can't Get It Wrong,
Not Until You Just Barely Get It Right.

The AQP Flight Review

In general aviation, all initial training and testing criteria, as well as some recurrent training criteria (like the IPC), are well defined by FAA in FAR Parts 61 and 141 and the ACS – except for the flight review as required by FAR 61.56:

https://www.ecfr.gov/current/title-14/chapter-I/subchapter-D/part-61/subpart-A/section-61.56

> **61.56 Flight review.**
> (a) Except as provided in paragraphs (b) and (f) of this section, a flight review consists of a minimum of 1 hour of flight training and 1 hour of ground training. The review must include:
> (1) A review of the current general operating and flight rules of part 91 of this chapter; and
> (2) A review of those maneuvers and procedures that, at the discretion of the person giving the review, are necessary for the pilot to demonstrate the safe exercise of the privileges of the pilot certificate.

This discretion that is granted to the flight instructor by the FAA is an opportunity for the instructor to tailor the flight review to the pilot's needs and experience. This document provides a veritable smorgasbord of options for the flight review. Get creative, think outside the box, and have fun with it!

The AQP Instrument Proficiency Check (IPC)

Unlike the flight review, which allows for significant flexibility in terms of the maneuvers that are included, the IPC as specified in FAR 61.57(d) is much more detailed and specific:

https://www.ecfr.gov/current/title-14/chapter-I/subchapter-D/part-61/subpart-A#p-61.57(d)

The instrument proficiency check must consist of at least the following areas of operation:

- Air traffic control clearances and procedures;
- Flight by reference to instruments;
- Navigation systems;
- Instrument approach procedures;
- Emergency operations; and
- Postflight procedures.

These tasks are defined in the Instrument Rating Airman Certification Standards (ACS):

https://www.faa.gov/training_testing/testing/acs/media/instrument_rating_acs_change_1.pdf

Additional guidance on how to conduct an IPC is found in Advisory Circular 61-98, Currency Requirements and Guidance for the Flight Review and Instrument Proficiency Check:

https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_61-98D.pdf

Some of the AC recommendations include:

- The flight instructor should structure an IPC in a manner similar to that of the flight review, tailoring the check to the needs of the pilot.
- The IPC may be conducted under visual flight rules (VFR) or instrument flight rules (IFR) in simulated instrument conditions, or it may be under IFR in actual instrument conditions.
- As with the flight review, the flight instructor should develop a plan of action that uses realistic scenarios to organize and sequence the required tasks and maneuvers.

Some of these “realistic scenarios” should include:

- Engine failure immediately after takeoff into IMC
    - Develop personal minimums that align with the pilot’s experience and the aircraft’s capabilities. At what minimum altitude is it realistic for the pilot of that aircraft to turn back to the airport if the engine quits during the departure phase of the IFR flight? Consider making that your minimum ceiling for departure. (For you folks flying IFR in aircraft with ballistic parachute systems, consider making the BRS minimum deployment altitude your minimum ceiling for departure.)
- Engine failure in flight in IMC
- Landing straight-in on an instrument approach with a crosswind vs. circle-to-land to avoid a crosswind
- Choosing an appropriate approach speed and configuration given current weather conditions and runway length

The AQP First Solo For Student Pilots

The requirements for student pilots are specified in FAR 61.67:

https://www.ecfr.gov/current/title-14/chapter-I/subchapter-D/part-61/subpart-C/section-61.87

A student pilot must demonstrate satisfactory aeronautical knowledge on a knowledge test that must address the student pilot's knowledge of:

- Applicable sections of Part 61 and 91
- Airspace rules and procedures for the airport where the solo flight will be performed; and
- Flight characteristics and operational limitations for the make and model of aircraft to be flown.

The student's authorized instructor must administer the test, and at the conclusion of the test, review all incorrect answers with the student before authorizing that student to conduct a solo flight.

The instructor must provide and log flight training for the following maneuvers and procedures:

1. Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems
2. Taxiing or surface operations, including runups
3. Takeoffs and landings, including normal and crosswind;
4. Straight and level flight, and turns in both directions;
5. Climbs and climbing turns;

6. Airport traffic patterns, including entry and departure procedures;
7. Collision avoidance, windshear avoidance, and wake turbulence avoidance;
8. Descents, with and without turns, using high and low drag configurations;
9. Flight at various airspeeds from cruise to slow flight;
10. Stall entries from various flight attitudes and power combinations with recovery initiated at the first indication of a stall, and recovery from a full stall;
11. Emergency procedures and equipment malfunctions;
12. Ground reference maneuvers;
13. Approaches to a landing area with simulated engine malfunctions;
14. Slips to a landing; and
15. Go-arounds.

At Holladay Aviation, our pre-solo knowledge test and flight training syllabus go well above and beyond these minimum requirements. Here is sample:

> *You are doing touch and go's on Runway 23 at CRG. You planned to touch down on the 1,000-foot marker, but floated a bit further due to excessive speed, and didn't actually touch down until you were approximately abeam Taxiway B4. How many feet of runway remain ahead of you, and is this enough to take off again? Discuss.*
>
> *What is DMMS (Defined Minimum Maneuvering Speed) for your airplane and how should it be used?*

We train our students on the importance of understanding energy management and aircraft performance in a variety of flight situations.

A Very Useful V-Speed: DMMS

Most general aviation pilots are familiar with the term maneuvering speed or Va, which is defined in the FAA Pilot's Handbook of Aeronautical Knowledge as "the maximum speed at which the structural design's limit load can be imposed (either by gusts or full deflection of the control surfaces) without causing structural damage." The FAA Airplane Flying Handbook glossary defines Va as "the maximum speed where full, abrupt control movement can be used without overstressing the airframe." Maneuvering speed is also commonly associated with turbulence penetration speed, or the speed at which the airplane will stall before structural damage is incurred at the design load limit of the airframe, typically ranging from about -1.5g to +4g depending on aircraft configuration. As a point of reference, a 60-degree bank angle in level flight imposes a force of +2g. So unless you are practicing aerobatics, fly into a thunderstorm or encounter severe turbulence, you're unlikely to ever really need to worry about Va. Historically, general aviation pilots get themselves into trouble by going too slow and stalling, not by going too fast and breaking the airframe apart in flight.

What is a stall? Simply, it is the loss of lift. The stall occurs when the critical angle of attack (AOA) of the wing is exceeded. This can occur at a variety of airspeeds, flight attitudes and aircraft configurations. Some general aviation aircraft are equipped with AOA indicators, but most are not. The airspeed indicator is required equipment in all aircraft, however, and is a much more intuitive and reliable indicator of an imminent stall. DMMS is not defined in the FAA handbooks. It is the minimum safe speed for maneuvering during a landing approach. Pilots should maintain an airspeed at or above DMMS to avoid an inadvertent stall during the approach to land. Stall speed increases with bank angle in level flight, so pilots should avoid bank angles greater than 30 degrees while maneuvering in the traffic pattern. Once established on the final approach segment, the pilot may then slow the aircraft to the desired final approach speed using the desired flap setting.

DMMS can be calculated as 1.4 times the aircraft's stall speed with flaps retracted (Vs1). Example: The Cessna 172P Information Manual recommends a final approach speed of 65-75 knots with flaps up, or 60-70 knots with flaps extended to 30 degrees. The published Vs1 in a 30-degree bank level turn is 47 knots, so DMMS would be 47 x 1.4 = 65 knots. Note that Vs1 in a 45 degree bank level is 52 knots, so DMMS at that bank angle would be 73 knots. So a conservative DMMS for this aircraft is 70 knots. This means the pilot should maintain 70 knots or greater while maneuvering from downwind, base to final. Only once established on the final approach segment should the pilot then slow the aircraft to the recommended approach speed. Even though stall speed is reduced with flaps extended, thus providing a greater margin above the stall while maneuvering for final approach, using the clean configuration DMMS as an absolute minimum while maneuvering, even with the flaps extended, accounts for situations where the pilot chooses not to use flaps during the approach, such as when circling to land off of an ILS approach, or when approaching to land in gusty wind conditions.

The Private Pilot ACS for a normal approach and landing requires the applicant to "maintain manufacturer's published approach airspeed or in its absence not more than 1.3 Vs0, +10/-5 knots with gust factor applied." For the C172P, with 30 degrees of flaps and 0 bank angle, Vs0 is 33 knots x 1.3 = 43 knots, which most would agree is dangerously slow, even if the allowable 10 knots per the ACS is added to make it 53 knots. The POH for the Cessna 172P recommends a normal approach speed of 60-70 knots with flaps extended.

Questions for Pilots and Instructors

Preflight Preparation and Aeronautical Decision Making (ADM)

- What is Preflight preparation?
- What is ADM?
- Which is more important? The planning part, or the decision-making part?
- Is preflight preparation a heavily emphasized FAA check ride task?
- Is ADM a heavily emphasized FAA check ride task?
- Which is more likely to cause a fatal GA aircraft accident? Poor preflight preparation or poor decision making?
- How prevalent are fatal GA accidents due to poor ADM?
- Is the task ADM on any FAA check ride?

Before Taxi Check

- Does your plane have a Before Taxi checklist?
- Do you normally perform a Before Taxi check after start, and before moving the plane?
- What is the importance of having a Before Taxi check?
- Does the FAA ever train you or check you on the task called Before Taxi Check?
- How prevalent are GA accidents, incidents, or runway incursions due to distracted
- pilots trying to taxi and work at the same time?
- How prevalent are fatal GA accidents due to skipped or missed checklist items?
- Is the task Before Taxi Check on any FAA check ride?

Preflight Briefing

- Even while flying-single pilot, what is the value of a good Pre-Flight Briefing and or self-briefing?
- How prevalent are fatal GA accidents due to missing, or no self-briefing, and not having a plan B?
- Is the task PRE-TAKEOFF BRIEFING on any FAA check ride?

Rejected Takeoff

- During takeoff, is it possible to need to reject the takeoff?
- What are some valid reasons for a reject prior to liftoff?
- Is there such a thing as a Rejected Takeoff on any FAA single engine check ride?
- Does the FAA ever require you to plan for a Rejected Takeoff?
- How prevalent are fatal GA accidents due to faulty RTO?

Intentional or Unintentional IMC After Takeoff (I-IMC ATO / U-IMC ATO)

- During periods of low ceilings and visibility, what is the most shocking sensation to a pilot not prepared to enter the clouds?
- Describe the pilot workload or some items that might need to be done as soon as the wheels leave the ground under these conditions.
- What is the primary cause of fatal accidents immediately after takeoff and upon entering clouds?
- Does the FAA place very much emphasis on these maneuvers?
- How prevalent are fatal I-IMC ATO or U-IMC ATO GA accidents?
- Is the task I-IMC ATO OR U-IMC ATO on any FAA check ride?

Loss Of Thrust On Takeoff (LOTOT)

- In your experience, which has been more emphasized by FAA in both training, and check-rides? Stall recoveries or stall avoidance?
- The stall recovery on ANY check ride always involves using two basic elements in order to recover. What are those two basic elements?
- Have you ever been taught to practice a stall recovery without the use of power?
- Is a power not available stall recovery mentioned in any FAA training, ACS, or PTS that you know of?
- When you practice stalls for training or a check ride, what altitude do you normally use?
- In real life, and based on GA fatal accident data, what altitude does a fatal stall progression normally start at? Above 1000 AGL or below 1000 AGL?
- Even if you were extremely sharp and proficient, could you reasonably expect to recover a full stall and spin from below 1000 AGL?
- If you are not expecting an engine failure on takeoff, how much time can you expect to lose before you are able to process the event and respond due to the startle factor?
- If a pilot loses thrust (engine out) on takeoff below 1000 feet and enters stalled condition, will he/she be fully trained by FAA required training and testing to recover without the use of power?
- Does it make sense that we as pilots solely train and test up high, (with someone telling us that we are about to stall, and that power is available for recovery) and we then get into trouble without an instructor, surprised, down low, and without power available?
- During any takeoff, what is your highest risk?
- How prevalent are fatal GA accidents due to LOTOT?
- Is the task LOTOT on any FAA check ride?

Spatial Disorientation (SD)

- What is spatial Disorientation?
- Have you ever been given specific dual instruction for any rating on a task called SD?
- Have you ever had SD be tested as a task on any check ride?
- On any check ride, when you are given the task of unusual attitude recovery by an examiner, are you wearing a view limiting device for this task?
- For a check ride, when you are asked to recover from an unusual attitude, where are you expected to look? Inside at the panel, or outside at the horizon?
- If you were flying VFR and heard a controller tell you to “Maintain VFR” what does the V stand for?
- If you were flying VFR and accidently got yourself into IMC conditions and a controller told you to “Maintain VFR”, would that cause you to want to look inside at your panel, or want to look more outside to stay visual?
- Have you ever been flying and heard a controller say something like: “I know you’re VFR only, but don’t look outside. Get on those gauges and fly wings level. I’m going to help you. Even if you fly through a cloud it’s OK, I got you covered. Concentrate on wings level and steady.”
- Does it make sense then, that we as pilots solely train and test with a hood on, and with an instructor or examiner reminding us to stay on instruments. But we get into trouble without an instructor, without wearing a hood, and ATC is telling us to stay visual?
- What happens if you fly VFR into a cloud without being IFR and the FAA finds out?
- If you are in flight and you declare an emergency, is there a penalty?
- What liberties do you have available as soon as you declare an emergency?
- Is there a regulation that says this in writing?

- Do you think that pilots are generally fearful of declaring an emergency in flight?
- Upon entering clouds, (either on purpose or inadvertent) what are your flight priorities?
- How prevalent are fatal GA accidents due to SD?
- Is the task SD on any FAA checkride for GA?

Controlled Flight Into Terrain (C-FIT)

- What is C-FIT
- What does the C stand for in C-FIT?
- All crashes end up crashing into the earth somehow, there are only two ways to do this. If C-FIT is one of them, what must the other be?
- What is the main difference between controlled and uncontrolled flight into terrain?
- Since all controls are working normally in C-FIT, it must be the pilot's incorrect positioning of those controls that steers a plane into something solid and not moveable. What can pilots use to avoid C-FIT accidents?
- How prevalent are fatal GA accidents due to C-FIT?
- Is the task C-FIT / TERRAIN AVOIDANCE on any FAA GA check ride?

Loss of AHRS / Attitude Reference In Flight

- What happens when a vacuum system fails in flight?
- What instruments are normally lost with loss of vacuum or PFD?
- Is it possible to stay upright during a loss of primary horizon and heading info while in the clouds?
- Would you declare an emergency for this?
- Do you have any portable device that could help with this situation?
- How prevalent are fatal GA accidents due to loss of VACUUM or PFD in flight?
- Is the task LOSS OF VACUUM or LOSS OF PFD IN FLIGHT on any FAA check ride?

Autopilot Failure In Flight

- Are you normally fully prepared to fly the plane without an autopilot?
- If you were in IFR and lost the autopilot, would you declare an emergency?
- If you had to shoot a low approach without an autopilot but you were used to having the autopilot do it for you, would you tell ATC or declare an emergency for this approach?
- How often do fatal accidents occur where a simple autopilot failure led to an accident?
- Is AUTOPILOT FAILURE IN FLIGHT on any FAA check ride?

Loss Of Speed Awareness

- What is DMMS?
- What is this number (speed) for your airplane?
- Without calculating this for yourself, is this speed published anywhere in your POH for your airplane?
- Does having this number calculated and placarded on your airspeed indicator help to remind you of the minimum speed to fly that will always give you that 30% stall buffer?
- The DMMS speed is 1.404 x Vs1 for most GA planes. What three things does this DMMS speed represent that are very useful to a pilot both in normal and abnormal scenarios?
- While turning base to final at a 30 angle of bank in your plane and holding altitude in the turn, if you are flying exactly the DMMS speed, what percent above stall should you still be even if you have no flaps out yet?

- Once on final, is it OK to go below DMMS?
- What is the FAA's recommendation for speed on final when fully configured?
- How often do airliners stall and spin and crash due to low speed conditions?
- How often is the low speed condition a cause of fatal accidents in the pattern for GA?
- Is DMMS usage on any FAA checkride?

Mis-handled Abnormal Situation In Flight

- What is the definition of abnormal?
- What is the main danger of any abnormality, no matter how insignificant?
- Can you name three types of levels or urgency for landing while in flight?
- Do you have a memorized list of items that would cause you to declare an emergency?
- If you need to land fast at the nearest airport, would you turn the plane first in the direction of an airport, or declare an emergency first and wait for permission to turn?
- How many fatal accidents are caused by pilots that never declare an emergency and never point towards a suitable landing area?
- Is the definition of an Abnormal on any FAA checkride?
- Are the three levels of urgency on any FAA checkride?

Stabilized Approach

- What is the definition of a stabilized approach according to the FAA?
- How many fatal accidents are caused by unstable approaches?
- Of these five landing goals, which one of these is least important to you: 1) landing on speed, 2) landing in TD zone, 3) landing on centerline, 4) staying on glide path, 5) squeaky landing
- Is the task Stabilized Approach on any FAA GA check ride?

Go-Arounds

- What are some dangers of messed up go-arounds?
- Does the FAA check the Go Around task on all FAA check-rides?
- How often are messed up Go Arounds the cause of a fatal GA accident?

Scenarios for Pilots and Instructors

Spatial Disorientation: Inadvertent IMC Encounter

Scenario: This happens when a pilot gets disoriented during day or night flight while encountering deteriorating visibility or clouds. The pilot can no longer distinguish the natural horizon, and loses the ability to control the aircraft with visual cues alone. At night, it can be difficult to see lower clouds or visibility coming. Most often this is associated with flying into clouds, but not necessarily. Flying in rain, over desolate land or over open water could initiate disorientation. If the pilot contacts ATC for help and the controller instructs the pilot to “maintain VFR,” the pilot will often continue searching outside for visual cues. Without a visual reference, the pilot will quickly become disoriented and enter an increasingly tight descending turn, often called a “death spiral.” The aircraft typically hits the ground very steeply and at a very high speed.

Solution: When conditions become marginal, and before the situation deteriorates too far, confess your actual situation to ATC and declare an emergency. Your PIC emergency authority means you are legal to be in the clouds at that moment. Stop worrying about getting into trouble with the FAA, and focus on staying alive! If you have any kind of view limiting device, put it on and concentrate solely on keeping wings level and do not look outside! Much like blinders on a horse or mule, a view limiting device is calming and eliminates scary stuff from your view. A view limiting device eliminates the sensation of rush of cloud and moisture streaming past your window from your view. It’s like not looking down while on a tall ladder. Wearing a view limiting device in flight is not normally legal, but once you declare an emergency, use any and all tools available to you in order to survive the encounter. You did all of your primary training wearing a view limiting device and you did just fine in keeping the wings level at that time.

This is no different. When ATC says to “maintain VFR” reply to them: “Negative, unable to maintain VFR, mayday!” When ATC gives you instructions, try to separate out turns and climbs. If a climb is required, accomplish that before a turn if able. Confess to ATC your actual situation and IFR skill level. If you are issued a turn, do it very slowly with full concentration on that panel. Do not attempt to look outside until you are very sure that you are back in VMC conditions.

If you are not in contact with ATC use all resources to point the aircraft towards where you came from, or towards better weather. You have got to be very careful and do things very slowly during this time. Do not look away from that panel for more than a second. This procedure is critical to your survival. Practice this with a safety pilot or your CFI until you are an expert at it. This is one of the highest repeat causes of fatal accidents in general aviation. Chances of survival are not very high for a pilot in these conditions regardless of the skill level of the pilot.

https://www.youtube.com/watch?v=b7t4IR-3mSo

Intentional IMC After Takeoff

Scenario: This happens when an instrument rated pilot files an IFR flight plan and is expecting IMC conditions after takeoff. For whatever reason, the pilot becomes distracted, overloaded, or disoriented immediately after liftoff. The wreckage is typically found just off the end of the departure runway, within a few miles of the departure airport.

Solution: Consider setting a conservative minimum ceiling for departure that will give you enough time to get the airplane stabilized in the climb after takeoff, and allow you to smoothly transition from visual cues during the takeoff roll to your instrument scan before you enter IMC. In the first 1,000 feet of the climb, pay very close attention to aircraft control and consider the delay in accomplishing the following items until you are sure that you can manage an additional task:

- Flaps up
- Contact departure
- Ident
- Boost pump off
- Landing light off
- Check in with departure
- Reduce power
- Set new assigned altitude
- Set new assigned heading

It is appropriate to add the words “Single Pilot IFR” to your callsign to alert ATC that you do not wish to be overloaded after takeoff. This is similar to using “Student Pilot” after your call sign when learning to fly. You can also ask for both runway heading and a higher initial altitude before takeoff. Sometimes ATC can make a quick call and approve either or both of these for you so that you are not dealing with both a level off and a turn immediately after takeoff. Most controllers are highly experienced and eager to help if you will tell them exactly how to help you. Most of all, aviate before you navigate, navigate before you communicate. Once you communicate, you have opened up the floodgates for ATC workload and they are going to load you up with more tasks. Take your time.

ATC has overloaded many pilots seconds after takeoff from a class D airport and it is totally not necessary to sacrifice aircraft control. Set the pitch first and then make slight pitch refinements using airspeed information. If you have an autopilot, consider bringing it on line as soon as speed, altitude, and limitations allow.

Do not let anything distract you from your primary job – fly the airplane. This is an absolute killer category and ATC is a major contributing factor in many cases. This is your life. Slow down and ask for help. Do not rush to accomplish tasks ahead of aircraft control. Practice this routine every time you fly IFR.

https://youtu.be/5PZyhCWKvcI

Unintentional IMC After Takeoff

Scenario: This happens when a non-instrument rated pilot attempts a takeoff and intends to stay visual but is unable due to low clouds and poor visibility. This type of accident is typical of a pilot not expecting IMC conditions after takeoff. The pilot in this case becomes distracted, overloaded, or disoriented immediately after liftoff. The wreckage is typically found just off the end of the departure runway.

Solution: Commit to doing a thoroughly professional job obtaining weather briefings for current and forecast conditions. If you encounter IMC and are surprised, you likely made your error long before engine start. Preflight planning and ADM are skills that must be practiced on every flight. Night departures are the most

likely scenarios for being surprised by being IMC during a VFR departure. Practice this with a CFI or really good safety pilot where you rotate and have to transition immediately to panel.

Do not attempt to stay visual and lower the nose unless you are sure that you can afford to do that. Oftentimes the IMC conditions go all the way down to very close to the ground. If you come back out of the sky at 1200 FPM you will never be able to react in time.

Practice this maneuver by using a view limiting device, and consider flying with a view limiting device in case of emergency where you need to not be able to look outside at the reference that will be the cause of SD. Remember, SD is not caused by looking at your panel. It is caused by looking outside for a reference that is not there!

https://www.youtube.com/watch?v=028tTU-sZFA

Mishandled Abnormal or Emergency Situation In Flight

Scenario: An abnormal is any event in flight that is not considered normal, and that could cause a pilot to be distracted by it, or if not properly corrected, that could cause an accident. Mis-prioritizing and giving the abnormal more attention than aircraft control is often the result. If you are flying with two people up front, consider immediately declaring who is going to fly and who is going to deal with the problem. Sample problems include such things as GPS waypoint modification, attending to a system that is not normal, attending to a passenger that is needing attention, etc. Use a briefing such as; “You fly the plane, I am going to work on resetting the waypoints on this flight plan. You have ATC, you have the aircraft, etc.”

An inflight emergency is of more serious nature and can definitely cause distraction. Depending on the severity of the situation, you may need to turn the aircraft immediately toward an airport or suitable terrain. Declare an emergency if in contact with ATC. ATC will often ask if you want to declare an emergency. They cannot formally do this for you and this is their way of prompting you to do that. If landing at an airport with emergency services, ask for “all men and equipment.” This is a phrase that will alert the controller that you desire emergency services to be scrambled to the field immediately. It sometimes takes 4 to 5 minutes to get emergency fire and rescue equipment loaded and enroute to the waiting area on the field. Start this immediately.

Solution: Consider incorporating this in your next preflight briefing and discussion with your CFI. Talk about what emergencies are likely scenarios for your aircraft and your typical flying mission. Consider a flight where your CFI manufactures a sample simulated abnormal or emergency during your flight and discuss how you did. Did you turn towards an airport? Did you lose heading or altitude during the process of dealing with the abnormal? There are numerous safe options for surprise abnormalities that can add real time effects. Be aware of how distractions can cause loss of aircraft control. Generally, pilots are afraid to declare an emergency and ask for equipment. This authority granted to you is always available, but you have to ask for it!

Loss of Attitude and Heading Reference System (AHRS)

Scenario: These accidents occur when a loss of attitude and heading information (either gyroscopic or electronic AHRS) causes the pilot to have limited pitch and bank information, or perhaps none at all, and

become disoriented. Instrument rated pilots receive training on this so-called “partial panel flying” scenario, but most VFR pilots do not.

Solution: It is important for all pilots, even those flying VFR in VFR-only equipped aircraft, to become familiar with the resources and equipment available in the aircraft to maintain control in this situation.

Unstable Approach

Scenario: These accidents occur when the pilot flies an unstabilized approach and forces the plane onto the runway instead of going around. The result is usually a runway excursion.

Solution: A stabilized approach must meet these four criteria:

1. Established on a glide path. This can be VASI, PAPI, Glide Slope, LPV, or just visual cues. A constant VSI that is stable and not excessive is one indicator of being on the path.
2. Speed stabilized. Determine what your target speed is going to be prior to being on final. This will always vary according to aircraft, weight, weather, runway length and possibly more criteria.
3. On centerline. Uncommanded lateral drifts off the centerline are obvious to the pilot and cannot be accepted. Slight variances may be tolerable depending on conditions and runway width, this consideration should be acknowledged prior to commencing the approach.
4. Wheels down in the touchdown zone. Some runways are marked with a white instrument box that indicates a touchdown point. In absence of any touchdown zone markings, use the first 500 feet of the runway as your touchdown zone.

Depending on if you are in IMC or VMC, you should have all four of these criteria met at some target position on each approach, typically by 500’ AGL for a visual final approach or crossing the Final Approach Fix on an instrument approach. The solution is to know your targets and be ready and willing to go around when you do not have all four criteria totally met by the gate that you established.

Loss Of Thrust On Takeoff (LOTOT)

Scenario: The primary power plant fails during takeoff when the aircraft is lowest to the ground, and the pilot is least prepared for it. The sudden shock of the sudden loss of thrust has been proven to cause pilots to unconsciously pull aft on the yoke or stick during the brief time of confusion. The aircraft typically has between 2 and 8 seconds before the wings stall and the aircraft departs controlled flight, stalls and spins into the ground. These accidents are nearly always fatal.

Solution: Get with your best CFI and practice this up high. Go through dozens of repetitions where you lower the nose based on when you hear the engine pitch change. This is called conditioning. You are conditioning your own reflexes! Learn to associate an immediate body reaction that correlates to the sound and feel of an engine losing RPM. Prior to every takeoff, brief the departure scenario. Expect the engine to quit soon after takeoff and be ready to push the yoke or stick forward to prevent a stall and achieve best glide speed. If your ASI is placarded with a DMMS speed, try to adjust pitch for DMMS at a minimum after the failure.

https://youtu.be/l6DBXZWoH68

Loss Of Speed Awareness While Maneuvering In The Pattern

Scenario: A large percentage of GA accidents occur during clean wing (flaps retracted) maneuvering either after takeoff during the climb, or while entering the traffic pattern and turning from base to final. When a pilot becomes distracted and allows speed to decay, most GA aircraft do not have an audible or visual warning to alert the pilot that they are approaching a stall. The stall horn does activate very close to the actual stall but in most cases, it is too late. A spin often follows an aerodynamic stall. Most of these accidents happen below 1,000 AGL where even the most proficient pilot in the world would have no chance of completing a spin recovery prior to impact. Prevention is the only real tool available. Give yourself a wide buffer above the stall by placarding Vs1 x 1.404 for your aircraft right on the face of your airspeed indicator. In this document we refer to this as DMMS or defined minimum maneuvering speed. Studies have shown that this simple indicator is extremely effective in increasing a pilot's awareness of where this boundary is.

Solution: Placard your ASI with a DMMS marker and practice referring to it often while in the pattern. Take immediate corrective action any time you are in flight below DMMS speed and not on final approach. DMMS awareness leads to the prevention of low-speed condition fatal accidents.

https://www.youtube.com/watch?v=M8scVzLX9l8

Midair Collision

Scenario: This accident most often occurs in the VFR traffic pattern at non towered airports although it could happen anywhere, even at a busy towered airport. Pilots and controllers are both subject to human error. Sometimes pilots don't follow ATC instructions, and sometimes controllers issue incorrect instructions to pilots. Don't assume that just because you are flying at a towered field that you are protected from a midair collision. The impact of two aircraft in flight most often renders both unable to be controllable and results in double fatal accidents.

Solution: Always clear your turns! Do not rely on ADS-B traffic. Be proactive on the radio to both announce your position accurately, and state your intentions, and be an excellent listener. Ask for clarification from other aircraft operating at your same airport if you are unsure of their position or intentions. Question ATC if an instruction doesn't make sense or you think complying will put you in danger of a midair collision.

https://www.youtube.com/watch?v=iM3oNcQx_uU

Improperly Executed Go-Around or Missed Approach

Scenario: In an attempt to go around and abort a landing approach, the pilot incorrectly executes the go-around (or if IFR, the missed approach) maneuver and inadvertently induces a stall and/or a runway excursion. As the pilot applies full power, the pitch attitude of the airplane will increase rapidly as the aircraft attempts to initiate a climb at the last trimmed speed. If not mitigated by the pilot, this sudden increase in angle of attack can result in a stall which, coupled with the likely inadequate application of right rudder for the climb, can result in a spin.

Solution: Every pilot should practice go-arounds, initiated at various points during the landing approach. Pre-solo student pilots should practice go-arounds at altitude with their instructor before attempting it at low altitude near the runway.

https://youtu.be/mB5Hpbmq3FU

Rejected Takeoff (RTO)

Scenario: The airlines place great emphasis on RTO during training and crew briefings. Unfortunately, RTO is not a required task in the Private Pilot, Instrument Rating or Commercial Pilot ACS. If a pilot continues the takeoff roll with insufficient thrust, engine roughness or any abnormal instrument indication, sound or smell, the takeoff must be aborted immediately before the aircraft gets airborne. The objective is to keep the airplane on the ground if something is not right. But first, the pilot must know how to identify this situation.

Solution: Pilots must develop checklists appropriate to their aircraft and operating environment that easily allow them to identify anomalies during the takeoff roll, and make the decision to abort the takeoff by a well defined point during the takeoff roll if something is not right. Some common techniques are to use runway distance remaining markers, key points on the runway (such as taxiways), runway centerline stripes, or even an elapsed amount of time from throttle advance to liftoff. The airlines calculate something called an “accelerate stop distance” that requires the pilot flying to abort the takeoff if certain conditions are not satisfied by the time the aircraft travels that distance down the runway.

When practicing RTO, brief the plan of action ahead of time. At a towered airport, this should include advising the tower of your intentions. When practicing with a CFI, you can have him or her advance the throttle for you but not to full power. See if your abort parameters become obvious when you have passed a point or a certain amount of time and the plane still has not reached rotation speed.

https://www.youtube.com/watch?v=IljFUURYhaw