

The National FAA Safety Team Presents

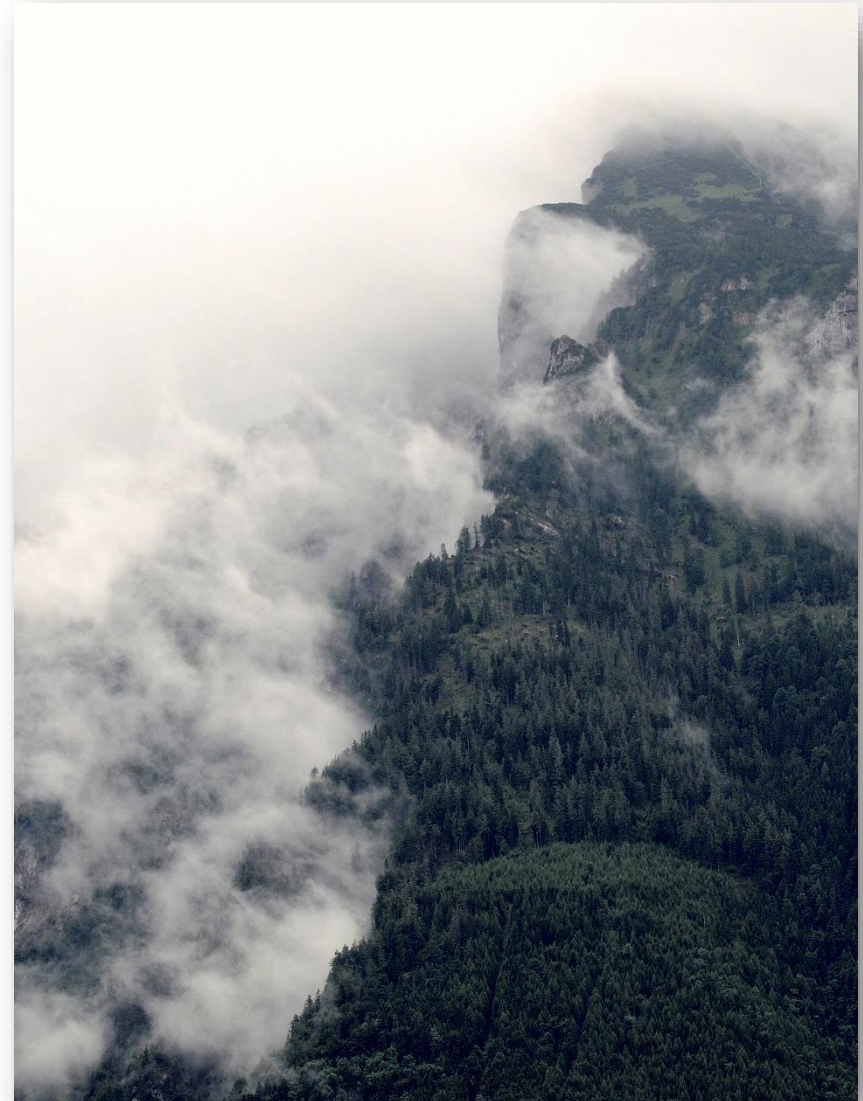
Topic of the Month – November CFIT & Over Reliance on Automation

Presented to: WAFC and Friends
By: Stephen Bateman, CFI
Date: November 8th, 2021

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



Federal Aviation
Administration



Welcome

- **Steve Bateman, CFI, Director of Flying Clubs at AOPA**
 - Treasurer, maintenance and safety officer – Westminster Aerobats Flying Club
 - FAASTeam lead representative, Baltimore FSDO
- **Our monthly in-and-out safety meeting using the FAASTeam Topic of the Month**
- **Sponsor Acknowledgment – WAFC, AOPA, FAASTeam, Baltimore FSDO**
- **WINGS Credit: Yes...but give me a day or two...**
- **Probably no time for questions, but send email:
steve.bateman@aopa.org**



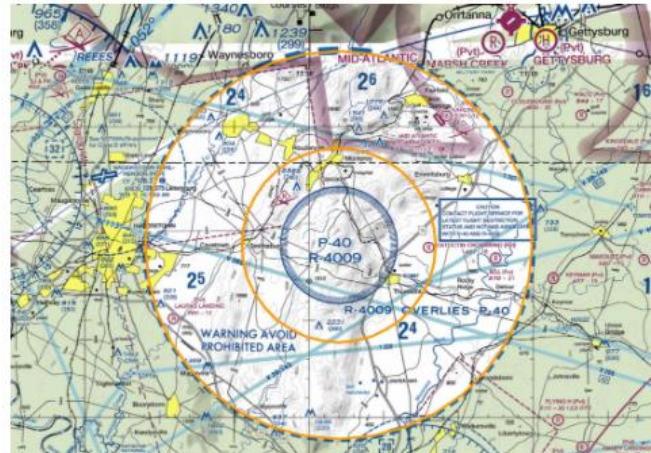
Check NOTAMS!



VIP TFR OVER WILIMINGTON, DE BEGINNING
TODAY SATURDAY, MARCH 6, 2021

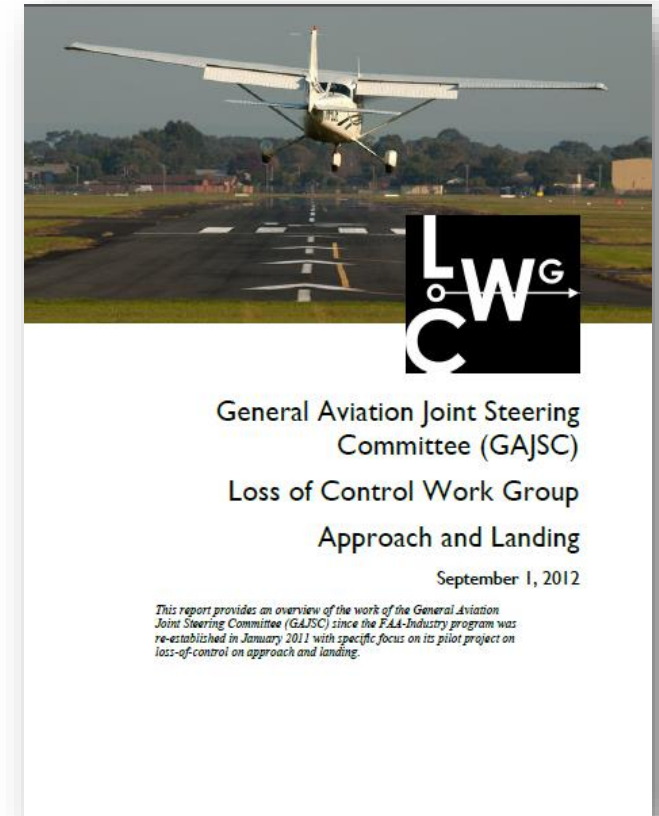


VIP TFR OVER HAGERSTOWN/THURMONT, MD
BEGINNING FRIDAY, APRIL 2, 2021
(((CHANGE IN DEPARTURE TIME)))



Overview

- The CFIT accident
- Some interesting stats
- Humans and Machines
- Recommendations



*GAJSC – General Aviation Joint Steering Committee



Controlled Flight Into Terrain

- **A big problem in the 1970s—and it still a problem**
 - More instrument flying
 - In more aircraft by more pilots, with more automation
- **Terrain doesn't have to be high elevation**

15 MSL (1972)



1,670 MSL (1974)



TWA 514 – 1 December 1974 – Day IMC

- **Scheduled to KDCA (Washington National)**
- **Diverted to KIAD (Washington Dulles)**
 - Radar vectors to RNY 12 VOR/DME
- **“Position five miles from JETMO. Fly heading one-four-zero. Maintain three thousand until established on the localizer. Cleared ILS one-two approach.**



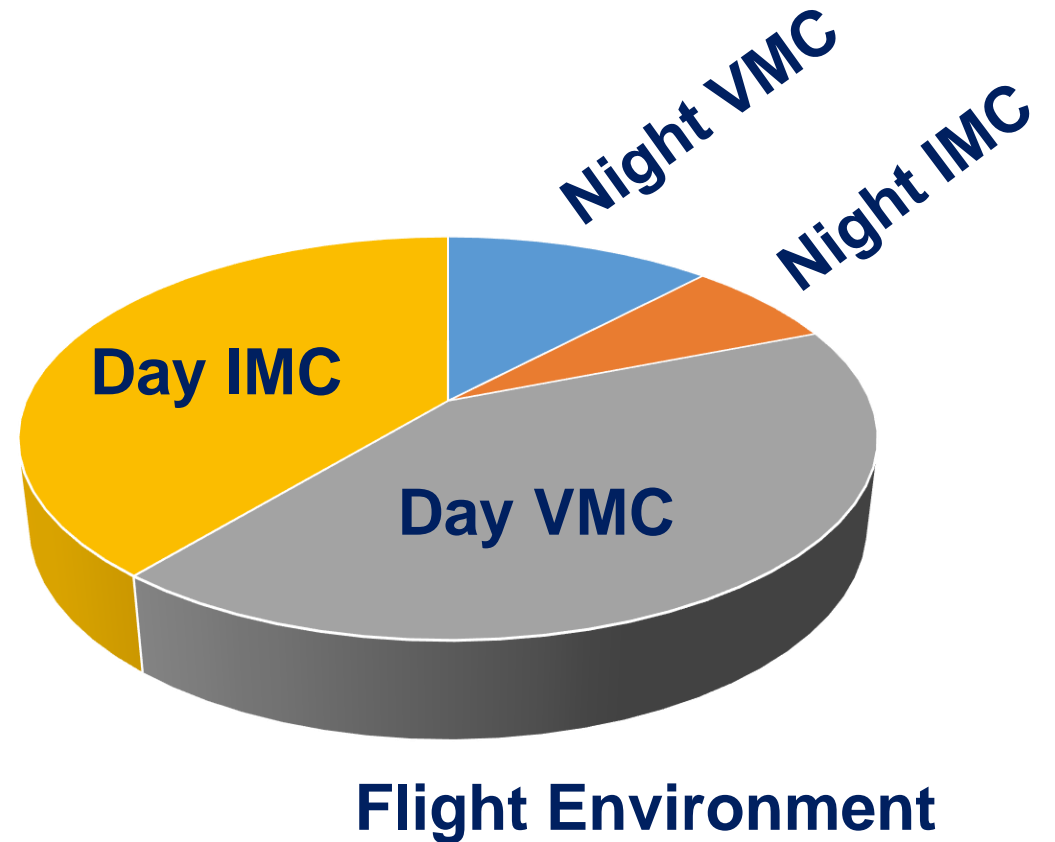
Eastern 401 – 29 December 1972 – Night VMC

- **Night VMC approaching KMIA (Miami)**
- **Fixation on solving a problem**
 - Landing gear light inoperative
- **Failure to monitor autopilot descent**
- **Be expert at dealing with distractions**
- **Automation will (generally) do what you told it to do, not what you want it to do...**
- **Never trust and always verify...**
- **Fly the airplane—George is never PIC**



The CFIT Accident

- **Unintentional collision with terrain while an aircraft is under positive control**
- **In one year**
 - 41 CFIT accidents
 - 56% Fatal
 - Inexperienced pilots?
 - Dark night and/or IMC?
- **Day VMC and experienced pilots**
- **Something else happened**
 - Distraction
 - Loss of situational awareness
 - Messing around with or trusting a box



From the 31st Nall Report

Figure 1.7: Flight Conditions

2019 Non-commercial fixed-wing



	Accidents		Fatal Accidents		Fatalities	
Day VMC	817	82.7%	109	60.9%	169	55.4%
Night VMC	65	6.6%	22	12.3%	39	12.8%
Day IMC	33	3.3%	24	13.4%	61	20%
Night IMC	7	0.7%	5	2.8%	8	2.6%
Unknown	66	6.7%	19	10.6%	28	9.2%

**Night fields include dusk.*



From the 31st Nall Report

Figure 1.5.2: Types of maneuvering accidents

2019 Non-commercial fixed-wing

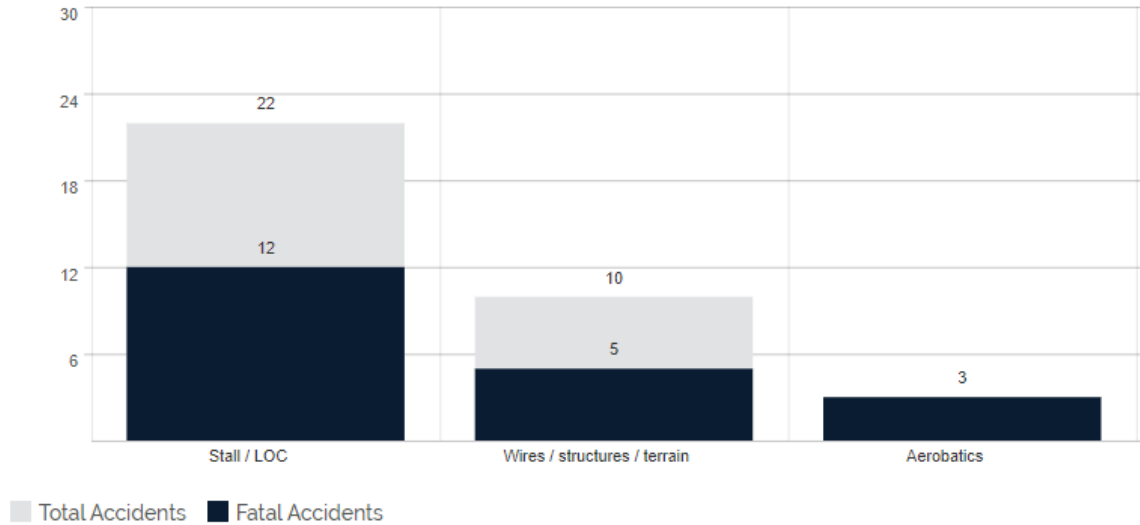


Figure 1.5.4: Flight conditions of maneuvering accidents

2019 Non-commercial fixed-wing



	Accidents	Fatal Accidents	Lethality
Day VMC	34 94.4%	19 95%	55.9%
Night VMC	2 5.6%	1 5%	50%

*Night fields include dusk



From the 31st Nall Report

Figure 1.6.2: Types of descent and approach accidents

2019 Non-commercial fixed-wing

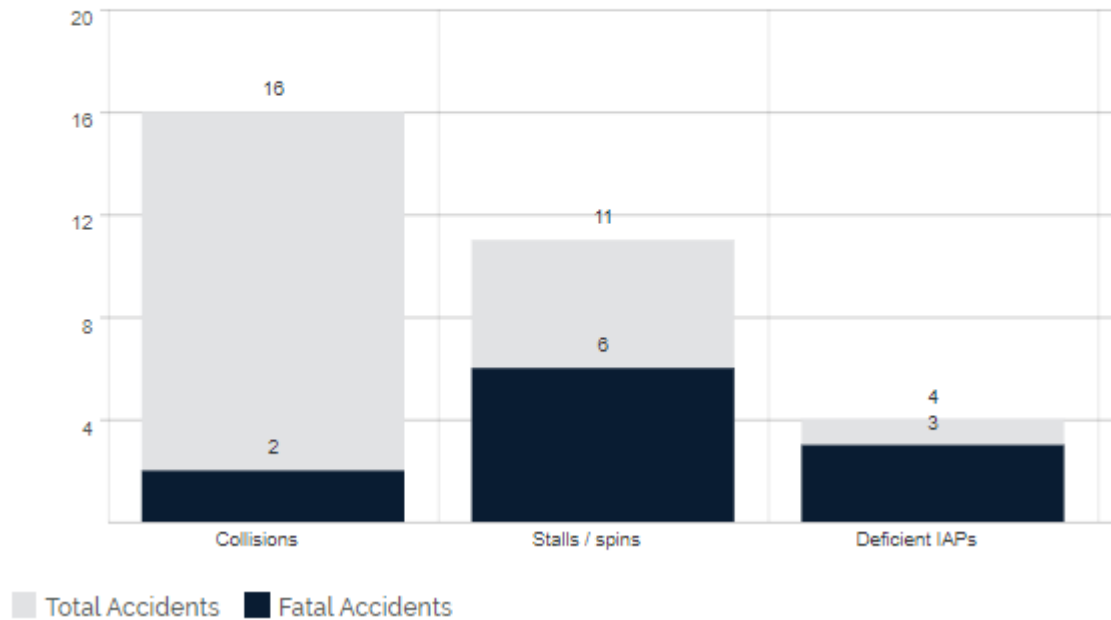


Figure 1.6.4: Flight conditions of descent and approach accidents

2019 Non-commercial fixed-wing

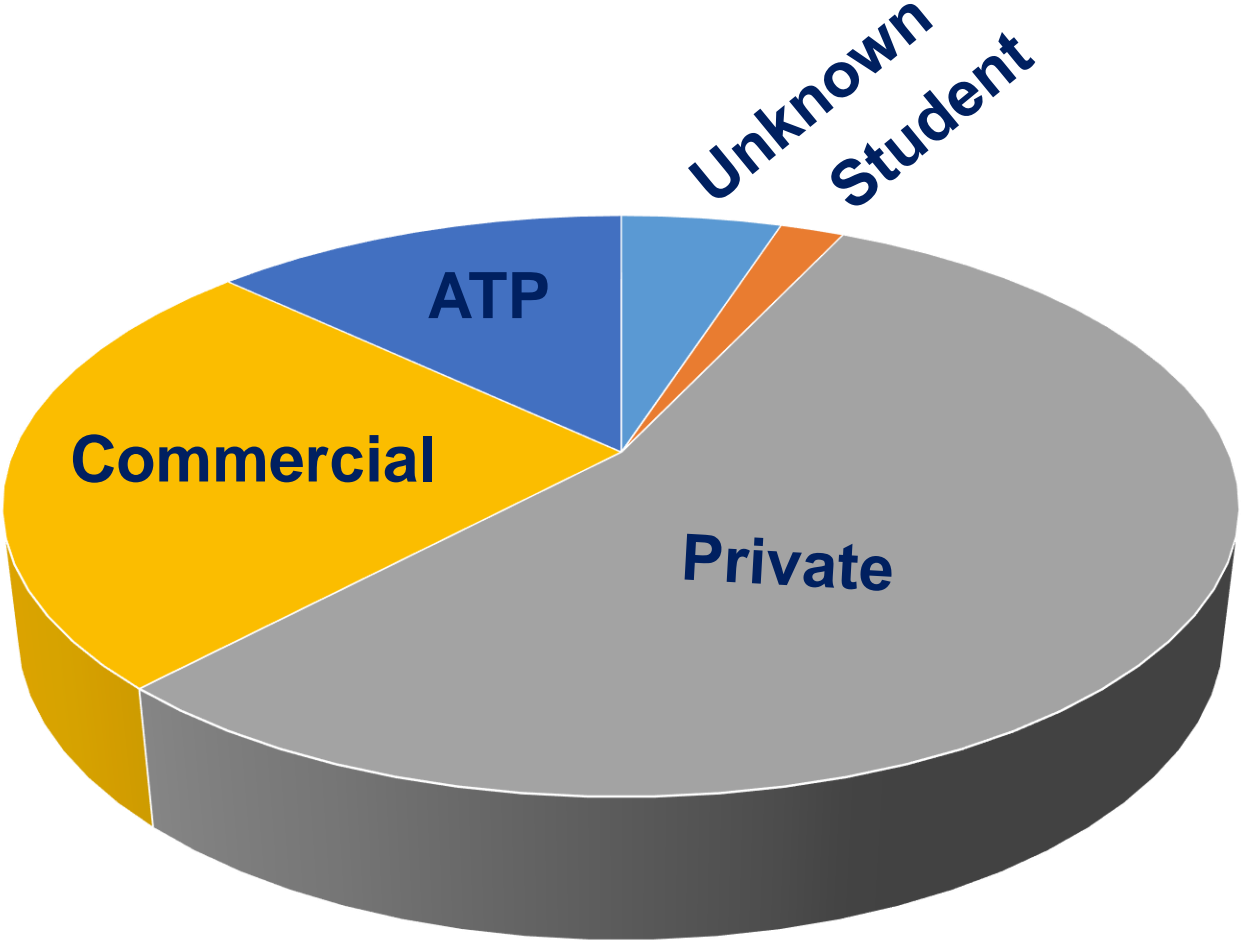
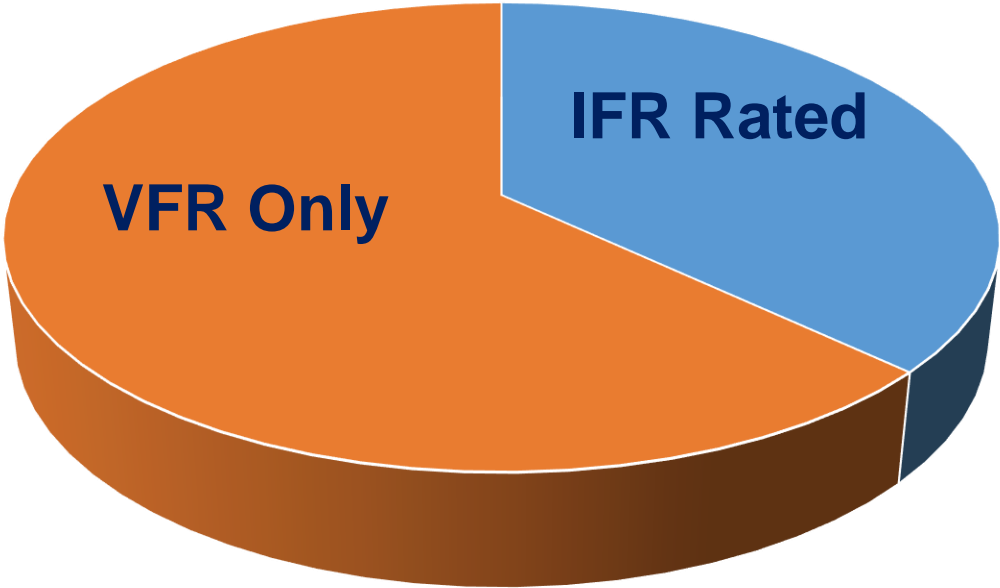


	Accidents	Fatal Accidents	Lethality
Day VMC	22 64.7%	6 54.5%	27.3%
Night VMC	6 17.6%	2 18.2%	33.3%
Day IMC	2 5.9%	2 18.2%	100%
Night IMC	1 2.9%	0 0%	0%
Unknown	3 8.8%	1 9.1%	33.3%

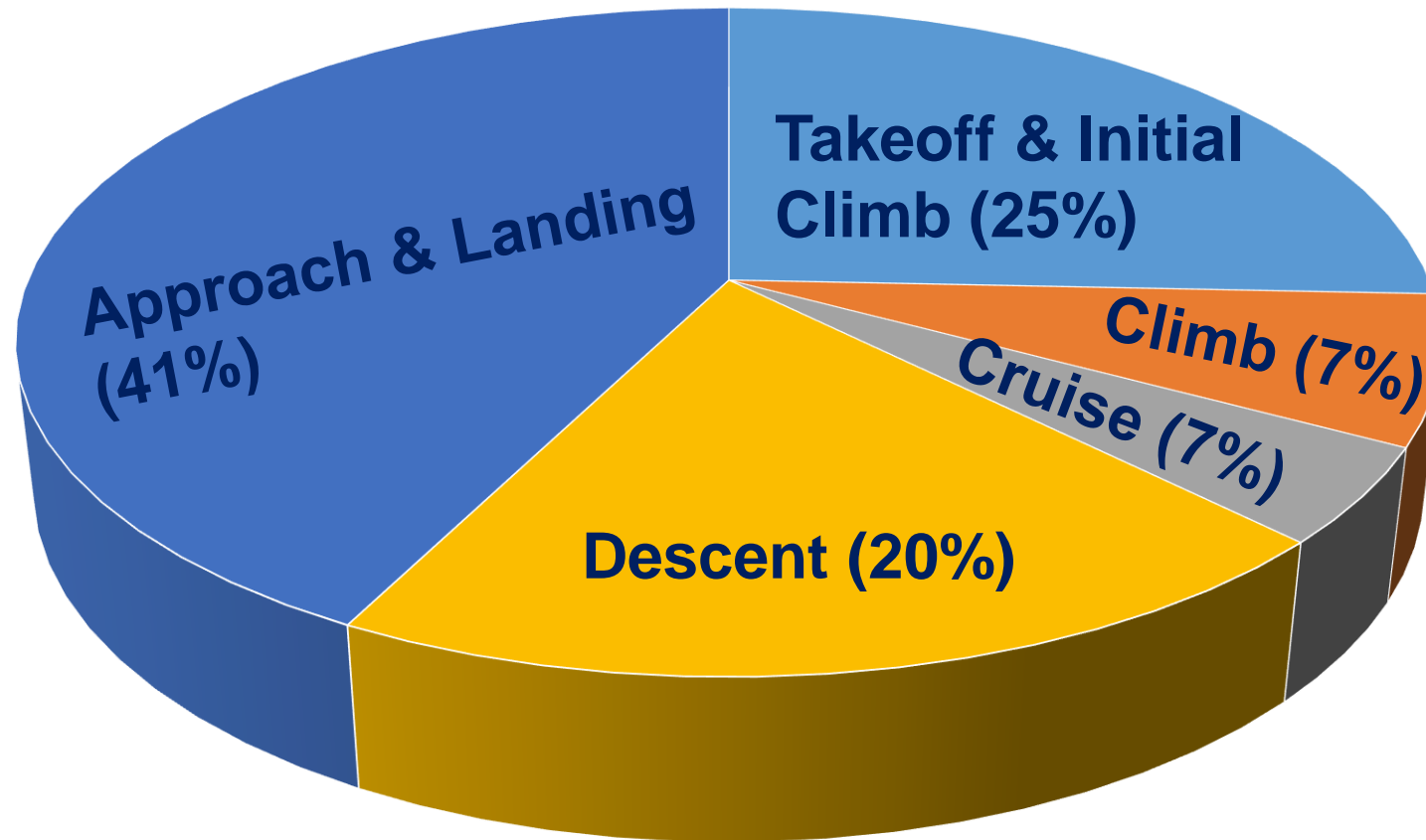
**Night fields include dusk*



CFIT and Pilot Certificates & Ratings



CFIT and Phase of Flight



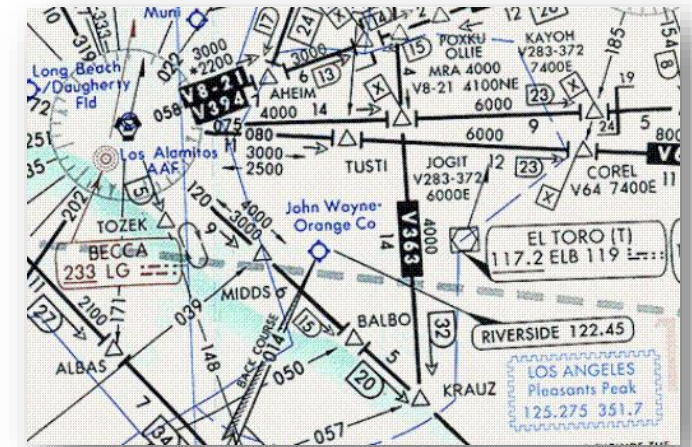
The CFIT Accident

- **Continued VFR into IMC**
 - These accidents are almost always fatal
 - 11 accidents in study group
 - 25% of total
 - 6 pilots were instrument rated
 - 5 were not instrument rated
 - Fate is the hunter...



The CFIT Accident

- **IFR procedural mistakes (Box set-up?)**
 - Flight below minimum en-route or crossing altitudes
 - Descent below MDA
 - Failure to fly assigned heading or altitude
- **Wire strikes**
 - Common in—but not exclusive to—Ag operations
 - **Most are below 200 Ft. AGL!**
 - Many (most) wires are unmarked



The CFIT Accident

- **Unrealistic aircraft performance expectations**
 - Density altitude
 - Short and/or obstructed runways
 - Weight and balance
 - Carb ice
 - Tailwinds



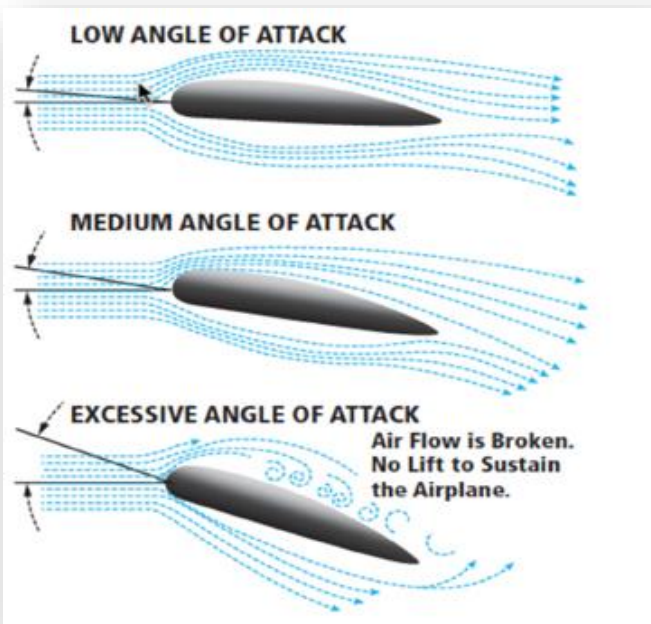
Automation is a wonderful thing

- Fly with precision and accuracy
- Reduces pilot workload



Automation is a wonderful thing but

- There are limitations
- Automation error



Automation is a wonderful thing but

- **ALT hold...at all costs...**

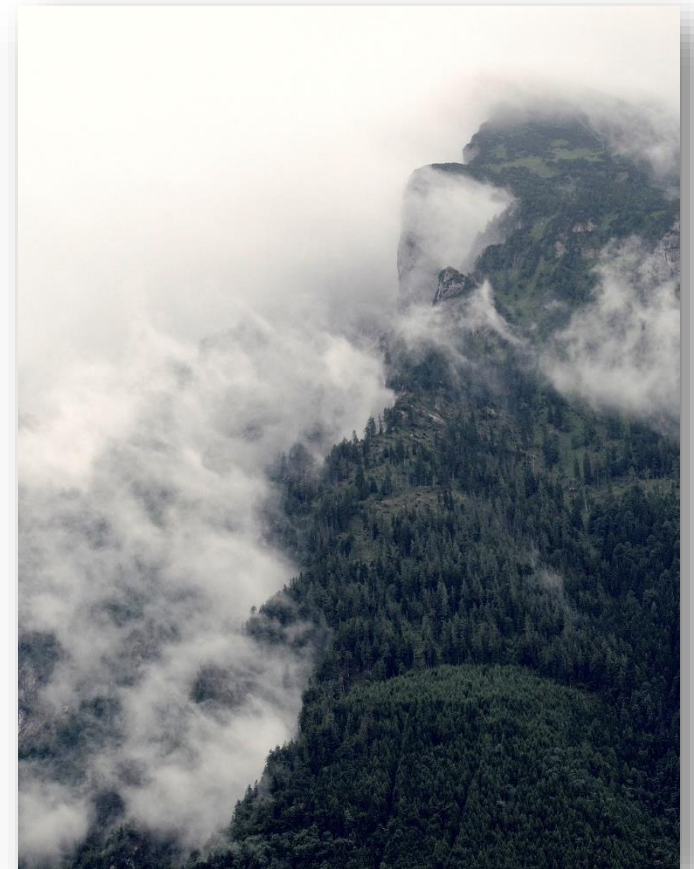


Automation is a wonderful thing but

- **Stay ahead of the airplane!**

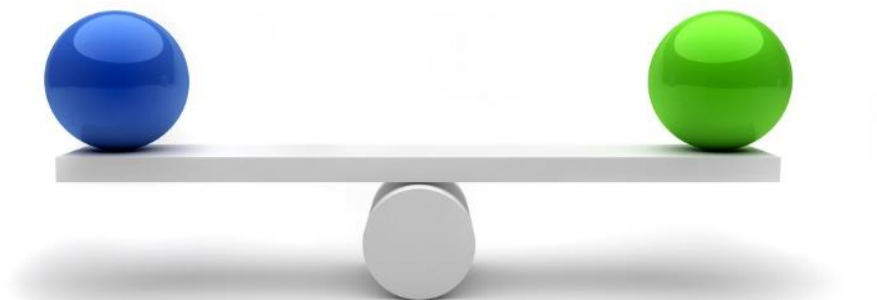


“Never let the airplane take you somewhere that your brain didn’t get to five minutes earlier.”



Automation is a wonderful thing but

- Breeds complacency
- May erode pilot confidence



Humans Vs. Machines

- **Each has limitations**
 - Cognitive
 - Logic sequences/programming
- **We are smarter, if only we don't get complacent**
- **Unchecked automation errors: LOC, CFIT, more...**
- **Pilot induced automation errors: finger trouble, dyslexia...**
 - It will do what you told it, not what you want it to do
- **Different and difficult man-machine interfaces (both ways)**
- **When redundancy, isn't**
 - What does each box “drive”? Are they exactly the same?



Recommendations:

- **Thoroughly understand the automation in your aircraft**
 - Including data sources, sensors and their failure modes
 - Normal operations (to correctly interpret abnormal)
 - Failure modes and emergency operations
 - Know all the ways to disconnect the boxes, Dave
- **Include all boxes in your scan and crosscheck**
- **Practice hand flying regularly**
- **Participate in regular proficiency training**
- **Fly as often as you can**



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

- Practice may make you perfect and might save your life!
- Fly often with a CFI
- Training is credited
- **WINGS** participation can save you money
 - Insurance discounts
 - Less bent metal!



Thank you for attending!

You are vital members of our GA safety community!



Next Month ToM:

The National FAA Safety Team Presents

Topic of the Month - December Engine Maintenance and Flight Data Monitoring

Presented to: WAFC and Friends

By: Stephen Bateman, CFI

Date: December 13th, 2021

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The FAA Safety Team ([FAASTeam](#))



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