

Creating Consistency,
Situational Awareness,
and Safety



Increase Consistency and Situational Awareness

We all have had experiences that have taught us lessons.

Some of these lessons cost us our pride, money, and blood pressure.

We can share what we learned from these experiences.

When people prioritize safety together, it becomes an integral part of their routine, making it easier to adopt and maintain positive practices.

Increase Consistency and Situational Awareness

When HABITS are developed, the actions associated with them become automatic, requiring less conscious effort.

This is especially important in safety practices, where routine and consistency can significantly reduce risks.

Increase Consistency and Situational Awareness

The goal is to practice procedures until they become second nature, allowing individuals to focus on their surroundings and respond effectively in various situations.

You either already have good habits, or it is time to build them.

Increase Consistency and Situational Awareness

Situational awareness involves:

- Being aware of your surroundings
- Understanding the dynamics at play
- Anticipating potential changes or hazards

Increase Consistency and Situational Awareness

It's about observing not just what's directly in front of you but also the broader context:

- The person next to you
- Environmental factors

Awareness is crucial for making informed decisions and enhancing safety in any setting.

Cultivating situational awareness can help individuals respond proactively rather than reactively, ultimately leading to safer outcomes.

Checklists

CAPR 70-1

9.11.2.2. Checklist. CAP develops, approves and maintains aircraft checklists using the process and standards outlined in CAPS 72-3, Aircraft Checklists. Use of a NHQ-approved checklist or a manufacturer's checklist is mandatory in all CAP aircraft Pilots must review and accomplish all checklist items.

Many clubs also have a similar rule

You can have a kneeboard or any type of reminders

...but not to replace/circumvent the official checklists...in ADDITION

Checklists During Preflight

Preflight like your life depends on it because it does

Use the checklist not your memory!

When you drive if you see steam or smoke come out of your engine you can pull over...we can not just pull over in the plane

Flows and Checklists

All of the next flows are fine such as GUMPS and CRCLCA
...but they should then be backed up by the checklist.

Clear Area

On the Ground and in the Air

Clear **R**ight

Clear **L**eft

Clear **A**vionics

GUMPS

Have you ever?

Left mixture lean on landing

Carb heat is still on...on a go around

Didn't switch gas to fullest tank

Didn't turn on the landing light

How can we minimize these mistakes?

By using the GUMPS procedure

GUMPS

Gas

Undercarriage

Mixture

Propeller

Switches (Flaps)

Seat belts

GUMPS

Gas

It's one thing when you fly a Cessna with tanks on both and no fuel pump needed but when you fly a low wing plane such as a Piper you need to swap tanks...and you need to turn on the fuel pump at critical times

GUMPS

Mixture

Sometimes you want full mixture, while other times you want to remember to lean the mixture.

GUMPS

Undercarriage

Propeller

“I fly a 172 why should I say this?”

If you start flying planes where you do need to check these, it will already be a good habit.

GUMPS

When should I say this?

Before taxing

After runup

Before takeoff

On Downwind

On Final

After clear of the runway

It might seem repetitive but the more frequently you do it, the less likely you will forget something critical.

Before Takeoff

Have everything setup on the ground

Flight Plan in Avionics

Flight Plan in tablet/phone

Altimeter settings

Heading Bug

Altitude Bug

Before Landing

Have everything setup ahead of time

Altimeter settings

What if you had it set at 30.15 and the airport is 30.10

Not a big deal on a nice day

...but at night you could be very close to trees or power lines

Consistent Patterns

Speed

Maintaining consistent target speeds for the planes you fly is crucial.

It enhances safety by ensuring you stay within optimal performance parameters and establish predictable flight profiles.

Knowing the target speeds for specific aircraft, like the Cessna 172, helps ensure safe and efficient flight operations.

Consistent Patterns

Speed

Maintaining around 75 knots on base and 65 knots on final provides a stable approach, allowing for better control and responsiveness.

This consistency is key to developing good flying habits and improving overall performance.

Consistent Patterns

Speed – Too Slow

Flying at low altitudes and slow speeds can be particularly dangerous because it reduces your ability to maneuver and increases the risk of a stall.

At slower speeds, the wings generate less lift, and if the aircraft's speed drops below the critical angle of attack, it can stall, leading to a sudden loss of altitude.

Consistent Patterns

Speed – Too Slow

When flying low, there's less time and space to recover from a stall or any other emergency.

Additionally, at low altitudes, pilots have less margin to avoid obstacles, terrain, and other hazards.

Consistent Patterns

Speed – Too Fast

Flying too fast presents its own set of dangers, particularly when it comes to overcorrection.

When traveling at higher speeds, the aircraft's response to control inputs becomes more sensitive, which can lead to a pilot overcorrecting or making sudden, excessive adjustments at the last moment.

This can cause instability and increase the likelihood of losing control.

Consistent Patterns

Height – Too Low

Tall trees near the approach path could cause a collision if the aircraft is too low.

Power lines are often hard to see and can pose a serious threat, especially at smaller airports or rural airstrips.

Ensure you're flying at a proper glide slope (often 3 degrees for many airports) to avoid obstacles that may not be easily visible from the cockpit.

Consistent Patterns

Height – Too Low

Hilly or uneven **terrain** could cause unexpected obstacles that the aircraft may encounter if descending too quickly or flying too low.

Follow the published instrument approach procedures or visual approach guidance for terrain clearance...even in VFR conditions.

Consistent Patterns

Height – Too High

If you're too high on final, the instinct might be to push the nose down to quickly lose altitude...diving.

This results in a steep descent, which increases airspeed rapidly.

Diving also reduces the ability to control the aircraft smoothly.

Consistent Patterns

Height – Too High

As speed increases and the runway approaches rapidly, the pilot may feel **rushed** to make quick decisions to stabilize the approach.

This can lead to **poor judgment** or rushed control inputs, causing errors.

Rushing can result in mistakes such as overcorrecting, misjudging the flare height, or landing too far down the runway.

Stress can also cause pilots to **forget** proper procedures.

Consistent Patterns

Height – Too High

In an effort to slow down and regain control, a pilot may deploy flaps to increase drag and reduce speed.

However, doing this when flying at high speed, especially **above** the aircraft's maximum flap extension speed (**Vfe**), can cause structural **damage**.

Deploying flaps at too high of a speed can overstress the airframe or cause flap damage, potentially resulting in control problems, particularly during landing.

Consistent Patterns

Height – Too High

Monitor Glide Path Early...

If you find yourself too high, rather than diving, consider using a go-around procedure or executing a longer approach to gradually reduce altitude.

Use the glide slope indicators (PAPI or VASI) to stay on the proper descent path throughout the approach.

Consistent Patterns

Height – Too High

If you realize you're slightly high, reduce power smoothly and adjust the descent angle in small increments.

Avoid steep dives to lose altitude quickly.

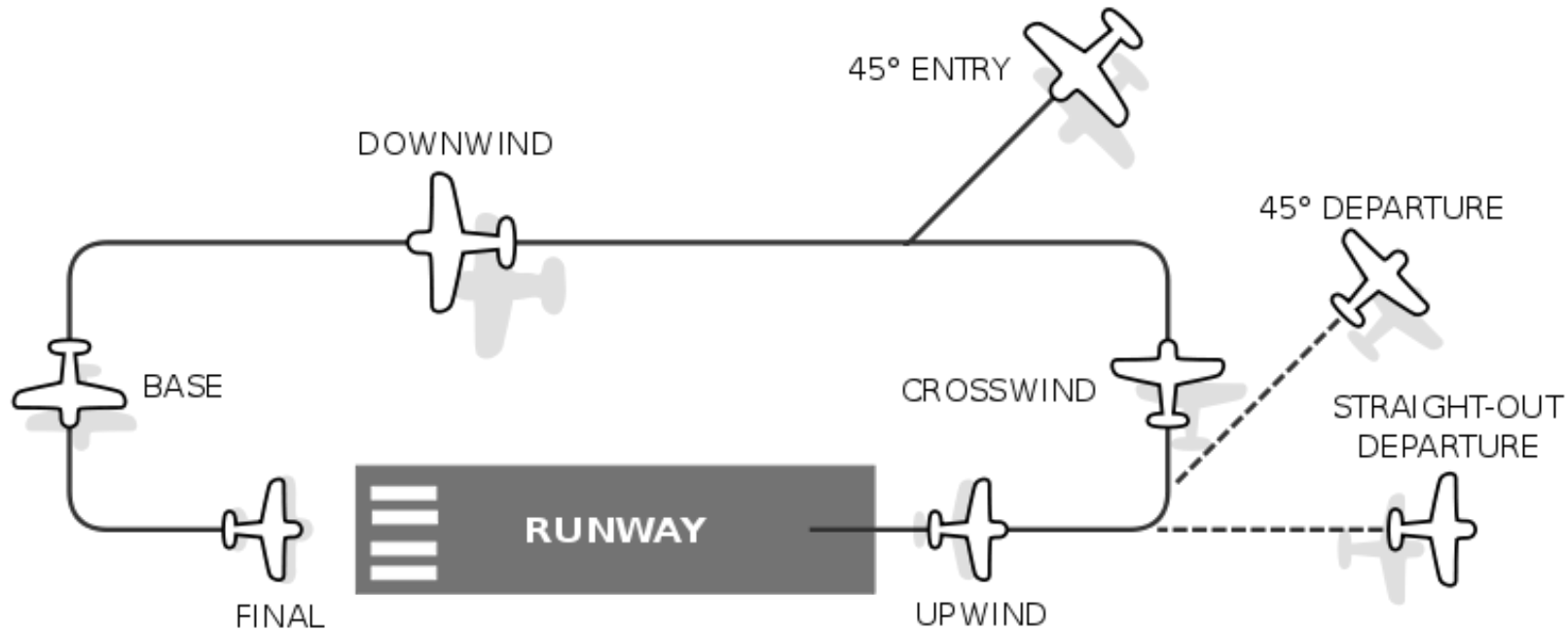
Consistent Patterns

Height – Too High

Go Around if Necessary!

If you're too high and can't make a safe, stabilized approach, it's always better to initiate a go-around.

This gives you a chance to reset the approach and avoid rushing into a high-speed landing.



Entering Downwind

Whatever speed you are comfortable with on 45 Entry

When on downwind each model has a typical configuration

C172 = 90-100 is fine...2100 rpm (180 HP)

Crosswind

CAPR 70-1

9.11.7.5. Wind and turbulence specific limitations. When determining crosswind, the gust component of surface wind must be taken into consideration.

9.11.7.5.1. Airplanes. CAP pilots shall treat the maximum demonstrated crosswind component as documented in the Aircraft Flight Manual or Pilot's Operating Handbook as a limitation. For airplanes without a published maximum demonstrated crosswind component, the limit shall be 15 knots.

If this is a CAP rule there is a reason why...when flying non CAP planes you might want to consider limits also

Greatly also consider variable wind direction

Analyze the Winds

Don't always 100% trust the METARs

Look at windsocks and flags

You should be able to see them in the pattern...if not consider a low pass



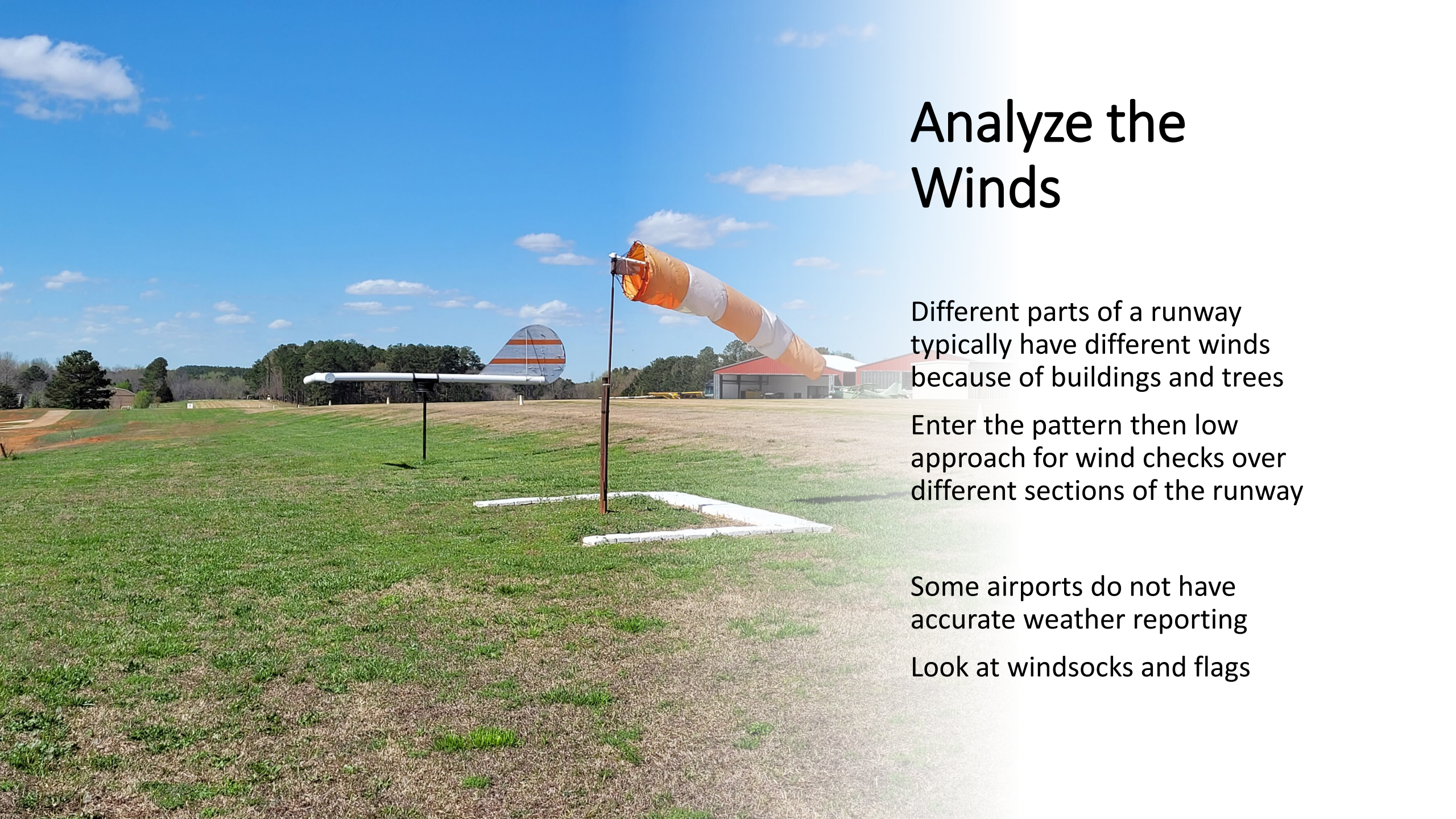
Analyze the Winds

Different parts of a runway typically have different winds because of buildings and trees

Enter the pattern then low approach for wind checks over different sections of the runway

Some airports do not have accurate weather reporting

Look at windsocks and flags



Consistent Landings

On Final say this over and over before and during touchdown

Speed

Height

Center

Nose

Consistent Landings

Speed

You do not want to be coming in too fast or too slow

Height

You do not want to be too high or too low

Center

Land the nose on the center line

Nose

Have the nose pointing straight when you land

Consistent Landings

Speed – Too Slow

When your airspeed is too low, the wings may not generate enough lift, putting you closer to a **stall**. In the low-speed regime, the critical angle of attack (the angle between the wing and the airflow) can be exceeded, leading to a loss of lift.

A stall on final approach is extremely dangerous because you are low to the ground with little room to recover.

If you stall 10-20 feet above the runway, the aircraft can drop suddenly, resulting in a hard landing or even a crash.

Consistent Landings

Speed – Too Slow

When flying too slow, your **control surfaces**—such as ailerons (for roll), elevator (for pitch), and rudder (for yaw)—become **less effective due** to reduced airflow over them.

The airplane becomes sluggish and less responsive.

Reduced control authority means it's harder to correct for deviations in alignment, altitude, or heading.

This lack of responsiveness can make it difficult to keep the aircraft on the proper glide path, stay aligned with the centerline, or counteract crosswinds during the landing phase.

Consistent Landings

Speed – Too Slow

When flying slowly, you have **less ability to counteract** the effects of **wind gusts or crosswinds** because the airplane is already operating at the edge of its performance envelope.

Crosswinds or gusts can push the airplane off the centerline or cause it to roll unexpectedly, and at low speed, recovering from this can be difficult.

Flying slightly faster than the minimum approach speed helps ensure there is enough "energy" to counteract wind disturbances.

Consistent Landings

Speed – Too Fast

Bouncing on Landing...

When approaching too fast, you might touch down with excessive speed, causing the aircraft to hit the runway hard and then rebound back into the air.

The plane could bounce multiple times, making it difficult to stabilize for a smooth landing.

If not handled properly, the second or third bounce can result in even harder landings, potentially damaging the landing gear or leading to a runway excursion.

Consistent Landings

Speed

A severe bounce could also lead to a loss of control, as the aircraft may not be aligned properly on the next touchdown.

This often happens when a pilot flares too high or too abruptly while still carrying too much speed.

Ensure your approach speed is within the correct range for your aircraft's weight and configuration.

Execute a smooth and timely flare, reducing speed gradually before touchdown.

If a bounce occurs, go-around rather than trying to force the aircraft down on subsequent touchdowns.

Consistent Landings

Speed – Too Fast

If you pull back too aggressively during the flare, the aircraft can **balloon**, where it briefly climbs back into the air due to the increased angle of attack.

This is common when coming in too fast or flaring too early, causing lift to increase suddenly.

Ballooning can lead to an unstable situation where the aircraft is floating above the runway at an increasing altitude.

As the speed bleeds off, the aircraft may then drop suddenly, causing a hard landing.

Consistent Landings

Speed – Too Fast

Causes: Excessive approach speed, combined with an overly aggressive flare

How to Avoid It:

Fly at the correct approach speed to avoid needing excessive control inputs during flare.

Flare **gently and progressively**, avoiding sudden or large pitch-up movements.

Consistent Landings

Speed – Too Fast

A small balloon with enough runway left can be worked out...smoothly adjust pitch and give it a little bit of power...then ease the aircraft down.

If you balloon too high and feel you can't safely stabilize the descent, perform a go-around.

Forcing the aircraft down from a balloon can result in a hard or nose-first landing.

Consistent Landings

Speed – Too Fast

You could run out of available runway. First pass they did a Go Around, second pass they did not.



Consistent Landings

Height

If you are too low, you could be in danger of hitting something on final.

Trying to do a spot landing on the numbers?

If you hit the localizer or the taxiway lights you will definitely be famous at that airport.



Consistent Landings

Center

Landing on the centerline of the runway is far more critical than it might seem at first glance, and there are good reasons why simply landing "within the pavement" may not always be enough.

Consistent Landings

Center

Runways are designed with a certain amount of extra space, or margins, on each side, but these areas are not intended for normal use during landings.

Landing off-center increases the risk of running out of lateral space, especially in conditions where control might be compromised, such as in crosswinds or during a tire blowout.

Additionally, these margins may contain lights, signs, or other obstacles that could be hit if the plane veers off.

Consistent Landings

Center

If a **tire blows** out during landing, maintaining control of the aircraft becomes much harder, especially if you're not on the centerline.

The aircraft may pull to one side or the other depending on which tire bursts.

A blown tire could cause the aircraft to veer dangerously toward the edge of the runway, and if you're landing near the edge, there may be insufficient space to keep the aircraft from running off into the grass, or worse.

Consistent Landings

Center

In **crosswind conditions**, it's more challenging to stay aligned with the runway.

If you start off too far from the centerline, any wind gust or slight deviation could push you toward the runway edge.

Even slight deviations from the centerline in a crosswind could cause you to land too close to the edge or run off the pavement.

The further from the centerline you are, the less margin you have to recover if things go wrong during the landing roll.

Consistent Landings

Center

During landing, especially in the flare and rollout, small deviations from the centerline can quickly grow.

Any instability (due to wind, uneven braking, or rudder input) could make it harder to maintain control.

If you land off-center, any slight deviation or instability could result in running off the runway, especially in poor weather conditions, on shorter runways, or if something unexpected happens, like a tire blowout or gust of wind.

Consistent Landings

Center

If you're not aligned on the centerline, you may overcorrect while trying to steer the aircraft back to the middle, especially if a sudden issue arises (like a gust of wind, a tire blowout, or improper braking).

Overcorrection can lead to loss of directional control, potentially causing a runway excursion or veering off the pavement entirely.

Consistent Landings

Nose

Do everything else right but your nose is pointing left:

Mild = it will be uncomfortable

Medium = You could tear up some tire tread or head quickly towards the grass

Severely = Risking damaging the plane and the people in it

Consistent Landings

Speed

-> Control with Pitch

Height

-> Control with Power

Aim spot moves up...throttle up

Aim spot moves down...throttle down

Center

-> Control with Yoke

Nose

-> Control with Rudder

...keep those feet honest...consider tail wheel lessons

Consistent Landings

Flare/Transition

The last seconds are the most important...

- When aim point is below window then transition
When runway widens then pitch up
- Look forward at the end of the runway
- Look out of the side windows to judge height and being parallel or not
- Sight picture taking off = sight picture landing

Consistent Landings

Flare/Transition

Slow flight over runway technique/Soft field landing technique seems to work well

A little bit of power in ground effect gives you a couple of seconds to work out your Center and Nose...ease it down

When mains touch, go idle if you have not already done so

Consistent Landings

- Limit braking if able
- Roll on runway till energy is out
- Use up whole runway if needed...do not stress about people behind you
- Keep wind correction...likely you will need more

Consistent Controls

Pitch

Power

Trim

Rudder

Bank

Mastering the controls of an aircraft through proficiency flights is crucial for becoming a skilled and confident pilot.

Proficiency flights are designed to enhance your familiarity with the aircraft's controls, flight dynamics, and handling under various conditions.

Consistent Controls

Pitch

Power

Trim

Rudder

Bank

Doing steep turns for example...

Repeating these words during steep turns can help build consistency and precision in your execution.

By verbalizing the process, you reinforce muscle memory and mental focus, keeping you engaged with the steps required for success.

Consistent Risk Management

Terrain

You can plan NOT to hit terrain from a long way away

Weather

You have plenty of time to avoid flying in dangerous weather

Traffic

Know where the other planes are around you...and ground vehicles such as large mowers

Wildlife

Keep an eye out for birds, deer, dogs, etc

Consistent Risk Management

Terrain

You can plan NOT to hit terrain from a long way away

If you normally fly in a relatively flat area but today you plan to fly over mountains, be hyper aware of MEFs, MEAs, and OROCAs.

Consistent Risk Management

Weather

You have plenty of time to avoid flying in dangerous weather

Monitor weather radar where the weather is now and which way it is moving

Understand most weather radar info you will use is many minutes old

Consistent Risk Management

Traffic

In situations where the crew is too focused on looking up information, whether in avionics or apps like ForeFlight, they might miss critical traffic alerts or proximity warnings, leading to dangerously close encounters with other aircraft.

This is often referred to as task saturation where the crew is so absorbed in one task that they lose situational awareness.

Consistent Risk Management

Traffic

Do not be overly dependent on your avionics, ForeFlight and ATC...you need to also See and Avoid

More than a decade ago traffic situation awareness was looking out of the window...windows are still available.

Consistent Risk Management

Traffic

When on the ground, know where the mowers are, golf carts, vans, or any other ground movement is

On the ground and in the air...

Clear **R**ight Clear **L**eft Clear **A**vionics

And remember you might be flying in airspace where a radio and a transponder are not required

Consistent Risk Management

Wildlife

Keep an eye out for birds, deer, dogs, etc

Wildlife WILL show up quickly at any time

Consistent Cockpit Management

Have good cockpit management of info and tools

Paperwork

EFB/ForeFlight/Garmin Pilot

Checklists

Having lots of information is great until it becomes a major distraction

Consistent Cockpit Management

Have good cockpit management of your crew

Who is navigating?

Who is looking up weather?

Who is talking with ATC?

Who is briefing the approach?

Another pilot is great unless...

They talk so much they become a distraction

They change something without telling you

They tune you to the wrong frequency

They do not know how to use the GPS

Consistent Cockpit Management



Avionics

If you are not familiar with the avionics in a plane you never flew, find another pilot/instructor who is that can teach you the basics.

After putting in a flight plan, zoom out to confirm it looks right.

Cross check with ForeFlight/Garmin Pilot/Avare

If you make one letter typo it could be taking you way out of the way.

Consistency with Radios

The basic format:

Them

Me

Current location

(Destination)

Request (tower) or the plan (no tower) or information (any)

Consistency with Radios

Them

CTAF, Clearance Delivery, Tower, Approach, Departure, Center

“Atlanta Speedway Traffic...”

“Peachtree Tower...”

“Atlanta Approach...”

Consistency with Radios

Me

Tail #, type, /G

“...Skyhawk 13469...”

“...CAP 941...”

“...3889J Cessna 150 /Golf...”

Consistency with Radios

Current Location

“...5 miles to the south...”

“...at runway 13 at Papa Uniform Juliet...”

"...at Wilson Air..."

"...10 miles at 3500 Southwest..."

Consistency with Radios

Destination

"...enroute to Thomasville Tango Victor India..."

Consistency with Radios

Request/The Plan/Info

Departing north, full stop landing, low approach, ready to pick up plan/clearance, on downwind, etc

“...45 for left downwind runway 24”

“...ready for IFR clearance”

“...request flight following”

“...inbound full stop”

Consistency with Radios

At a non towered airport, you should be **exchanging** info with other pilots.

You want to be **situationally aware** of where the other aircraft are, and you certainly want everyone else to know where you are...as well as your plan.

Be descriptive if needed, talk, this is not the time for brevity if it could be open for interpretation.

Sometimes you have to force others around you to be **situationally aware**.

Consistency with Radios

“Speedway 123AB will cross over to do the teardrop to 24”

There is no ‘teardrop’ in the AIM

+ there seems to be different interpretations

Instead:

“Atlanta Speedway Traffic Skyhawk 13469 5 miles to the north planning on crossing midfield at 2500 going to go 3 miles south of the airport then turn to the 45 for left downwind runway 24...Atlanta Speedway”

Consistency with Radios

Correct Frequency

We have all done it before no matter how many hours you have flown...

You make the perfect radios calls...on the wrong frequency
...you swore you changed it

...or you changed it slightly by mistake like 122.72 to 122.75

Consistency Enroute

VFR or IFR you are still navigating. Keep asking yourself:

Where now?

Where next?

How low can we go?

Airspace rules?

Consistency Enroute

Where now?

Between YEBUT and HAMPP

Where next?

HAMPP

How low can we go?

2600 MSL

Airspace rules?

Do not climb to 3000 or you will be in class B without a clearance

Consistency Enroute

Speed

Height

Heading

Modes

Talk

Consistency Enroute

Speed

Your target could be 120 kts or 90 kts

Keep checking and adjusting your pitch & power

Height

Be at whatever altitude you should be at per ATC or the approach plate

If you are hand flying the glide slope, adjust if you are above or below the slope

Consistency Enroute

Heading

You might be hand flying, on heading mode, or nav mode...make sure you are going in the direction you should be

Modes

Check your autopilot modes as well as your CDI source

Talk

When ATC clears you to use the CTAF you must make others aware of your location...multiple times

Don't Be Afraid to Say

“Unable”

“Unfamiliar”

“Uncomfortable”

“Vectors please”

Fuel Exhaustion

Fuel Exhaustion = Nothing left in the tanks

Causes

- Inaccurate planning: Miscalculating fuel needs
- Not paying attention to fuel levels
- Gauges that don't provide accurate information about fuel levels
- Pilot error: Choosing to continue a flight despite low fuel levels
- Fuel cap wasn't on right...fuel going into air while in the air

Fuel Starvation

Fuel Starvation = Fuel in the tanks but can't flow to engines

Causes

- Fuel mismanagement: The pilot may select the wrong fuel tank, or an empty tank
- Fuel contamination: Water, debris, and microbes can clog the fuel lines and filters
- Fuel pump malfunction: The fuel pump may not be working properly
- Unporting: During hard maneuvers, a steep climb, or a departure from coordinated flight, fuel can slosh away from the engine
- Clogged vent

Consistently Expected 'the unexpected'

The Pilot and the Plane need to be **Go Around Ready**

Think 50/50 landing or go around...then you won't feel rushed if you need to

Coming into my neighborhood I don't go more than 20 flaps until I know for sure I am landing

Better to decide early like 100 feet above instead of at the end of the runway 2 feet above

Go Around: ALL IN...Flaps in stages

Consistently Expected 'the unexpected'

On Takeoff Be Ready for Engine Trouble

If the wheels are still on the ground:

Whether engine has partial power or no power...

Pull throttle, yoke back, brake

Consistently
Expected 'the
unexpected'

On Takeoff Be Ready for Engine Trouble

If you are in the air with runway remaining or grass:

Pitch down immediately, land

If landing past the runway remember to pitch back to not dig in the nose wheel

Consistently Expected 'the unexpected'

After Takeoff Be Ready for Engine Trouble

It is possible to make the 'impossible turn' but more often it is not possible...

Richard McSpadden, the Senior Vice President of the Aircraft Owners and Pilots Association (AOPA) Air Safety Institute, died in a plane crash on October 1, 2023:

McSpadden was a well-respected aviation safety expert and former commander of the U.S. Air Force Thunderbirds.

Consistently Expected 'the unexpected'

After Takeoff Be Ready for Engine Trouble

If you are high enough and you have a strong wind you might have a chance IF YOU DO NOT DELAY

Chances are you will not be landing on the runway...

Pitch down immediately

Typically look to your right and left

Look for something long and flat

If you aim for something soft remember to pitch back to not dig in the nose wheel

Consistently
Expected 'the
unexpected'

Engine Trouble Elsewhere

Airspeed = pitch up to glide speed

Best = flattest, safest

Checklist = **T**anks, **P**ump, **M**ix, **M**aster, **M**ags

Decare = Freq you know you can reach someone, **7700** (77 heaven), call **911** on your phone

Execute = **D**oors, **S**pirals, **S** Turns, **S**lips, **F**laps

Consistently
Expected 'the
unexpected'

Engine Trouble Elsewhere

Contact everyone you can!!

Approach

121.5

911

Carry a personal beacon such as Zoleo

Most of the CAP saves are because of the cell phone forensics
and radar analysis teams

Consistently Expected 'the unexpected'

The answers to the next scenarios are not “hold on while I pull out the checklist”

You can double check the checklist after your initial actions

The checklist might be melted...

Consistently Expected 'the unexpected'

The 40 year old NAV COMM radio catches fire

What do you do?

The left wing tip catches fire

What do you do?

The engine catches fire

What do you do?

Consistently Expected 'the unexpected'

The 40 year old NAV COMM radio catches fire

Stop electrical flow and air flow

The left wing tip catches fire

'Step on the fire' = rudder next to wing with the fire

The engine catches fire

Nose down immediately...steep descent till fire is out

...engine off -> ABCDE

Consistently Expected 'the unexpected'

Your homework is go re-read all the emergency procedures
for the planes you fly

It might save your life



Any questions?