

The National FAA Safety Team Presents

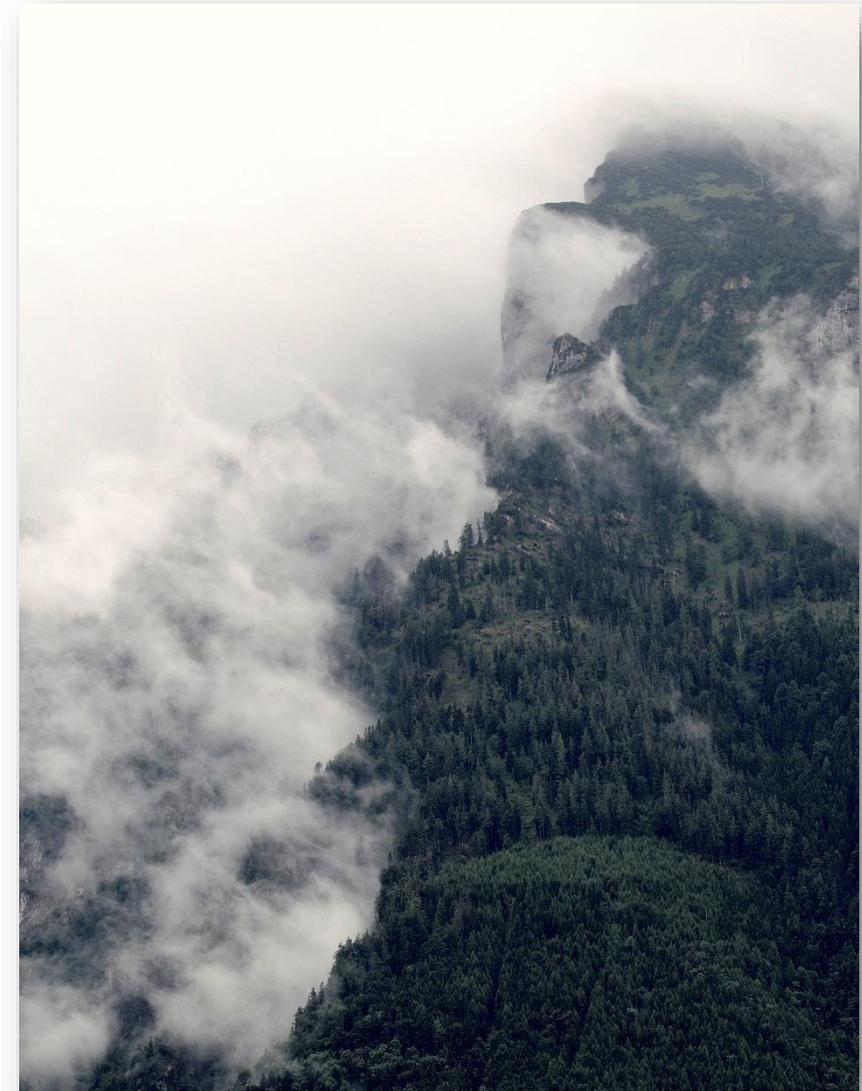
Topic of the Month—November 2022 CFIT & Plan Continuation Bias

Presented to: WAFC and Friends
By: Stephen Bateman, CFI
Date: Monday November 14th, 2022

Produced by AFS-850
The National FAA Safety Team (FAASTeam)



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Welcome

- **Steve Bateman, CFI, AOPA Director of Flying Clubs**
 - Safety and Maintenance Officer, Westminster Aerobats Flying Club
 - FAASTeam lead representative, Baltimore FSDO
- **Our monthly 30-minute in-and-out safety meeting based on the FAASTeam Topic of the Month**
- **Sponsor Acknowledgment – WAFC, AOPA, FAASTeam, Baltimore FSDO**
- **WINGS Credit: Yes...but give me a day...**
- **Probably no time for questions, but send email:**

steve.bateman@aopa.org



Check NOTAMS!



Overview

- **CFIT and human biases**
- **What...me...biased?**
- **Managing the manageable**
- **Maintaining proficiency**
 - Ah...Ah...Ah...Ah...Stayin' Alive...Stayin' Alive...



GAJSC, CFIT and Biases

- **The General Aviation Joint Steering Committee (GAJSC) Controlled Flight Into Terrain (CFIT) work group report suggests that human biases—particularly Plan Continuation Bias—may be significant factors in CFIT accidents.**



*GAJSC – General Aviation Joint Steering Committee

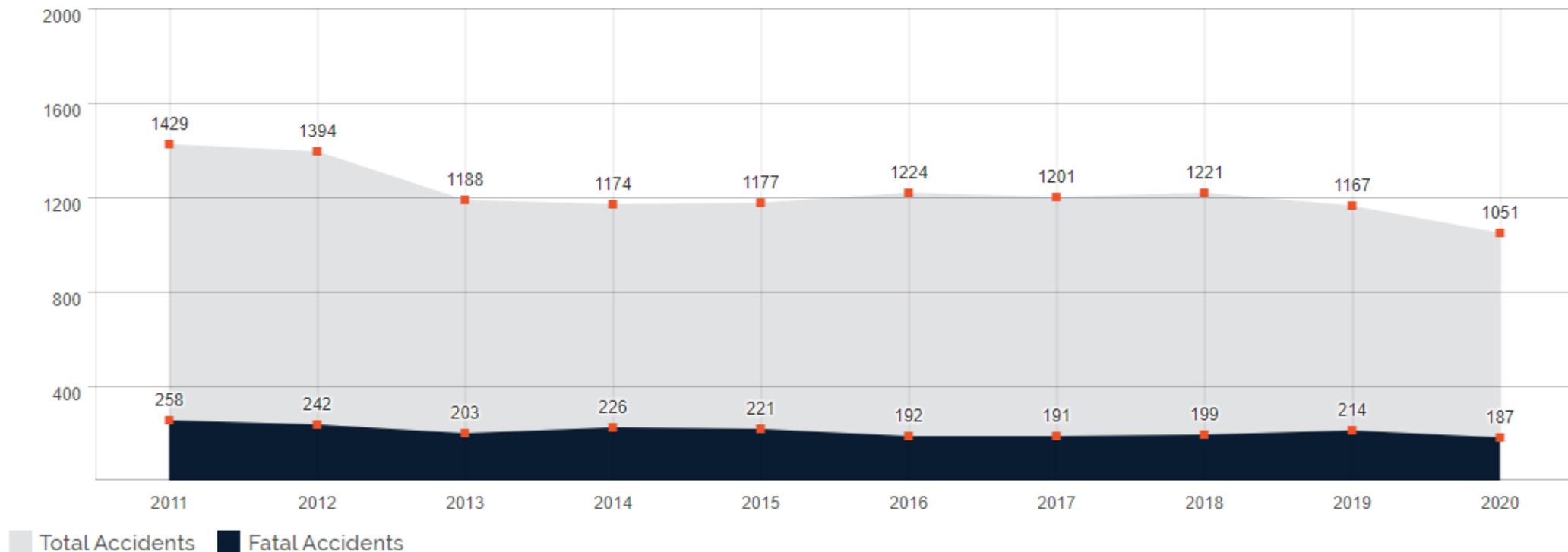


• Federal Aviation Administration

All GA Accident Trend: 2011 – 2020:

General Aviation Accident Trends 2011-2020 : 32nd Nall Report

2020 Overall Summary

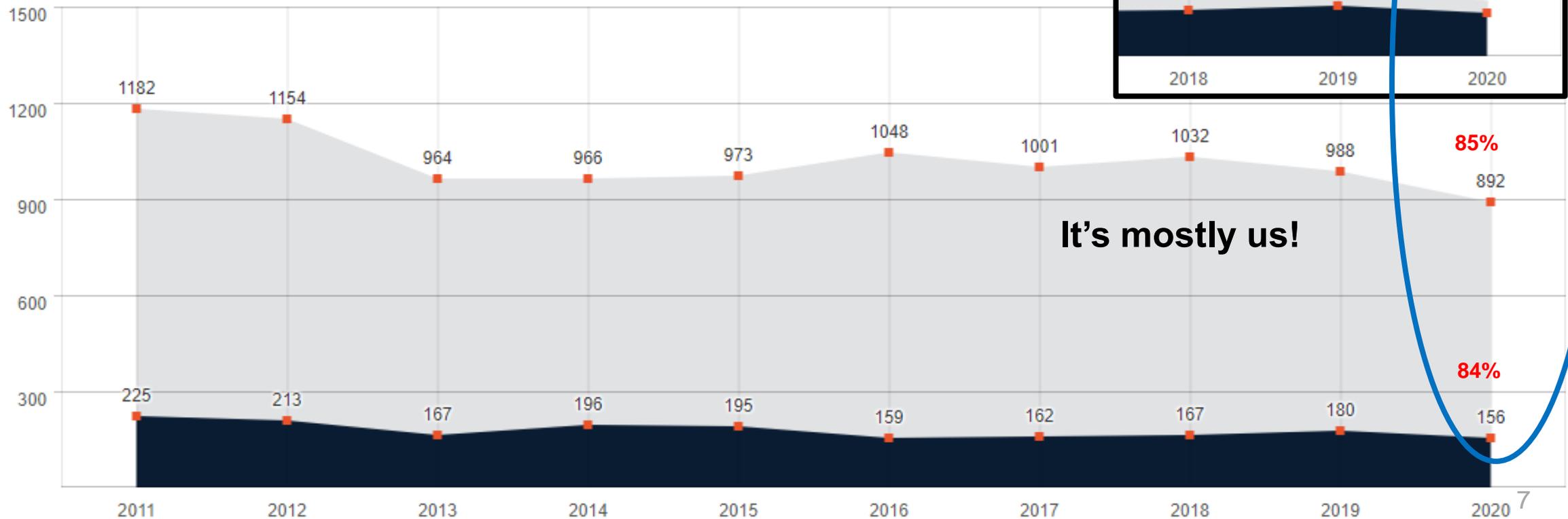


Non-Commercial Fixed-Wing Trend: 2011 – 2020

Overlay All GA

Figure 1.2: General Aviation Accident Trends 2011-2020 : 32nd Nall Report

2020 Non-commercial fixed-wing



It's mostly us!

85%

84%



Total Accidents Fatal Accidents

Pilot Related Accidents

Figure 1.9: Pilot-related Accident trend
2020 Non-commercial fixed-wing

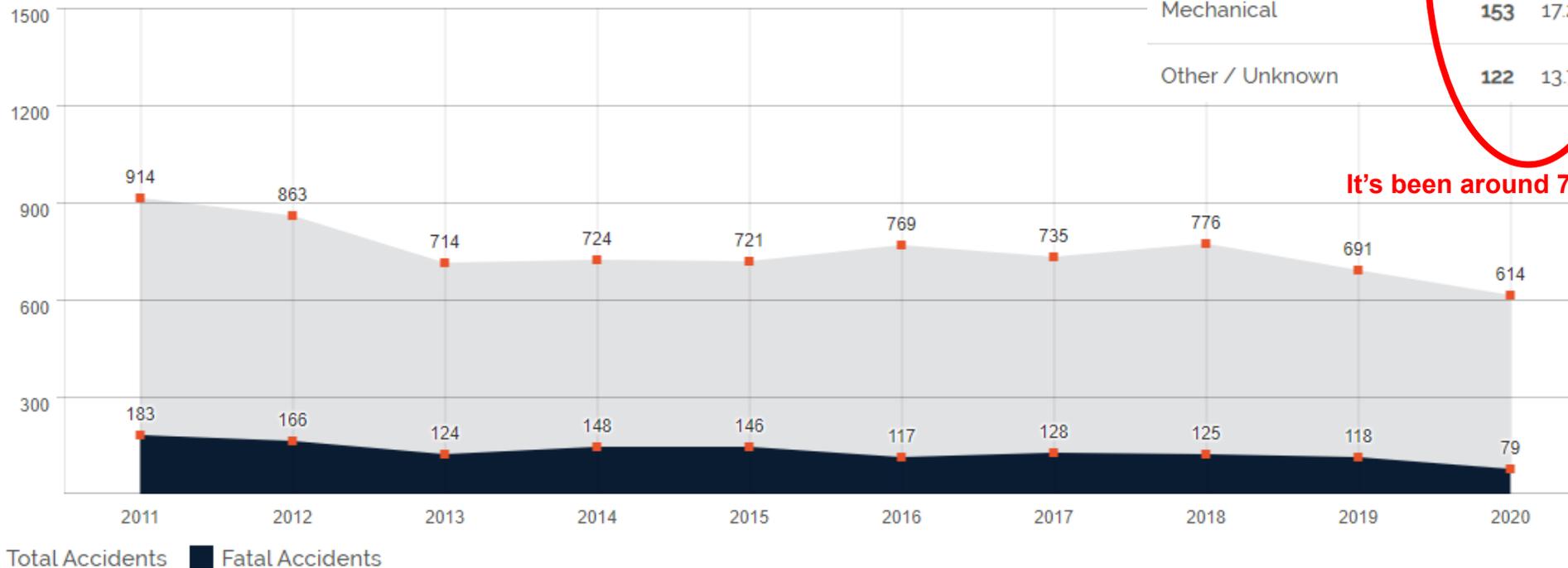


Figure 1.4: General Aviation Accidents in 2020
2020 Non-commercial fixed-wing



	Accidents	Fatal Accidents
Pilot-Related	614 69.1%	79 51.6%
Mechanical	153 17.2%	14 9.2%
Other / Unknown	122 13.7%	60 39.2%

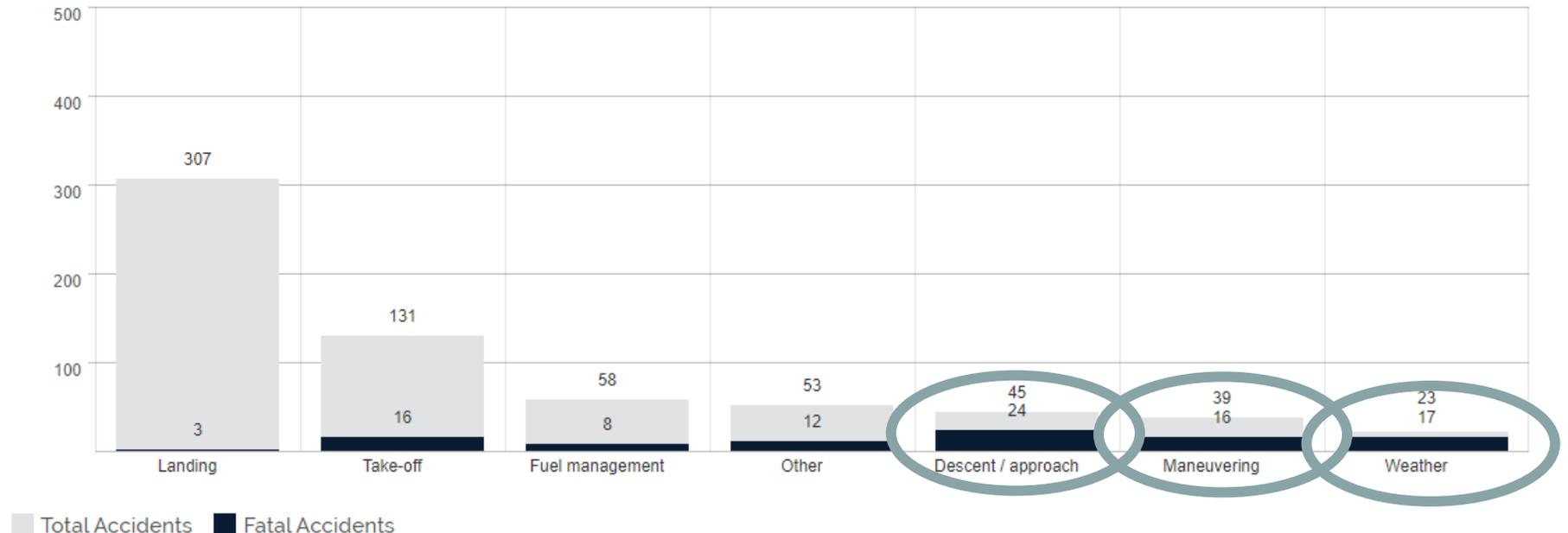
It's been around 70% for years.

Pilot Related Accidents

- Landing dominates number of accidents, but generally survivable (not including go-around)
- **74% fatality rate if accident is weather related**
- **53% fatality rate if accident on descent and approach (CFIT more likely)**
- **41% fatality rate if accident due to “maneuvering”**
- **So...choose your accidents wisely**

Figure 1.11: Major types of accidents

2020 Non-commercial fixed-wing



Flying is fun...but being perfect can be stressful

- **Mission Imperative**
 - Get it done!
- **Personal image**
 - Competent, confident, safe
- **Time pressure**
 - Only so many hours in the day
- **Finances, health, relationships**
 - Even good things can be stressful
 - “I leave my problems on the ground when I fly...” Yeah...right!



Managing the manageable

- You are to be honored at a prestigious dinner a 2-hour flight away
- Important to fly in...your being honored as a pilot!
- Friends and family will be there
- Business meeting before taking off...no option...must attend
- VFR weather forecasted, but system moving in



Managing the manageable

- **Business meeting ran late**
- **2-hour flight @ 10 gph = 20 gall**
- **+ 1-hour reserve = 30 gall**
- **Measured fuel on board = 25 gall**
- **Weather moving-in quicker than forecasted**



Managing the manageable

Launch with the fuel you have

- Will make the start of the dinner
- Done this trip before
- Winds are always favorable

Call for fuel & top off

- Enough fuel for the return trip
- Will make the end of the dinner

Plan a fuel and WX review stop

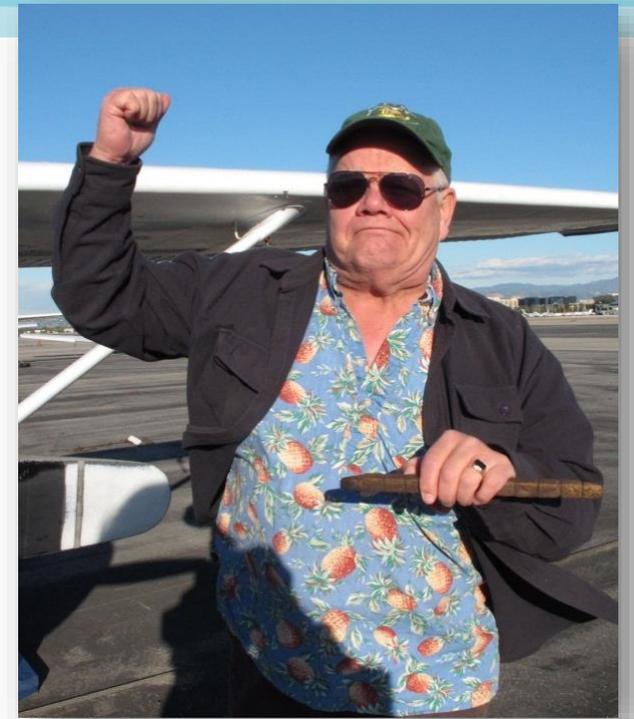
- Tell them you'll be late

Drive

- Tell them you'll be late

Is this why they are honoring you?

Be the pilot they expect you to be.
This is why they are honoring you!



Winners never quit.....

- Quitters never....
- Plan the flight and
- You'll never get anywhere if you don't...
- When in doubt, stick to the

International Flight Plan

U.S. Department of Transportation
Federal Aviation Administration

PRIORITY: **<=FF** ADDRESSEE(S): _____

FILING TIME: _____ ORIGINATOR: _____ <=

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND / OR ORIGINATOR: _____

3 MESSAGE TYPE: **<=(FPL** 7 AIRCRAFT IDENTIFICATION: _____ 8 FLIGHT RULES: _____ TYPE OF FLIGHT: _____ <=

9 NUMBER: _____ TYPE OF AIRCRAFT: _____ WAKE TURBULENCE CAT.: _____ / _____ 10 EQUIPMENT: _____ / _____ <=

13 DEPARTURE AERODROME: _____ TIME: _____ <=

15 CRUISING SPEED: _____ LEVEL: _____ ROUTE: _____

16 DESTINATION AERODROME: _____ TOTAL EET: _____ HR MIN _____ ALTN AERODROME: _____ 2ND ALTN AERODROME: _____ <=

18 OTHER INFORMATION: _____

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)

19 ENDURANCE: _____ HR MIN _____ PERSONS ON BOARD: _____ EMERGENCY RADIO: _____ UHF _____ VHF _____ ELT _____

SURVIVAL EQUIPMENT: _____ POLAR _____ DESERT _____ MARITIME _____ JUNGLE _____ JACKETS: _____ LIGHT _____ FLUORES _____ UHF _____ VHF _____

DINGHIES: _____ NUMBER _____ CAPACITY _____ COVER _____ COLOR _____ <=

AIRCRAFT COLOR AND MARKINGS: _____

A/ _____

N/ _____ REMARKS _____ <=

C/ _____ PILOT-IN-COMMAND _____)<=

FILED BY: _____ ACCEPTED BY: _____ ADDITIONAL INFORMATION: _____

FAA Form 7233-4 (7/15)



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Winners never quit.....

- Quitters never win
- Plan the flight and fly the plan
- You'll never get anywhere if you don't keep to a plan
- When in doubt, stick to the plan

U.S. Department of Transportation
Federal Aviation Administration

International Flight Plan

PRIORITY **<=FF** ADDRESSEE(S) _____

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DINGHIES NUMBER CAPACITY COVER COLOR _____

AIRCRAFT COLOR AND MARKINGS _____

REMARKS _____

PILOT-IN-COMMAND _____

FILED BY _____ ACCEPTED BY _____ ADDITIONAL INFORMATION _____

FAA Form 7233-4 (7/15)



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Winners.....

- Quitters know when to quit
- Plan the flight and change it as needed
- You'll never get anywhere if you don't update the plan
- When in doubt, think of the headlines

U.S. Department of Transportation Federal Aviation Administration		International Flight Plan	
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9 NUMBER	TYPE OF AIRCRAFT	WAKE TURBULENCE CAT.	10 EQUIPMENT
13 DEPARTURE AERODROME	TIME		
15 CRUISING SPEED	LEVEL	ROUTE	
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18 OTHER INFORMATION			
SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)			
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DINGHIES NUMBER CAPACITY COVER COLOR			
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REMARKS N/			
PILOT-IN-COMMAND C/			
FILED BY	ACCEPTED BY	ADDITIONAL INFORMATION	

FAA Form 7233-4 (7/15)



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Get-there-itis



Plan Continuation Bias

“The continuation of an original plan even with the availability of new information that suggests that the plan should be abandoned or at least updated.”

We call this...



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It's Complicated...

Bias—a prejudice in favor of or against one thing, person or group compared with another

Plan Continuation Bias

A form of Confirmation Bias...



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Confirmation Bias

**I know those three lakes...
Just where I expected them!**

**Actually, it's a driveway with a few
puddles...!**



Pattern recognition...

Long-term memory relies heavily on visual information and pattern recognition habits

Pilots are particularly adept at pattern recognition and usually do what works well for them but occasionally do human tendency causes problems

Running a familiar program in response to a different situation or running a correct program imperceptibly can result in disaster

But what if we get it wrong...?



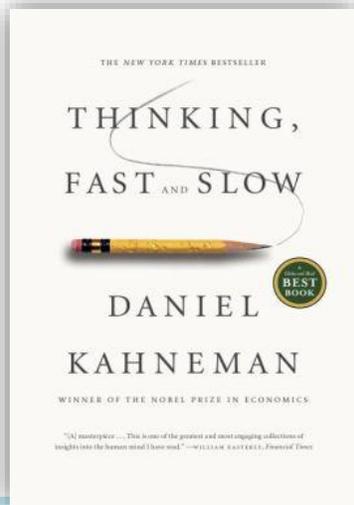
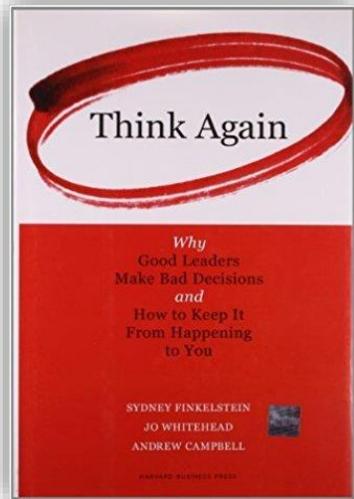
Interesting...

- *“Important decisions made by intelligent, responsible people with the best information and intentions are sometimes hopelessly flawed.”*

“Think Again,” Campbell, Whitehead, Finkelstein; HBR, 2008

- *“Many people are overconfident, and prone to place too much faith in their intuition.”*

“Thinking, Fast and Slow,” Farrar, Straus and Giroux; 2011

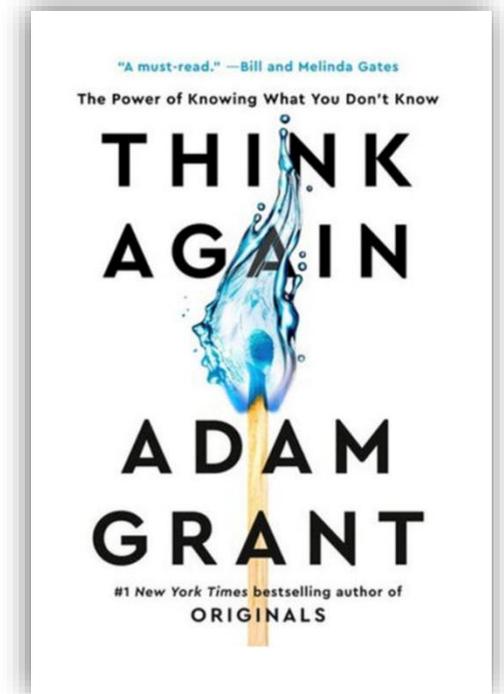


Really Interesting...

- **“Plan Continuation Bias” results from:**
 - “Confirmation”, and “desirability” biases
 - See what we want to see; feeling good...feels good...
 - “I’m not biased”, bias
 - Over-estimating knowledge, skills, and experience
 - Who...pilots...?
- **To overcome biases—think, decide and plan like an *engineer*...**
 - Fly based on a hypothesis
 - Be willing to accept new, better, disproving data

“Being good at thinking, can make you worse at rethinking”

Adam Grant



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Understanding Human Decision Making



- **Brainiac flying:**
 - Why Do Good Pilots Make Bad Decisions?
 - What were they thinking? (You know best bias)
 - Memory vs. compute; cognitive reasoning; limbic highjack
 - Expand Your Horizons (learn and practice new things) = Proficiency
- **The human brain doesn't naturally "consider all alternatives".**
 - We are trial and error learners
- **We leap to conclusions based on experience and emotions**
 - Last one and most pleasant ones first
- **We are heavily biased by subconscious inputs**
- **Reluctant to *revisit* initial assessment, even with more data**
- **Quickly shift gears to execution mode...get it done!**
- **Really difficult to "stop and think" once decided**



The Initial Decision is Powerful

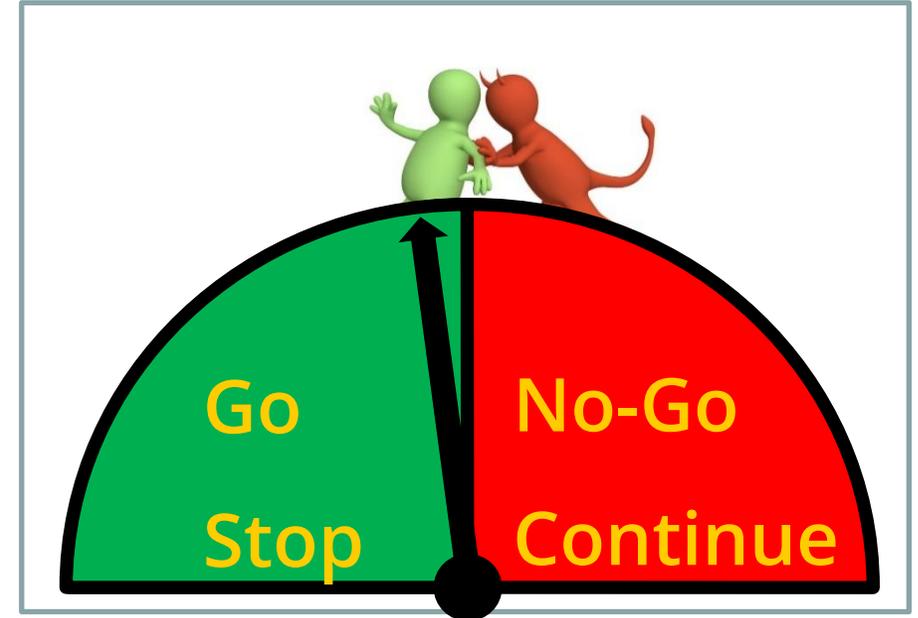
- Dec 2021 - Two aircraft leave from MNE (LA) to H35 (AR)
- Neither pilot instrument rated
- Pre-flight weather was “sketchy”, but decision made to go
- Planned early diversion option to AGO
- In IMC 20-mins after take-off...looking better over there...
- **The Result:**
 - Weather worse than expected enroute (Strike 1)
 - Bypassed diversion option (Strike 2)
 - Entered IMC and continued (Strike 3)
 - Lead airplane impacted terrain (Out)
 - One fatality...quick final report...CEN22FA058



The Initial Decision is Powerful...Even With Plan B



Location:	Bonnerdale, Arkansas	Accident Number:	CEN22FA058
Date & Time:	December 3, 2021, 18:23 Local	Registration:	N182NS
Aircraft:	Cessna 182L	Aircraft Damage:	Destroyed
Defining Event:	VFR encounter with IMC	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		



Initial Decision Momentum

Plan established. Conditions worse than planned. Pilots pressed on.

Oh...so familiar, with a familiar outcome

Difficult to say no-go and even tougher to say stop



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From NTSB Final Report

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The noninstrument rated pilot's improper decision to continue visual flight rules flight into instrument meteorological conditions, which resulted in spatial disorientation and a subsequent impact with terrain.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Below VFR minima - Decision related to condition
Personnel issues	Aircraft control - Pilot
Personnel issues	Spatial disorientation - Pilot



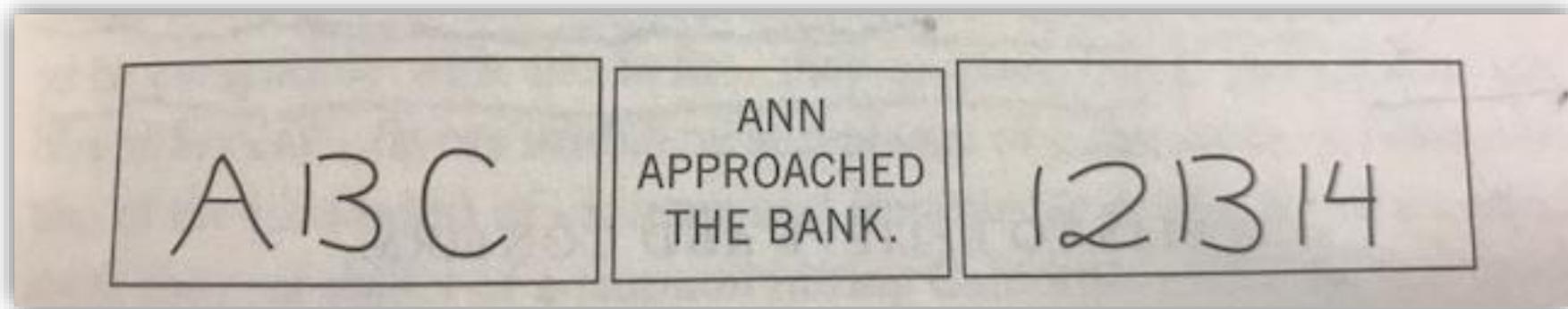
Bias, Bias, Bias

- **“Being good at thinking, can make you worse at rethinking”**
- **“I make decisions quickly”**
 - Okay...but were they correct?
- **“It is okay to fail such that you can learn from your mistakes”**
 - Might work in management books, but may kill you in the air



Biased Intuition

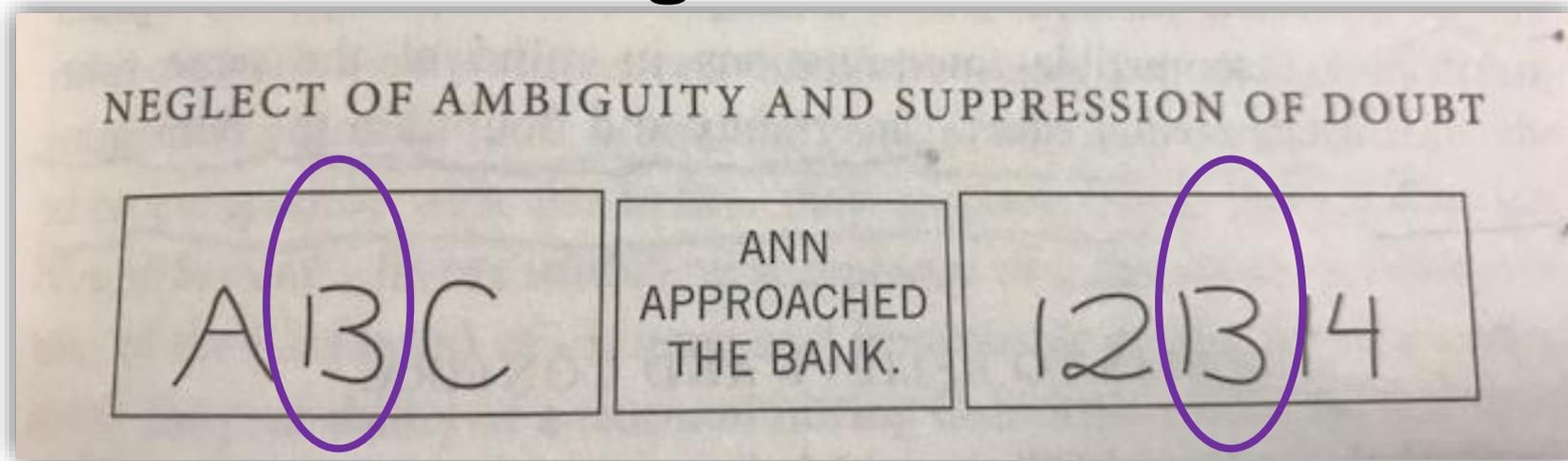
What do you see?



What do you think Ann is doing?



Context Bias and Priming



- What were your answers? Probably A B C, and 12 13 14?
- Middle symbol in both boxes is identical (B or 13...it depends...)
- What was your mental picture of Ann? Probably based on recent experience...

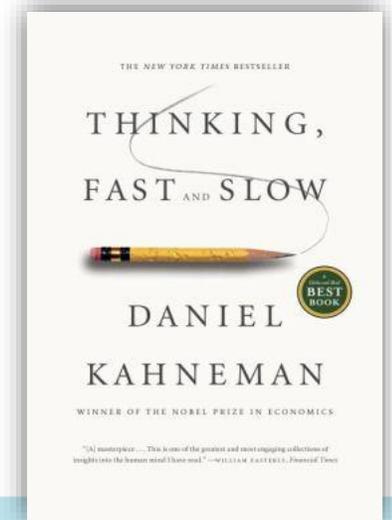


Cognitive-Ease Bias (Primed and Easy)



Consequence: Casual, sloppy and superficial thinking

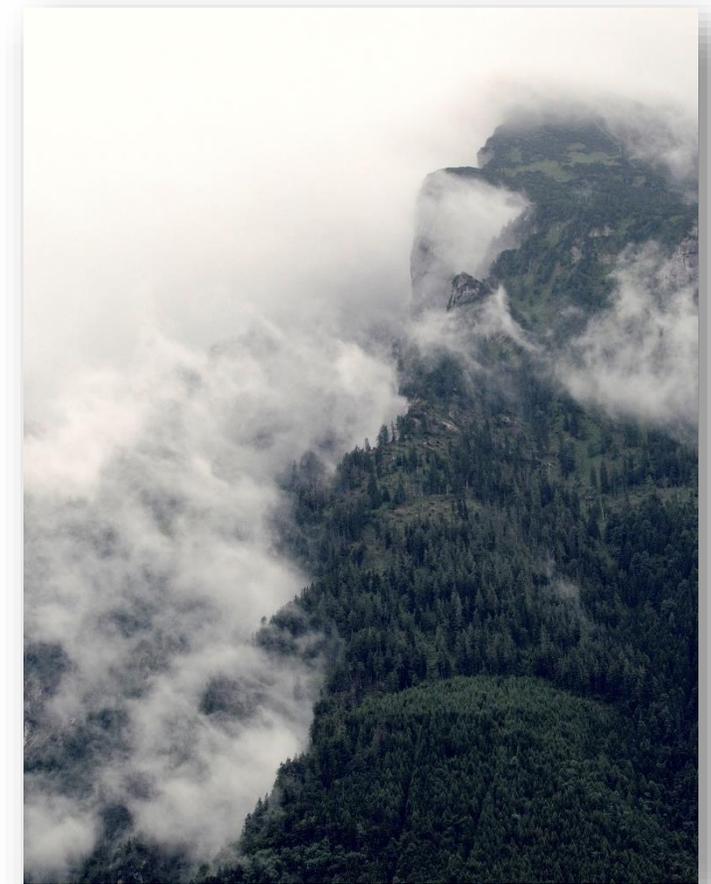
Inconsistent with aviation!



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So, what's that got to do with CFIT?

- **Mission focus**
 - Reject non-supportive information, even if strong
 - Seek supportive information, even if weak
- **Easier to continue**
 - Flight is already planned to the destination
- **Reluctance to use alternatives**
 - May be seen as failure to complete the mission
 - Manage passenger expectations
- **Delay reduces alternative options**



I would never do that!



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Takeaways

1. Fly the aircraft!
2. Recognize that any plan is immediately out of date and flawed
 - Use “all available information” to continually update



The takeaways

3. **Realistic preflight planning with alternative(s)**
4. **Objective in-flight plan performance assessment**
 - How is it going...?
5. **Deal with small problems before they become big ones**
 - Diversion to alternate is a small problem
 - Not enough fuel to get there is a big one
6. **Objective pilot performance assessment**
 - 5. How am I doing...? How did I do...?
7. **Maintain proficiency with *WINGS***



Whose Job is Safety?



Not My Job, Mate...



Safety Management Systems (SMS) Coming to General Aviation

FAA General Aviation Safety Outreach Initiative

The FAA General Aviation (GA) Safety Outreach Initiative is intended to increase the GA community's awareness of safety management practices that could elevate their overall safety performance. It specifically involves 14 CFR parts 61, 65, 91, 91k, 101, 103, 105, 107, 125, 133, 135, 137, 141, 142, 145, and 147.

The primary goals of the FAA GA Safety Outreach Initiative include:

- Increase the GA community's awareness of the Safety Attributes and the benefits of applying them
- Increase Air Operators' and Air Agencies' participation in the Safety Management System Voluntary Program (SMSVP)

Reaching these goals will result in a desired outcome of a lower accident and incident rate in the GA community.



<https://www.faa.gov/about/initiatives/gasafetyoutreach>



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Learning Points:

- Human biases are patterns of reasoning that assess the value of information according to *preconceived* beliefs
- Plan Continuation Bias is a form of Confirmation Bias that features pressing on with a plan even when presented with (new) information that suggests that the plan should be modified. It gets stronger as we near completion of the activity (for example, nearing the planned destination)
- Realistic pre-flight planning must objectively consider aircraft and pilot capabilities, route and weather challenges, and alternative destinations
- Regular objective pilot performance assessments should be made in consultation with a Flight Instructor
- Objective in-flight “how-goes-it?” assessments should be performed in order to influence en-route decision making with respect to continuing, modifying, or abandoning the plan...and providing the opportunity to "break-the-chain"



Have you earned your *WINGS*?

- **Proficient Pilots are:**
 - Confident
 - Capable
 - Safe
- ***WINGS*** will keep you on top of your game



Proficiency and Peace of Mind

- Fly regularly with your CFI
- “Revert to training” ...only works if...?
 - a) You've seen it before
 - b) You've done it recently
- **Practice, practice...**
 - Get in your head
 - ...and keep it there...
- Document in **WINGS**



WIN – Wings Industry Network

- Making it easier to navigate faasafety.gov
- More info here: <https://www.wingsindustry.com/ez-wings>
- From any browser:
 - <http://www.ezwings.net/>
- **USE IT!!!**



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FAA Pilot Proficiency Program



Thank you for attending

- You are vital members of our GA safety community



