The National FAA Safety Team Presents

Federal Aviation Administration

Topic of the Month – November

Normalization of Deviation Bias

Presented to: <Audience>

By: <Presenter>

Date: < >

Produced by:
The National FAA Safety Team (FAASTeam)

Welcome

- Exits
- Restrooms
- Emergency Evacuation
- Breaks
- Sponsor Acknowledgment
- Set phones and pagers to silent or off
- Other information

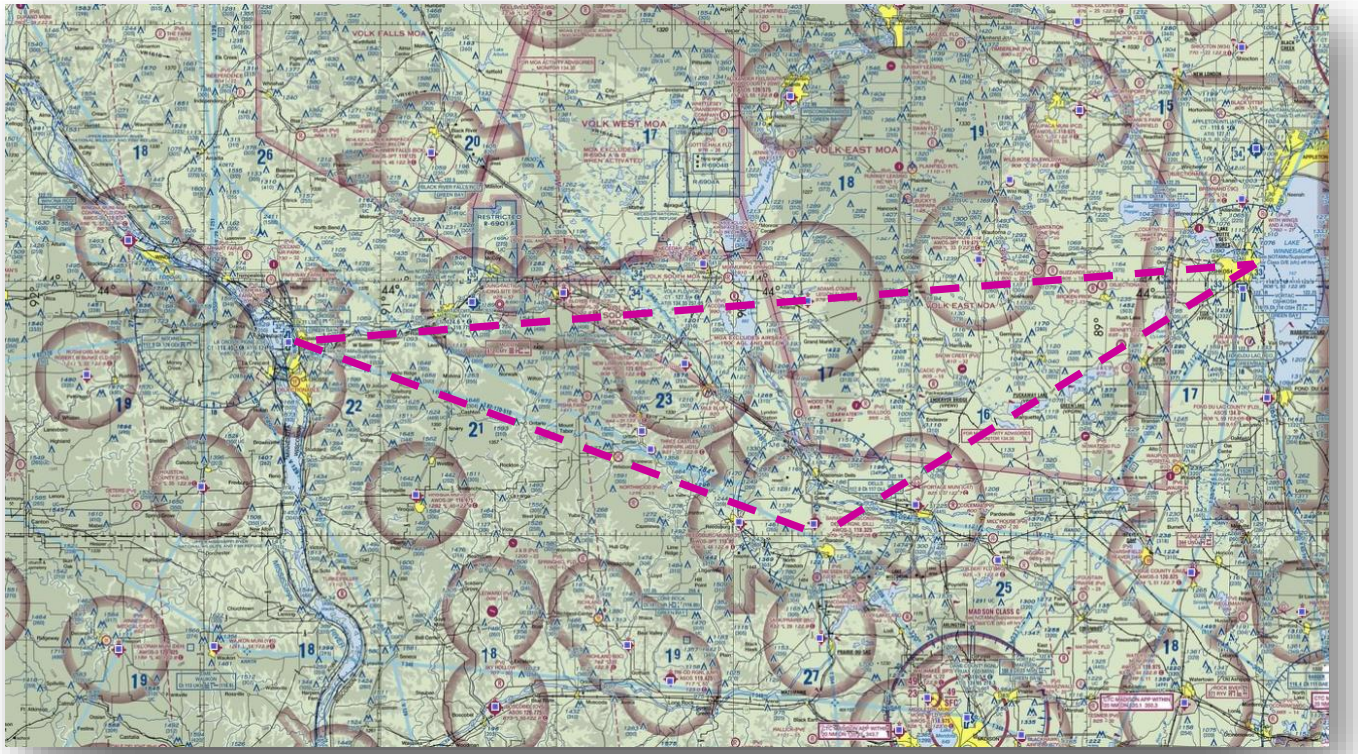
Overview

- **Normalization of Deviance**
- **CFIT Case Studies**
- **Maintaining Proficiency**

***GAJSC – General Aviation Joint Steering Committee**

Pushing the limits is human nature

- **A recipe for success**
- **Continuous improvement**
  - Safety & Quality control
- **Shortcuts**
  - Save time & money



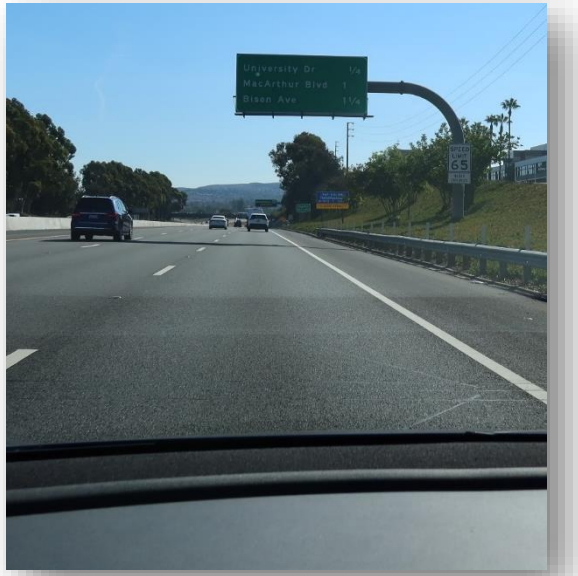
Complications

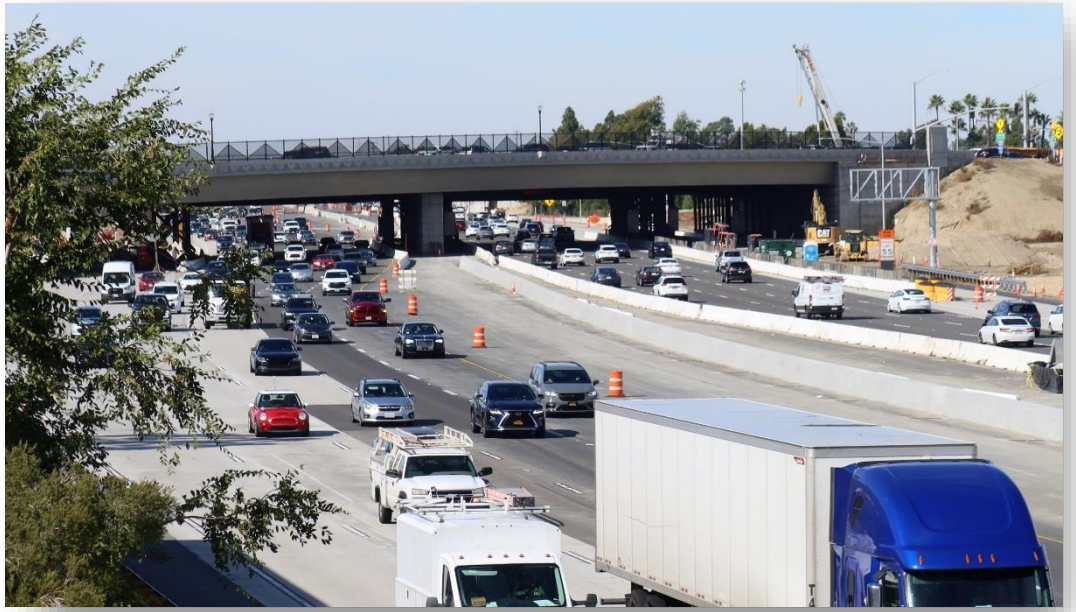
- **Bias – a prejudice in favor of or against one thing, person or group compared with another, often in a way considered to be unfair**

- **Normalization of Deviance**
  - Operational Drift
  - Dunning-Krueger Effect

What’s the limit?

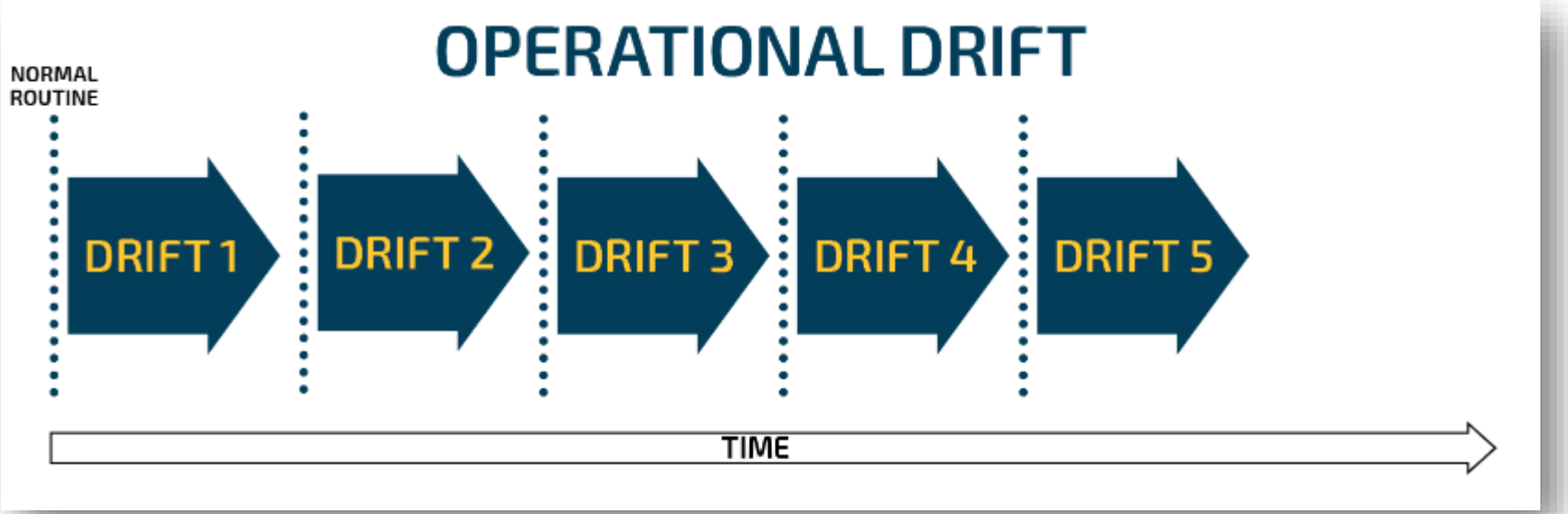
- **Posted vs Practical**
  - I’m not speeding – just keeping up with traffic





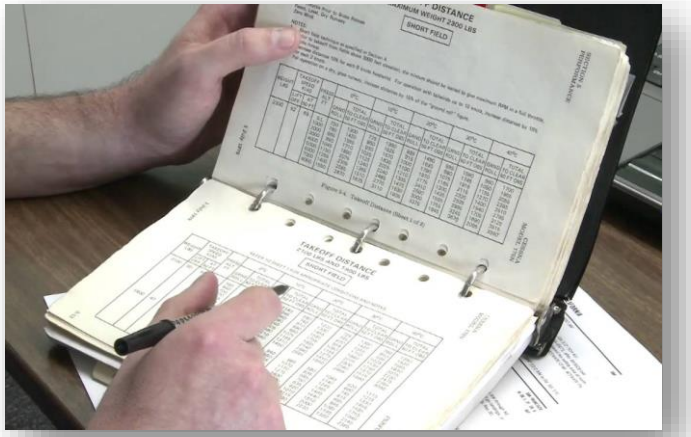
Operational Drift

- **Acceptable process limits tend to drift over time**



How often have you heard….

- She’ll haul anything you can fit in the door
- Relax - It flew in here – it’ll fly out
- We’ve got plenty of fuel



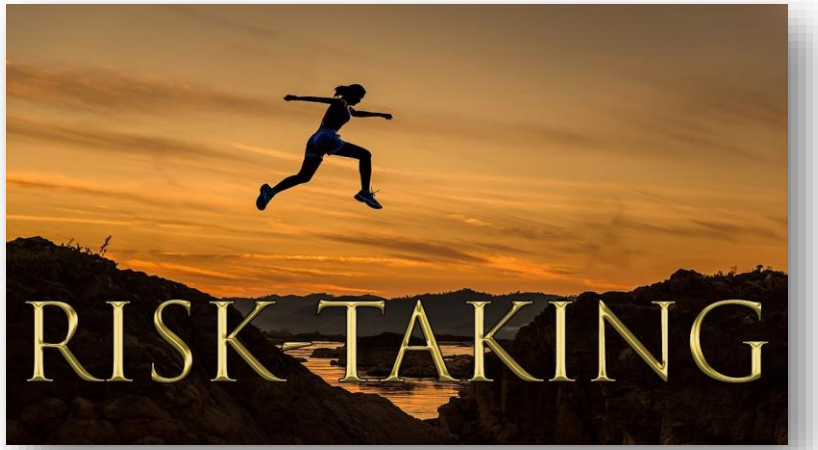
We’ve got plenty of fuel

- **Regular round-trip flight from Virginia to New England**
  - 675 nm
    - Fuel – 48Gal @ 7GPH
      - 6 hrs. 48 min. – no reserve
    - Speed – 110 Knots
      - 6 hrs. 5 min. – no wind
      - Average Trip – 6 hrs. 15 min.
    - No refuel if outbound leg is < 3 hours

Discussion

The Dunning - Kruger Effect

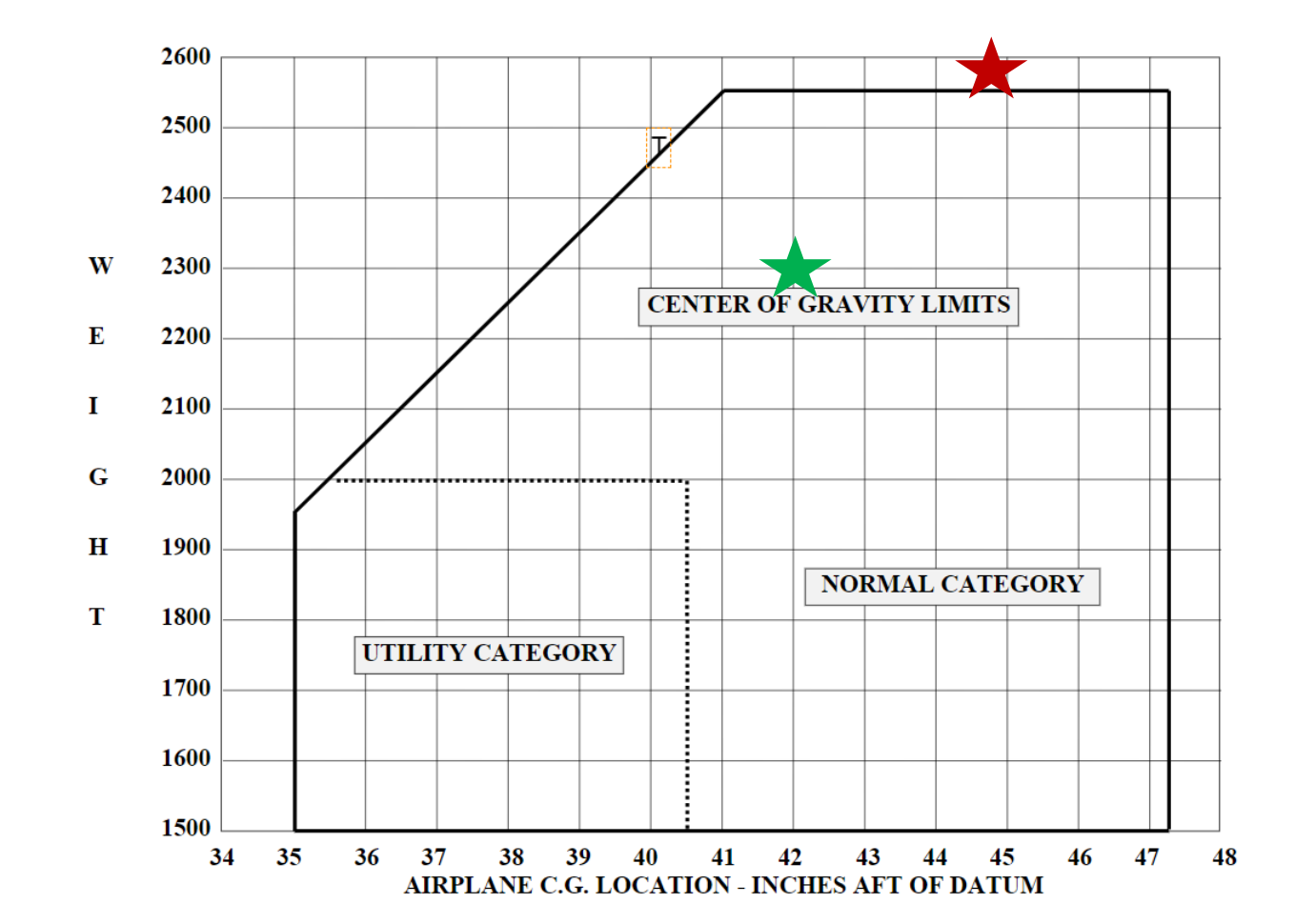
- **Less experienced practitioners tend to overrate their ability**
  - and their decision making
- **More experienced aviators appear to be more cautious**
  - Taking more factors into consideration
  - Considering their previous experience



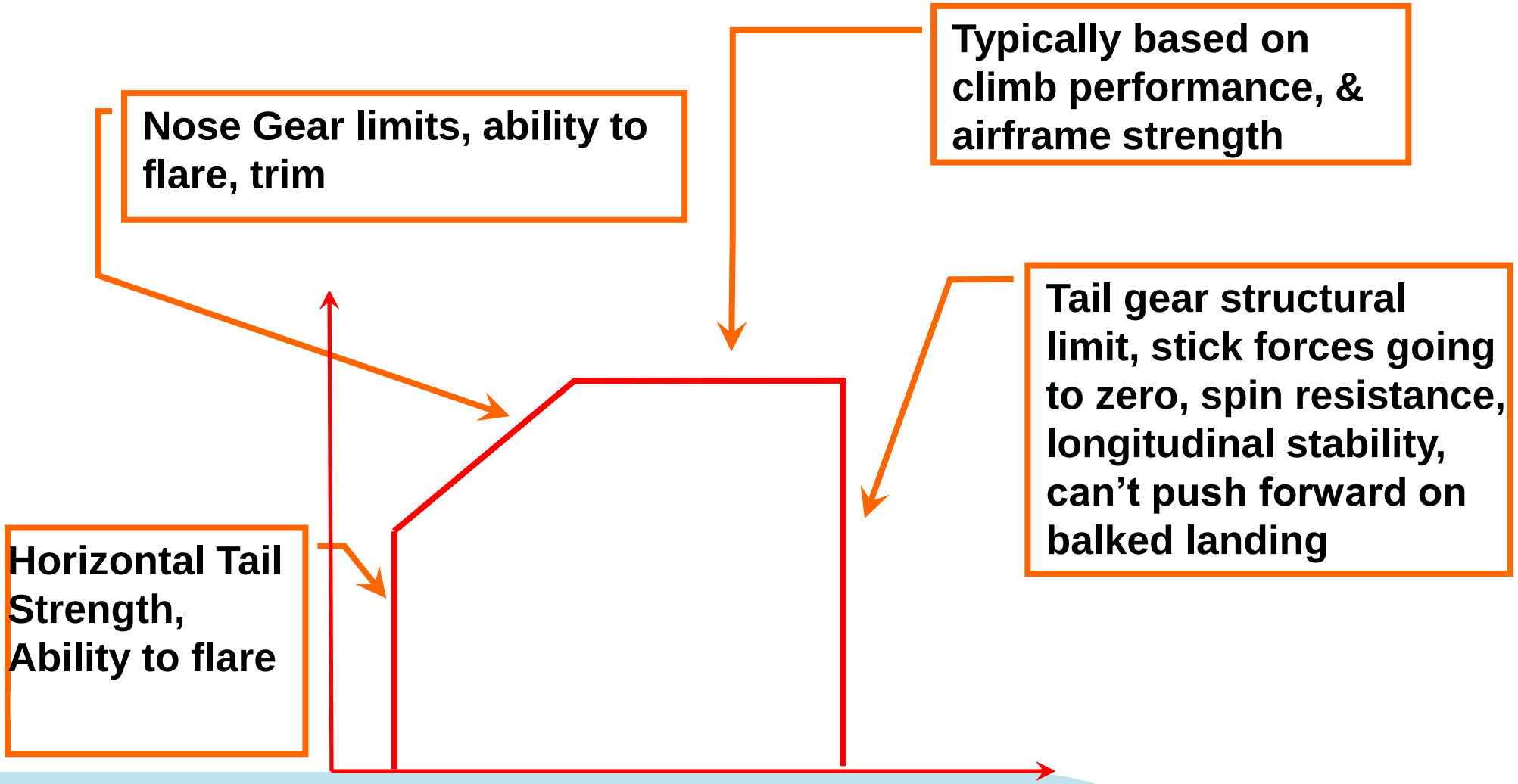
She’ll haul anything that will fit in the door

- **Airplane owned for more than 10 years**
  - Max T.O. Wt. 2550
  - Empty Weight 1680
  - Fuel 53 Gal 318 Lb.
  - Useful Load 552 Lb.

Ten years of operational drift



Examples of Weight and Balance Limits



Weight Limits – True or False

1. Maximum gross weight is selected early in the design of most airplanes and the rest of the airplane is designed around that number.

Yes – that's true.

2. Exceeding maximum gross weight routinely can result in fatigue problems.

You bet – exceeding max gross weight – even by a little bit will result in fatigue problems. As the fleet ages we're seeing more of this.

3. Exceeding maximum gross weight results in lower climb rates and can result in structural failure.

Well duh – of course we're going to climb slower but the insidious thing is the possibility of structural failure.

4. When exceeding Max Gross Wt. Stall speed goes up, controllability can be reduced, ability to maneuver without entering an accelerated stall can be reduced.

Yes this is all true when you exceed weight limits.

Operational drift and CFIT

Reduced margins of safety

CFIT – a possibility

Coping with Normalization of Deviation

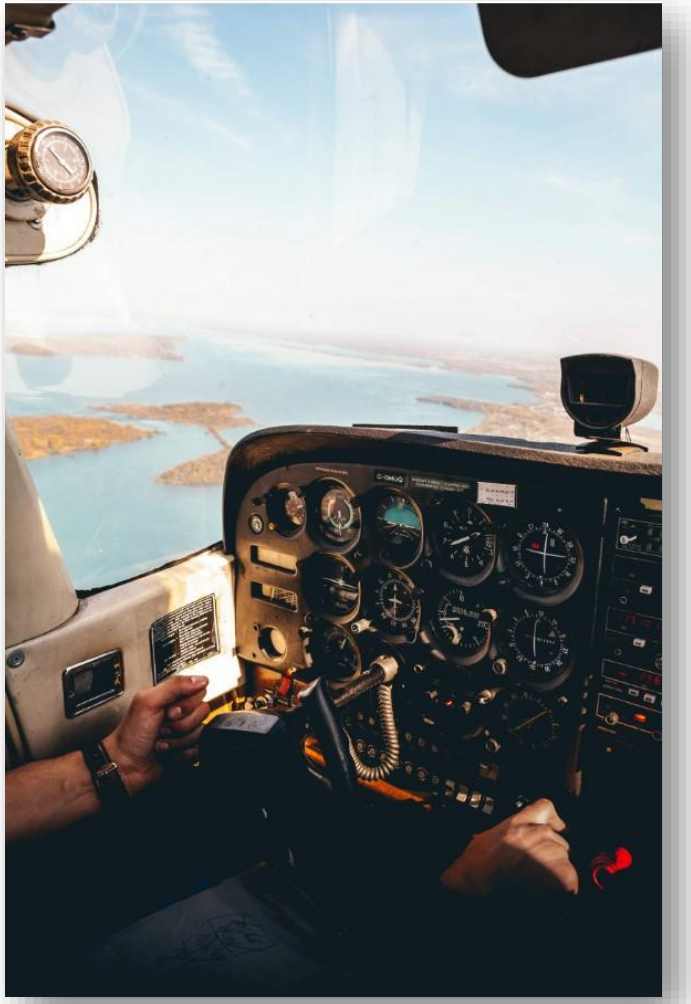
Recognition

- Everyone is susceptible
- Awareness is the first step

Document and operate within limitations

- POH
- Regulations
- Personal

Discussion



Personal Minimums

Pilot

Aircraft

en**V**ironment

External Pressures

Pilot

- Certification Level
- Total Experience
- Recent Experience
- Health
- Fatigue
- Stress

Aircraft

- Performance
- Range
- Instrumentation
- Navigation Equipment
- Wx Avoidance Equipment

enVironment

- Topography
- Runway & approach aids
- Wind and Weather
- Lighting Conditions

External Pressures

- Employers & Passengers
- Schedules & Deadlines
- Expenses

Assess Experience and Comfort Level

Experience and "Comfort Level" Assessment
Wind & Turbulence

	SE	ME	Make/ Model
Turbulence			
Surface wind speed	10 knots	15 knots	
Surface wind gusts	5 knots	8 knots	
Crosswind component	7	7	

Experience and "Comfort Level" Assessment
IFR & LIFR

Weather Condition		IFR	LIFR
Ceiling		500–999	< 500
	Day	800	—
	Night	999	—
Visibility		1–3 miles	< 1 mile
	Day	1 mile	—
	Night	3 miles	—

Experience and "Comfort Level" Assessment
Performance Factors

	SE	ME	Make/ Model
Performance			
Shortest runway	2,500	4,500	
Highest terrain	6,000	3,000	
Highest density altitude	3,000	3,000	

Adjust for Specific Conditions

	If you are facing		Adjust baseline personal minimums by
Pilot	Illness, use of medication, stress, or fatigue; lack of currency (e.g., have not flown for several weeks)	Add	At least 500 feet to ceiling
Aircraft	An unfamiliar airplane or an aircraft with unfamiliar avionics or other equipment	Add	At least 1/2 mile to visibility
enVironment	Unfamiliar airports and airspace; different terrain or other unfamiliar characteristics	Add	At least 500 feet to runway length
External Pressures	"Must meet" deadlines, pressures from passengers, etc.	Subtract	At least 5 knots from winds

- **Never adjust to a less conservative level**

Develop & adjust with your CFI

- **CFIs provide:**
  - Perspective
  - Consistency
  - Coaching
- **Regular Reassessment**
  - Required for professionals
  - Highly recommended for all pilots

Preflight with a FRAT (Flight Risk Assessment Tool)

Pilot	Yes?	Risk Value	Total Risk Value			Risk Matrix Chart		
Less than 50 Hours in Aircraft or Avionics Type		0	0	Pilot	Time in Type	Low	Moderate	High
Less than 15 hours in last 90 Days		0		VFR	<100	5 to 15	15 to 20	>20
Flight will occur after work		0		VFR	>100	15 to 20	20 to 25	>25
Less than 8 hours sleep in 24 hours prior to flight		0		IFR	<100	20 to 25	25 to 30	>30
Dual Instruction Received in last 90 days		0		IFR	>100	25 to 30	30 to 35	>35
WINGS Phase Completion in last 6 months		0						
Instrument Rating, current and proficient		0						
Flight Conditions								
Twilight or Night		0						
Surface wind greater than 15 Knots		0						
Cross wind greater than 7 Knots		0						
Mountainous Terrain		0						
Airport								
Non-towered Airport or tower closed at ETD or ETA		0						
Runway length less than 3,000 feet		0						
Wet or soft field Runway		0						
Obstacles on approach and/or departure		0						
VFR Flight Plan								
Ceiling less than 3,000 feet AGL		0						
Visibility less than 5 SM		0						
No Weather Reporting at destination		0						
Flight Plan filed and activated		0						
ATC Flight Following used		0						
IFR Flight Plan - Instrument Rated Pilots Only								
Ceiling less than 1,000 feet AGL		0						
Visibility less than 3 SM		0						
No Weather Reporting at destination		0						
Best available Approach- Instrument Rated Pilots only								
Precision Approach		0						
Non precision Approach		0						
No Instrument Approach		0						

20 Statements - VFR

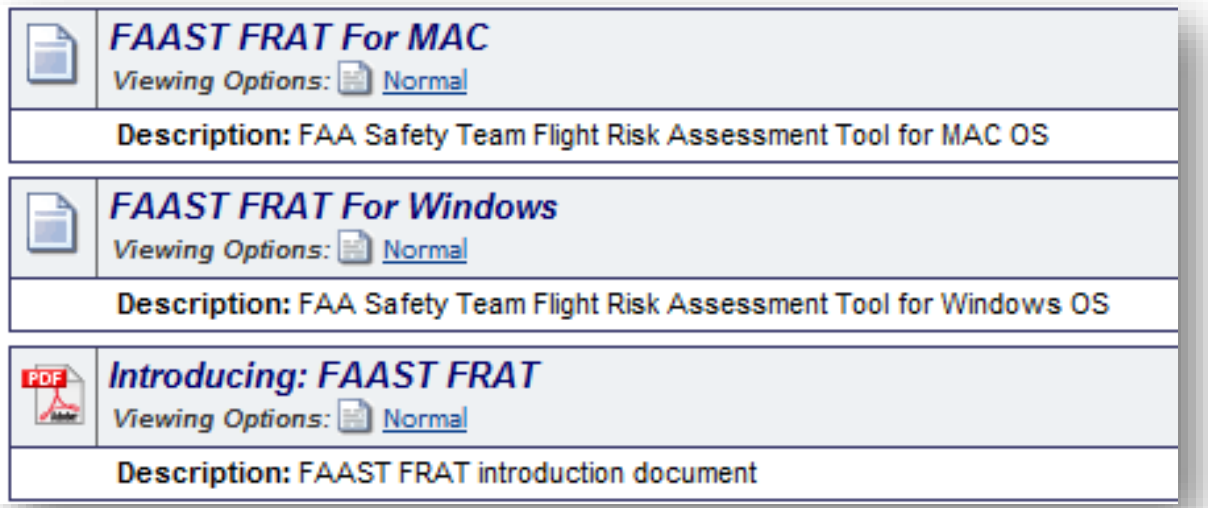
22 Statements - IFR

FAAST FRAT

https://bit.ly/3g7GJOf

FAAST FRAT

- **Click on Flight Risk Assessment Tool**
- **Download appropriate FRAT for your computer.**



Have you earned your *WINGS*?

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

http://www.mywingsinitiative.org/

The Paul and Fran Burger 2021 $10,000 *WINGS* Sweepstakes

The ***WINGS*** Sweepstakes mission is to reduce the nation's accident and incident rate by increasing pilot participation in the *WINGS* FAASTeam Pilot Proficiency Program. The *WINGS* program has courses based on real world accident and incident causes so flight instructors, pilots and student pilots get training that can truly make a difference.

Studies indicate that pilots who complete *WINGS* phases are safer aviators. Please join us in saving lives.

Captain Sully endorses the *WINGS* Pilot Proficiency Program
View the video
learn about the program and its many benefits.

The 2020 Sweepstakes awards 10 cash prizes! Prize levels include:

Four (4) $1,500
Four (4) $750
Two (2) $500

WINGS
Industry Network

Questions?

Safety Management Systems (SMS) Coming to General Aviation

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

Thank you for attending

- **You are vital members of our GA safety community**

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