PASCO Safety Seminar 2017

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Trustee

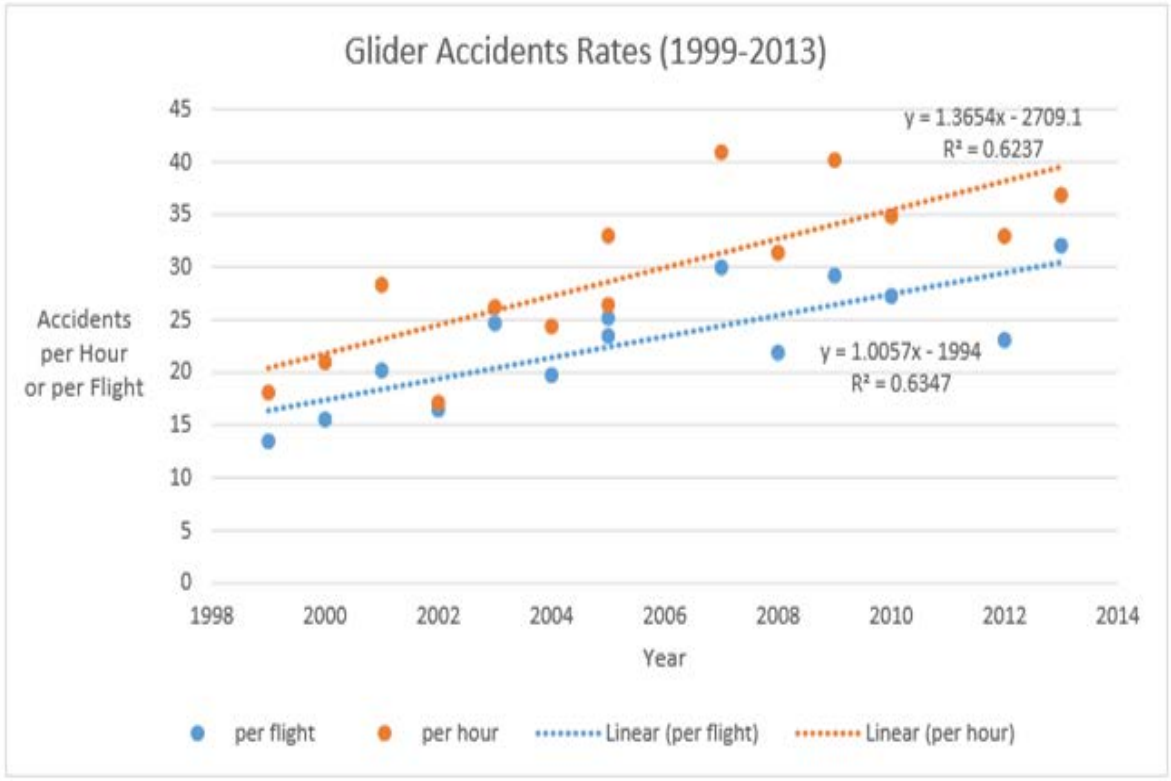
Soaring Safety Foundation

The Plan

- Safety Review
- Checklists
- Stalls
- PT3 and Pattern
- Question Time

Accidents and Fatalies in 2016 were down However..

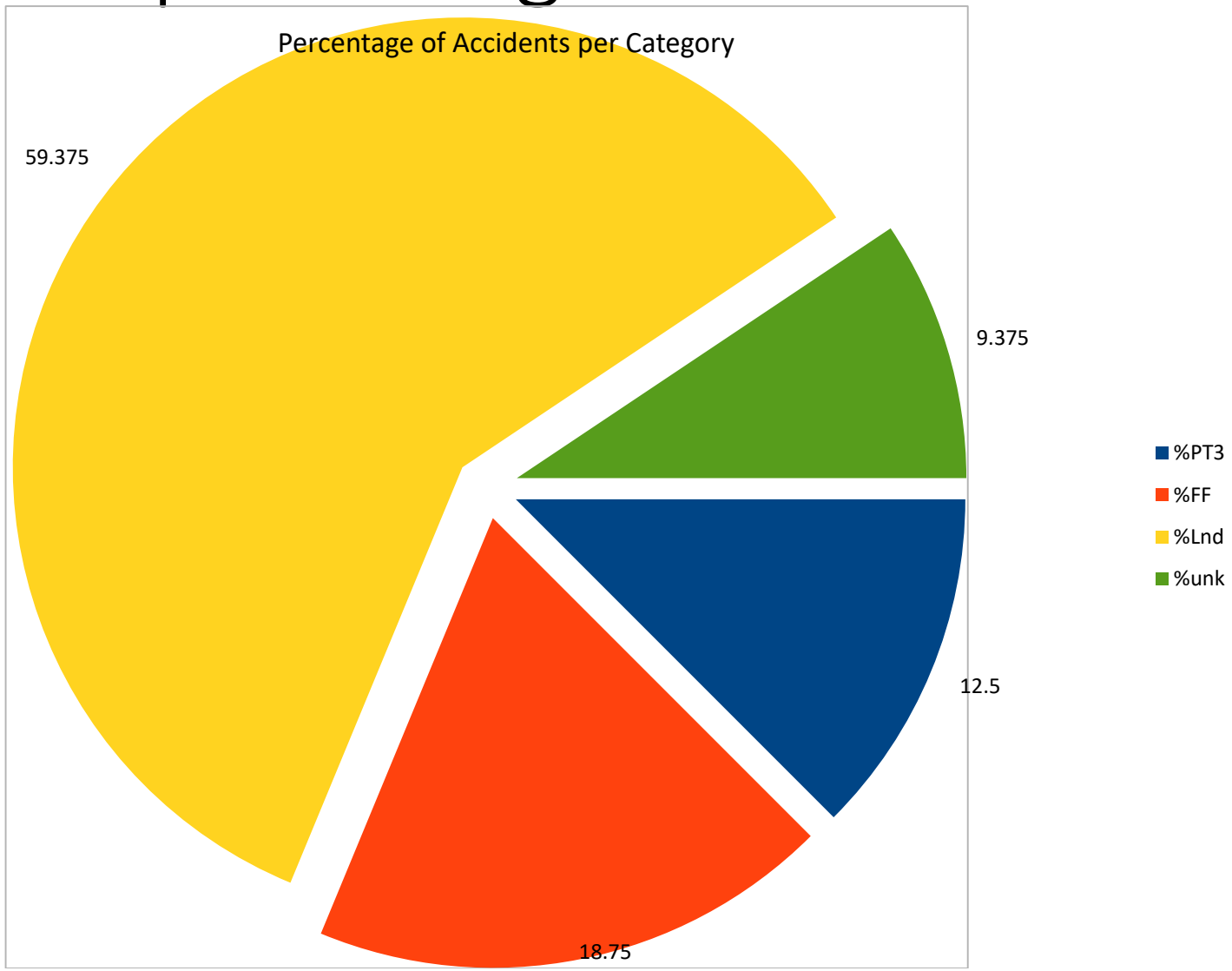
The overall accident rate is increasing. It has almost doubled since 1999.



Findings:

1. Accident rates significantly increased at an average rate of 1.01 accidents per/flight per year from 1999 to 2013 (p = .000648). The linear model explains 63% of the variance in accident rates. By chance, this trend would occur less than 7 times in 10,000.

Accidents as percentage of total

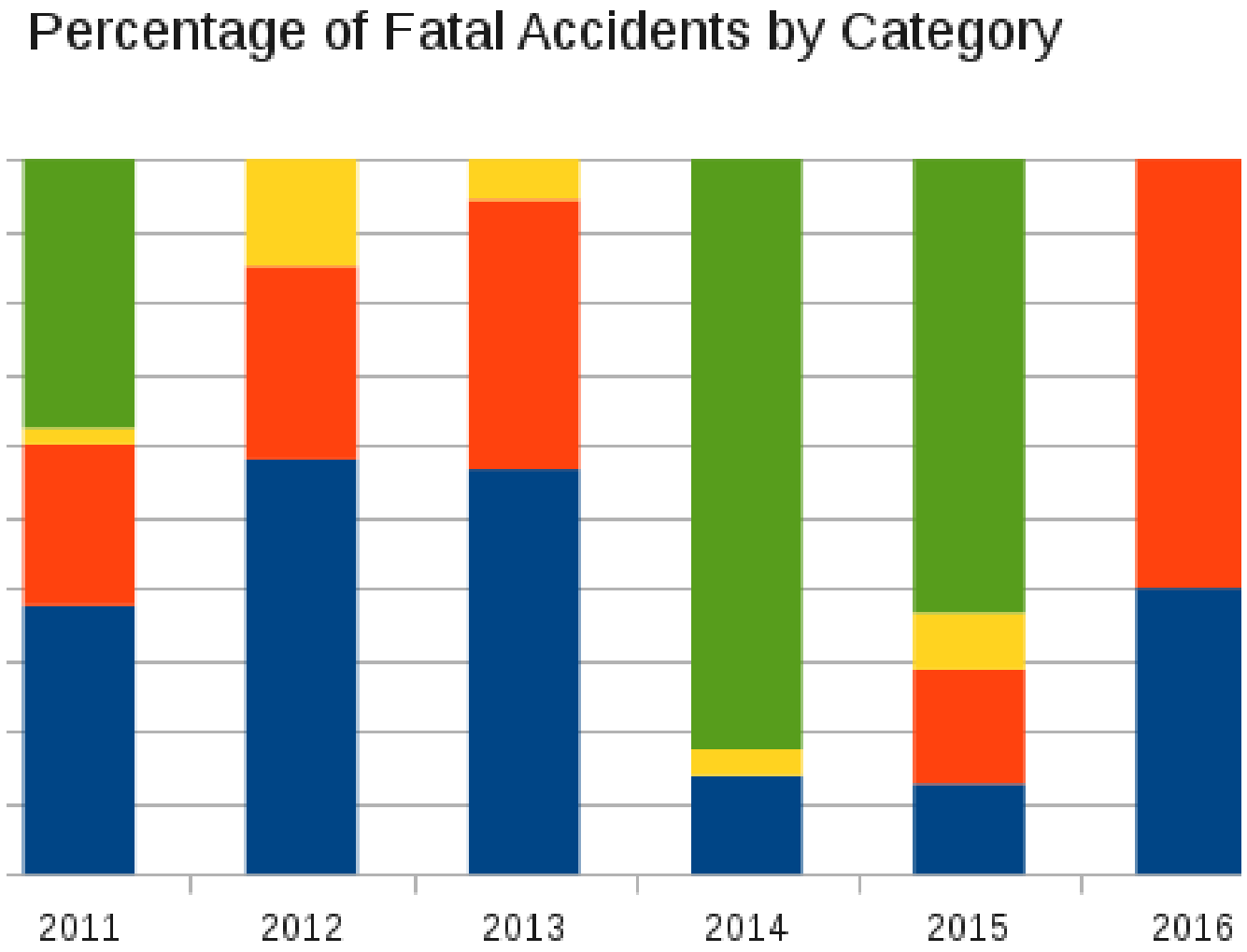


Most Accidents happen in Landing Pattern

Most Fatalities happen during a PT3

65% of PT3 accidents are “planned”

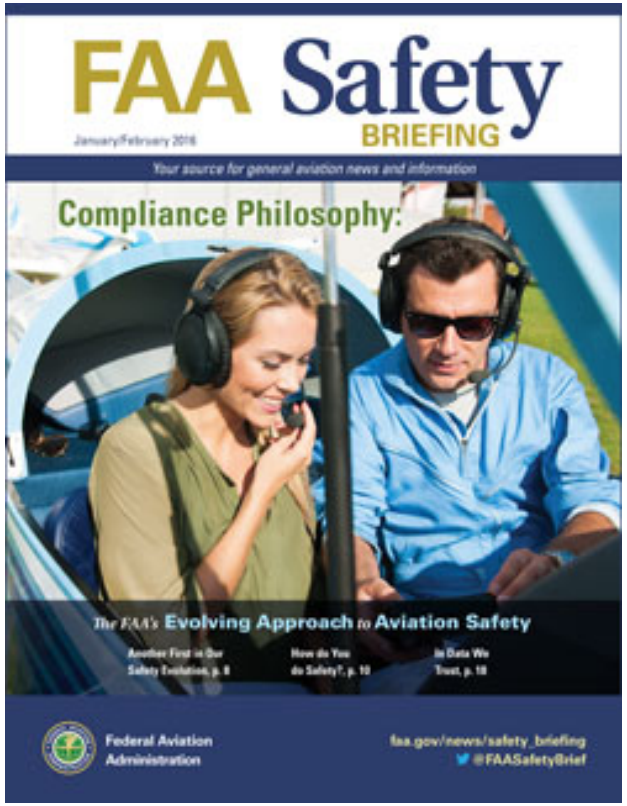
43% of PT3 accidents are FATAL



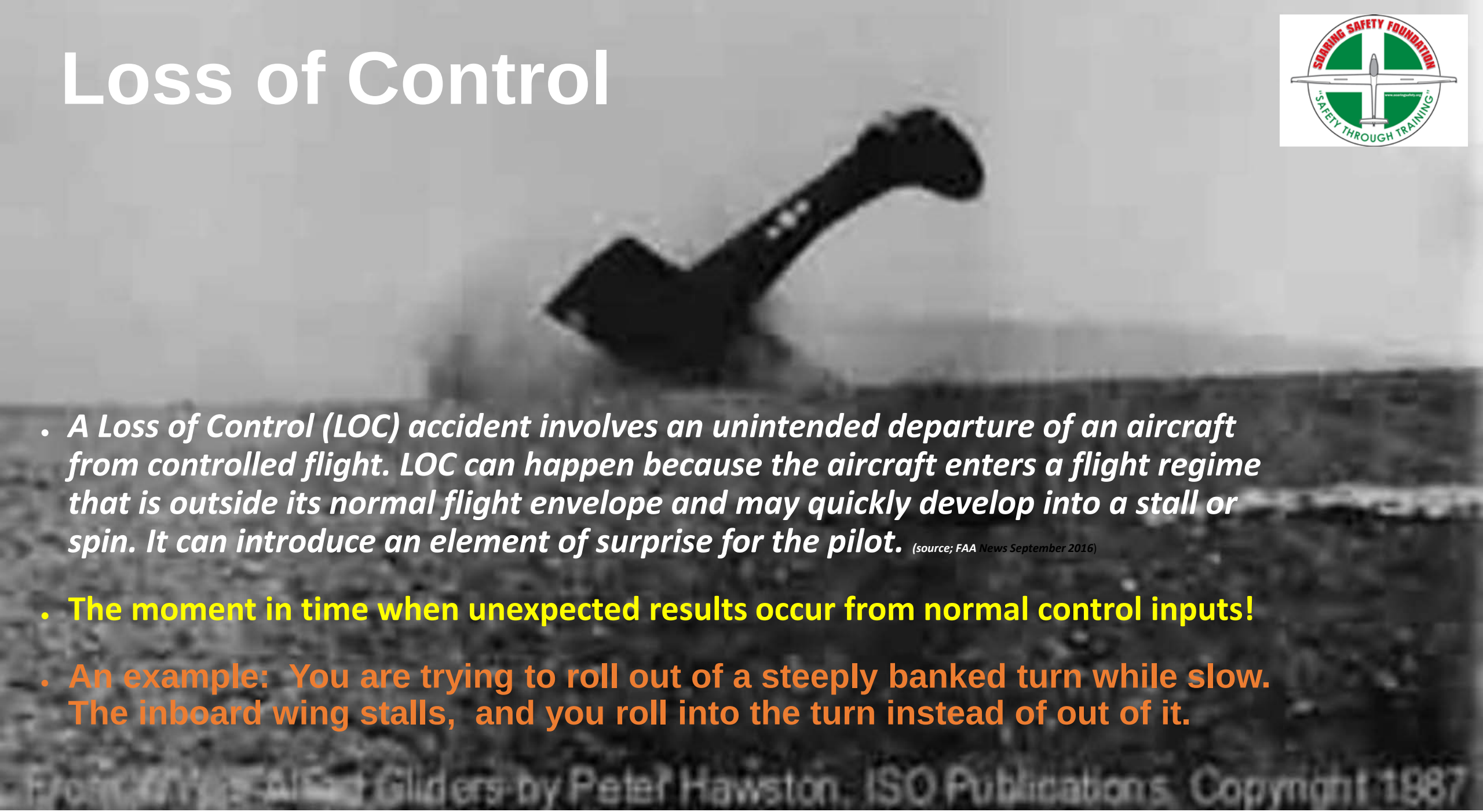
That's what we think, so what does the FAA think?

General Aviation Joint Steering Committee

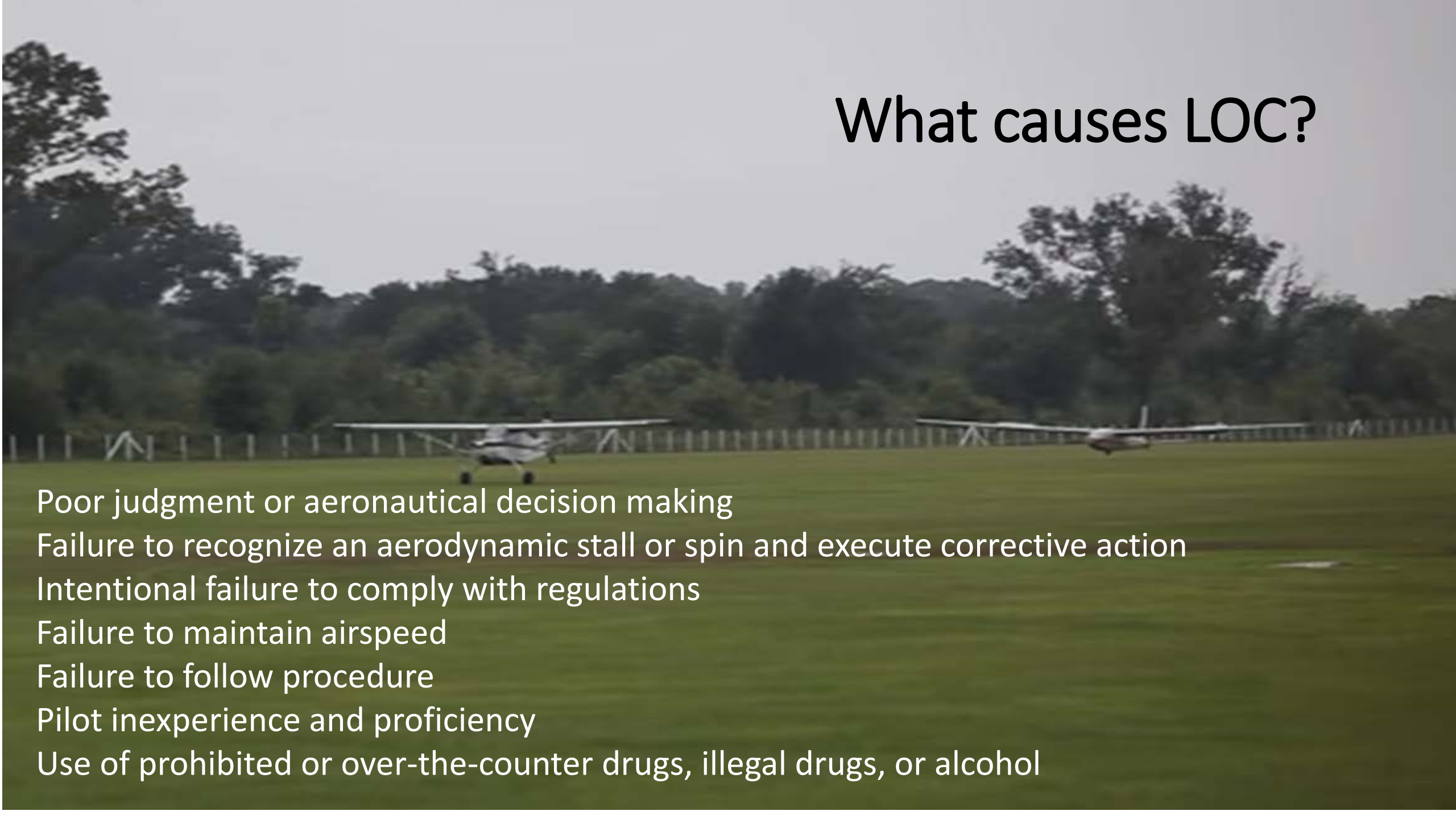
- Loss of Control
  - Between 2001 and 2011 over 40% of fatal fixed wing GA accidents were attributable to the pilot losing control of the aircraft
  - "An extreme manifestation of a deviation from intended flightpath". It includes
    - Icing-related events
    - Pilot-induced oscillations
    - Stalls and spins



Loss of Control



- *A Loss of Control (LOC) accident involves an unintended departure of an aircraft from controlled flight. LOC can happen because the aircraft enters a flight regime that is outside its normal flight envelope and may quickly develop into a stall or spin. It can introduce an element of surprise for the pilot.* *(source; FAA News September 2016)*
- **The moment in time when unexpected results occur from normal control inputs!**
- **An example: You are trying to roll out of a steeply banked turn while slow. The inboard wing stalls, and you roll into the turn instead of out of it.**



What causes LOC?

Poor judgment or aeronautical decision making
Failure to recognize an aerodynamic stall or spin and execute corrective action
Intentional failure to comply with regulations
Failure to maintain airspeed
Failure to follow procedure
Pilot inexperience and proficiency
Use of prohibited or over-the-counter drugs, illegal drugs, or alcohol


GAIN
TILT
MODE
ACARS-FREE TEXT 1/2
DISPATCH
CHEMTRAIL MIX
MIND CONTROL SEL
POPULATION CONTROL SEL
MASS STERILIZATION SEL
ENTER>
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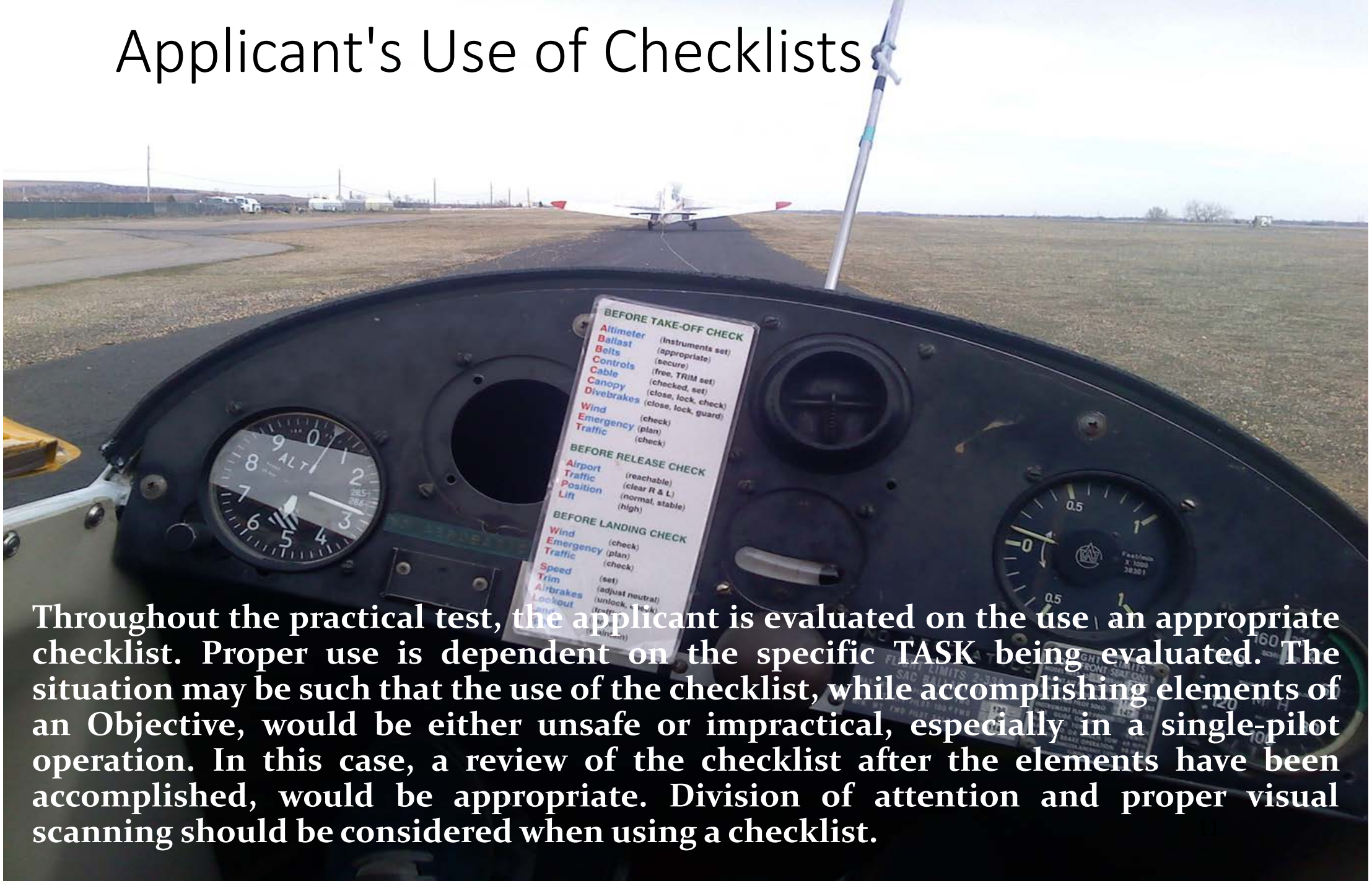
Checklists

Applicant's Use of Checklists



Throughout the practical test, the applicant is evaluated on the use an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impractical, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished, would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

Topic of the Month

Federal Aviation Administration

Single Pilot CRM

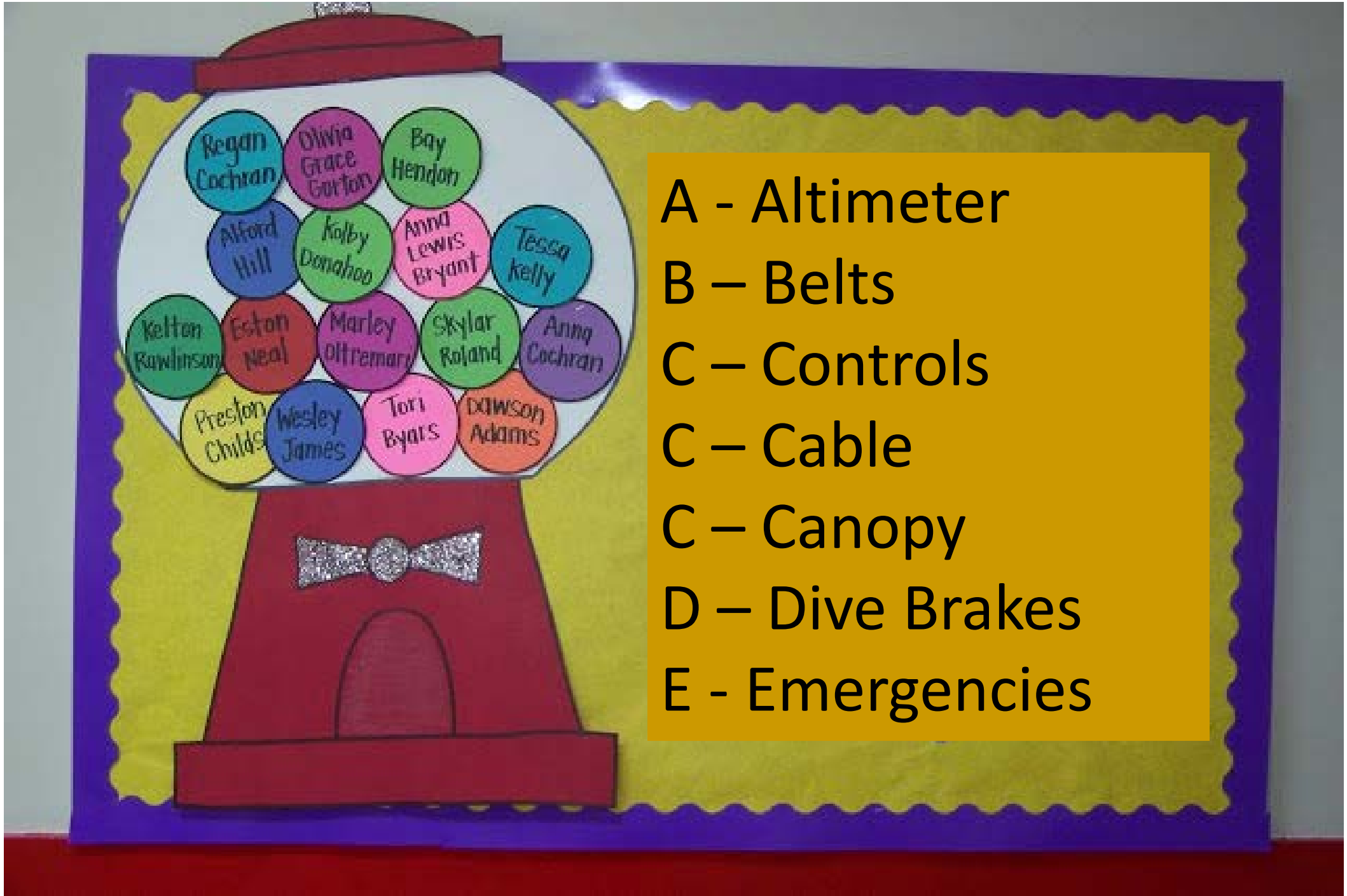
Memorize Checklist

Use written checklist as time allows

Aviate
Navigate
Communicate

Philosophy

- Is it a *checklist* or a "*to-do*" list?
- Call—do—respond
- Altimeter……..Set to 600,
  Belts…..I'm putting mine on
- or
- Challenge-Verification-Response
  (checklist backs up flow patterns)
- Altimeter is set to 600, set
- Belts are on and secure, on



ABC
Checklist

CB-SIFT-CBE

- Controls
- Ballast
- Straps
- Instruments
- Flaps
- Trim
- Canopy
- Brakes
- Emergencies

LANDING PLANNING

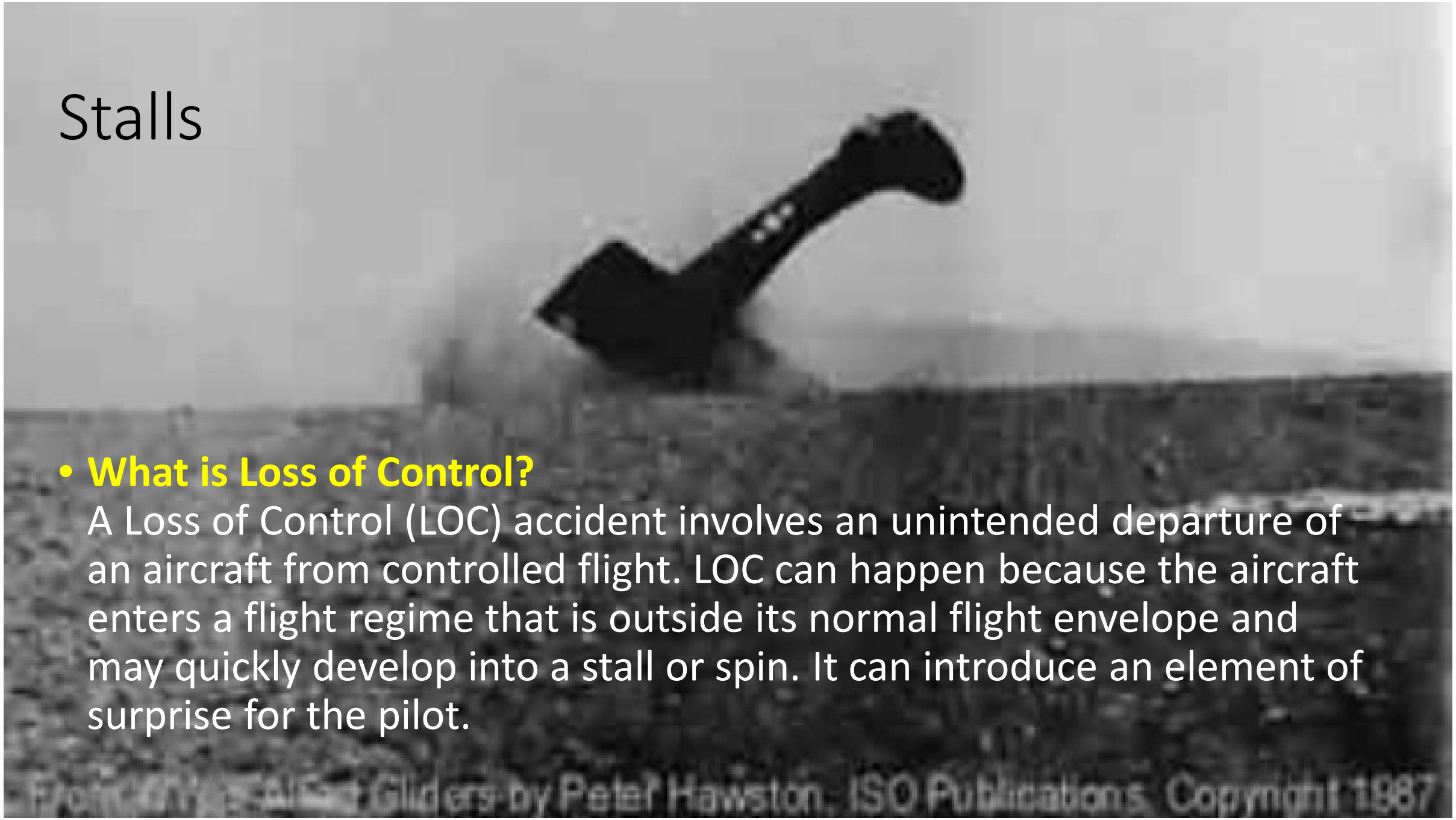
Landing Checklist

- **T** Traffic in Area
- **O** Obstacles on Ground/Runway
- **W** Wind - Direction & Speed
- **A** Airspeed for Approach (X+wind/2)
- **R** Reconfigure: gear/flaps/trim/spoilers
- **D** Dive Brakes Checked & Ready


If this were easy
we'd let the Air Force do it

Stalls

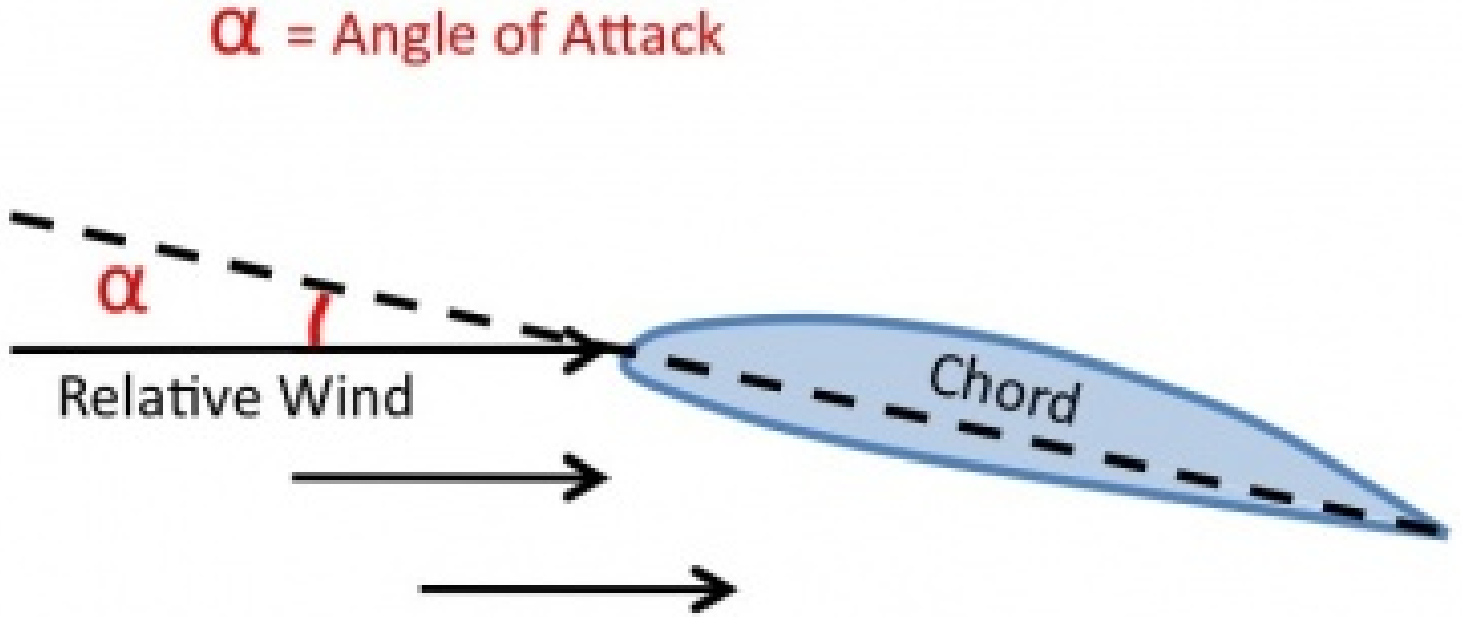
Stalls



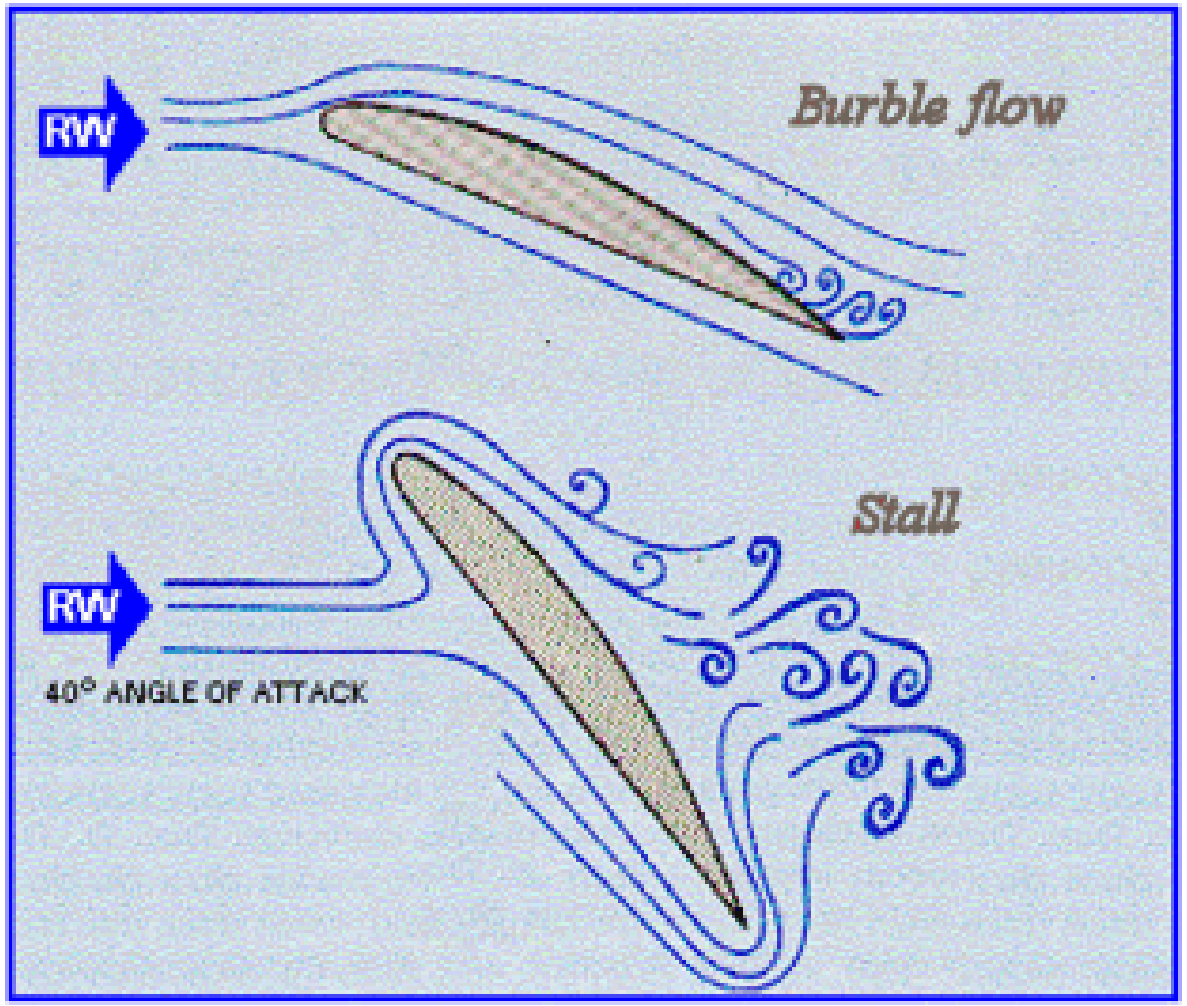
- **What is Loss of Control?**
  A Loss of Control (LOC) accident involves an unintended departure of an aircraft from controlled flight. LOC can happen because the aircraft enters a flight regime that is outside its normal flight envelope and may quickly develop into a stall or spin. It can introduce an element of surprise for the pilot.

What is….

- Chord line?
- Relative wind?



Why does a wing stall?



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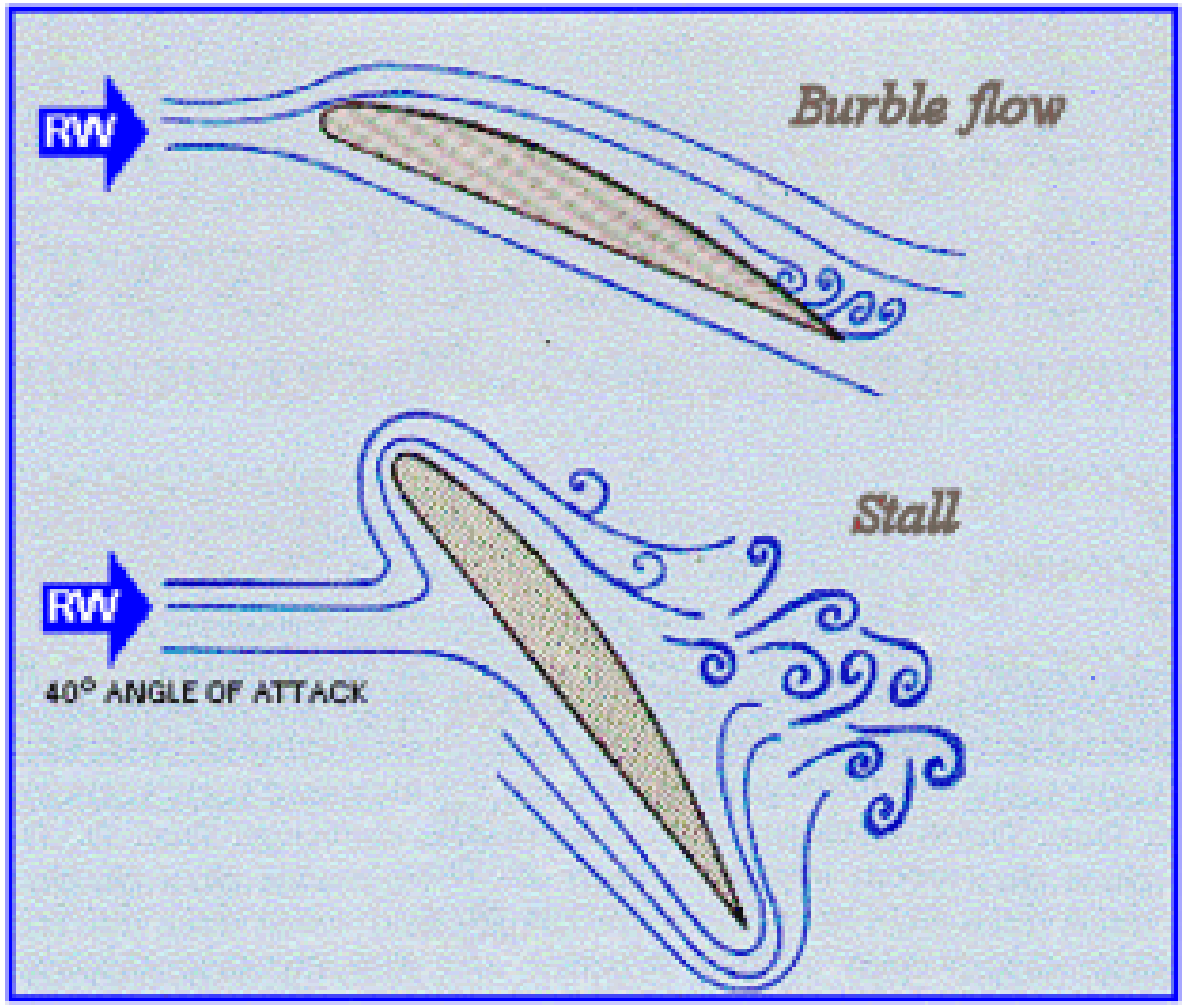


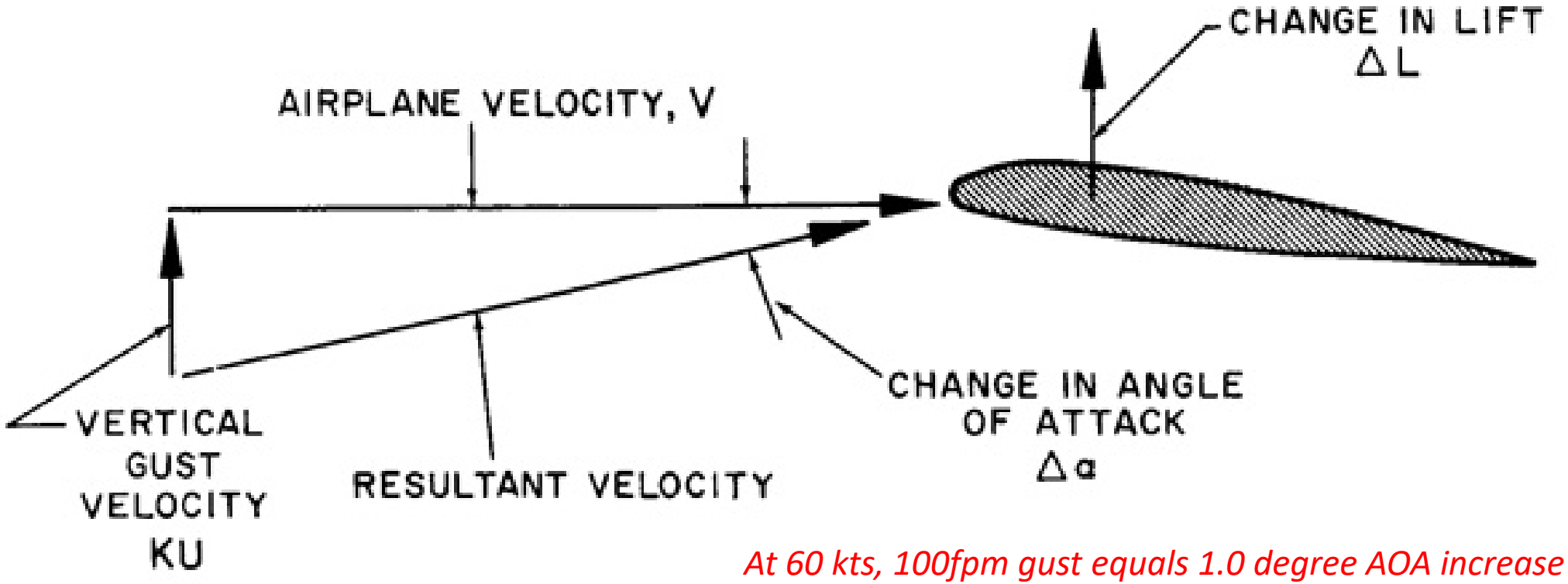
You have exceeded the critical angle of attack.

Six Signs?

1. Excessive back stick pressure
2. Nose high attitude
3. Low airspeed
4. Quietness
5. Mushy controls
6. Buffet

How many need to be present to stall?

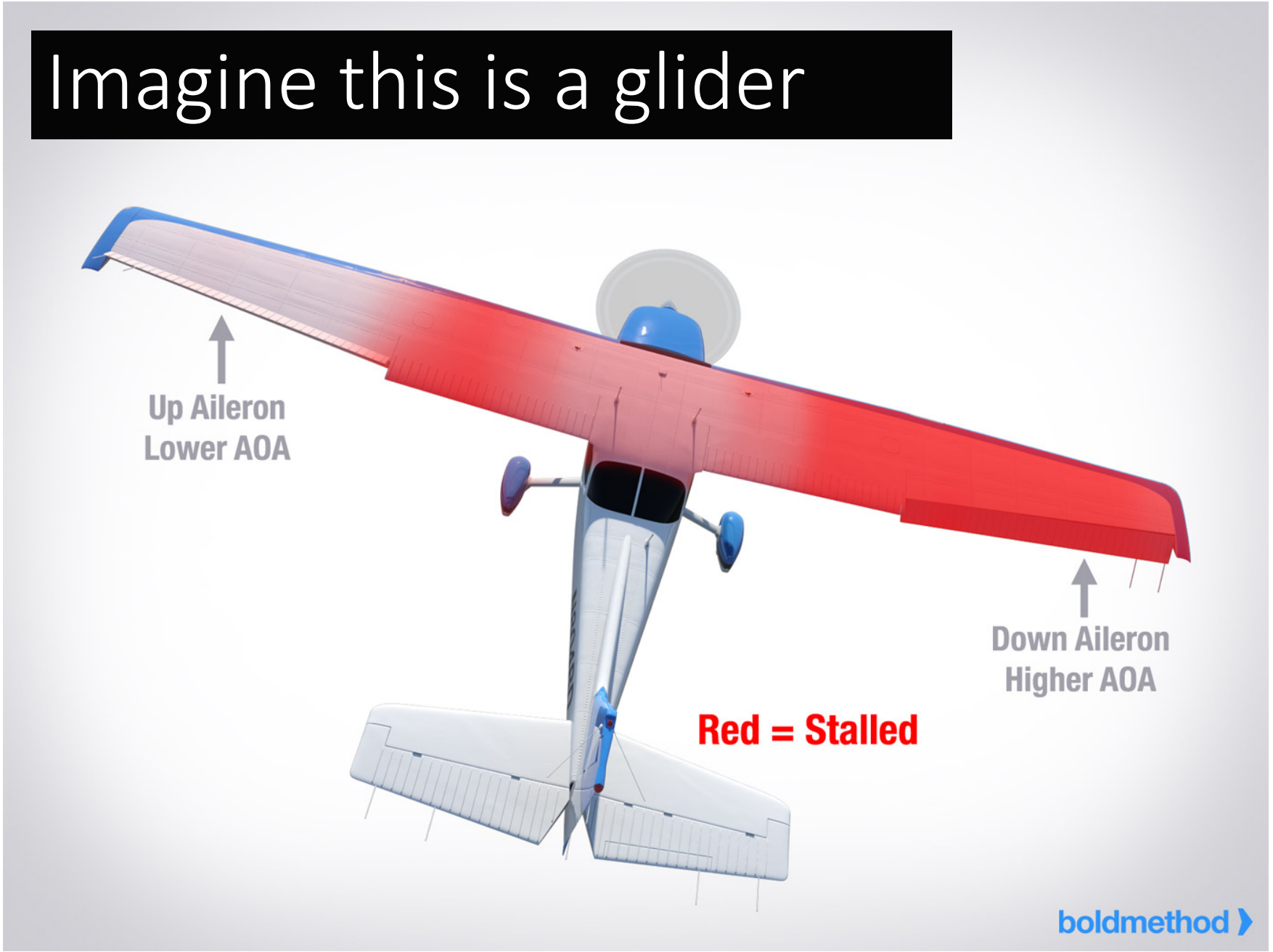
Other Factors Gusts



At 60 kts, 100fpm gust equals 1.0 degree AOA increase
At 60 kts, 500fpm gust equals 4.8 degree AOA increase

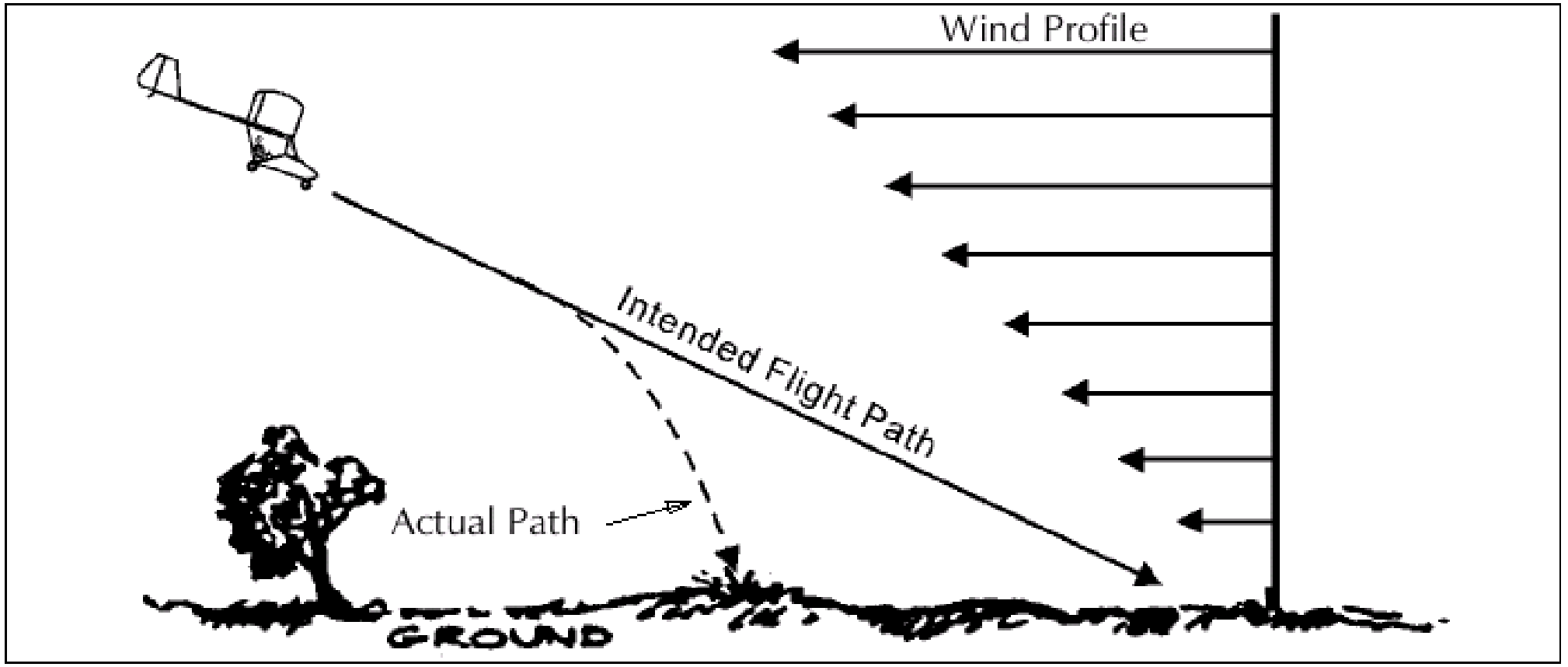
At 40 kts, 100fpm gust equals 1.4 degree AOA increase
At 40 kts, 500fpm gust equals 7.2 degree AOA increase

Imagine this is a glider



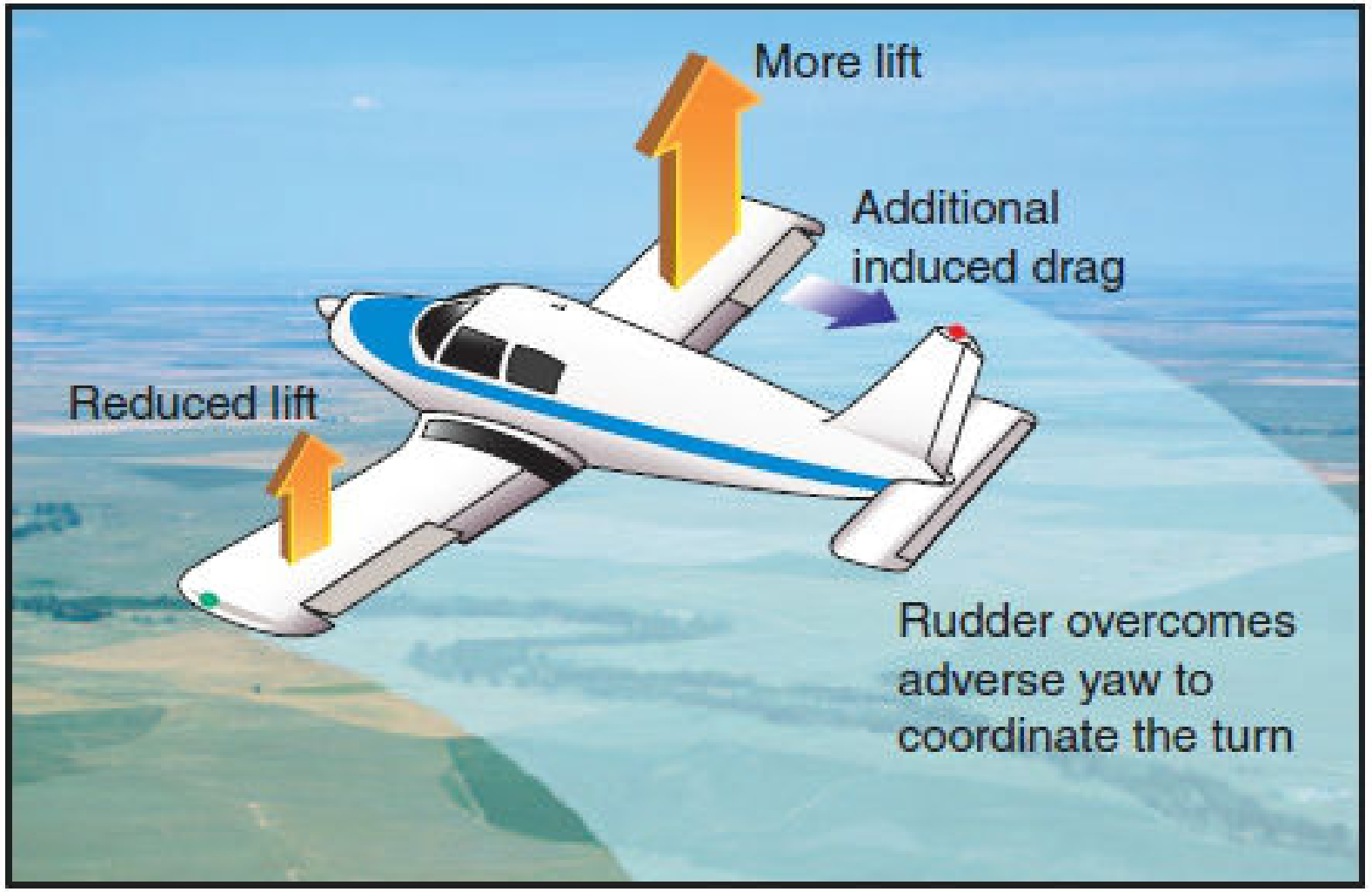
Aileron Displaced in a Turn

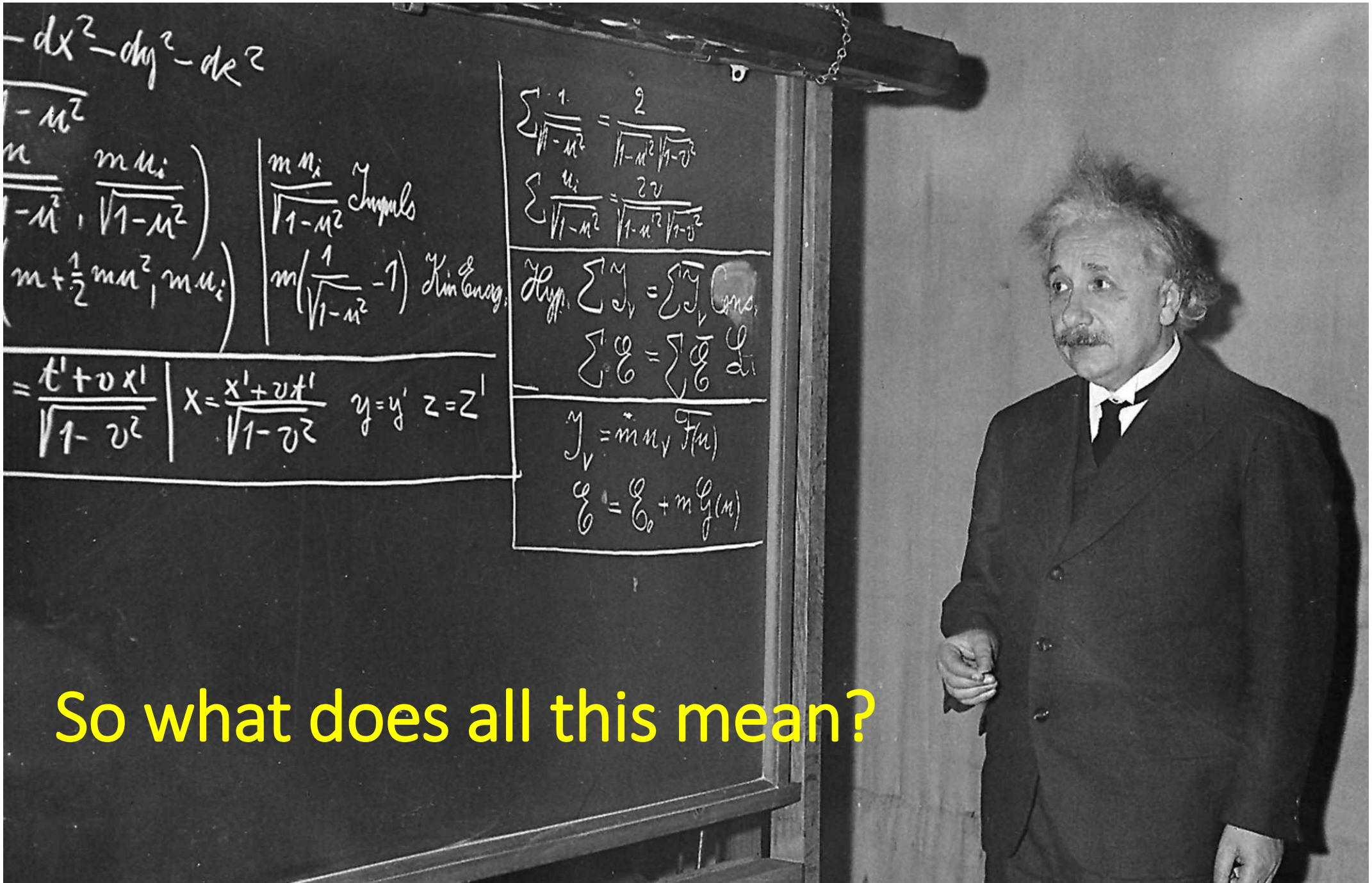
Wind Gradient



AOA initially increases in wind gradient event

What does the Rudder Do?




So what does all this mean?

Low altitude turns

All the factors are against you!

How do you fight it?

ASW-27

ASK-21

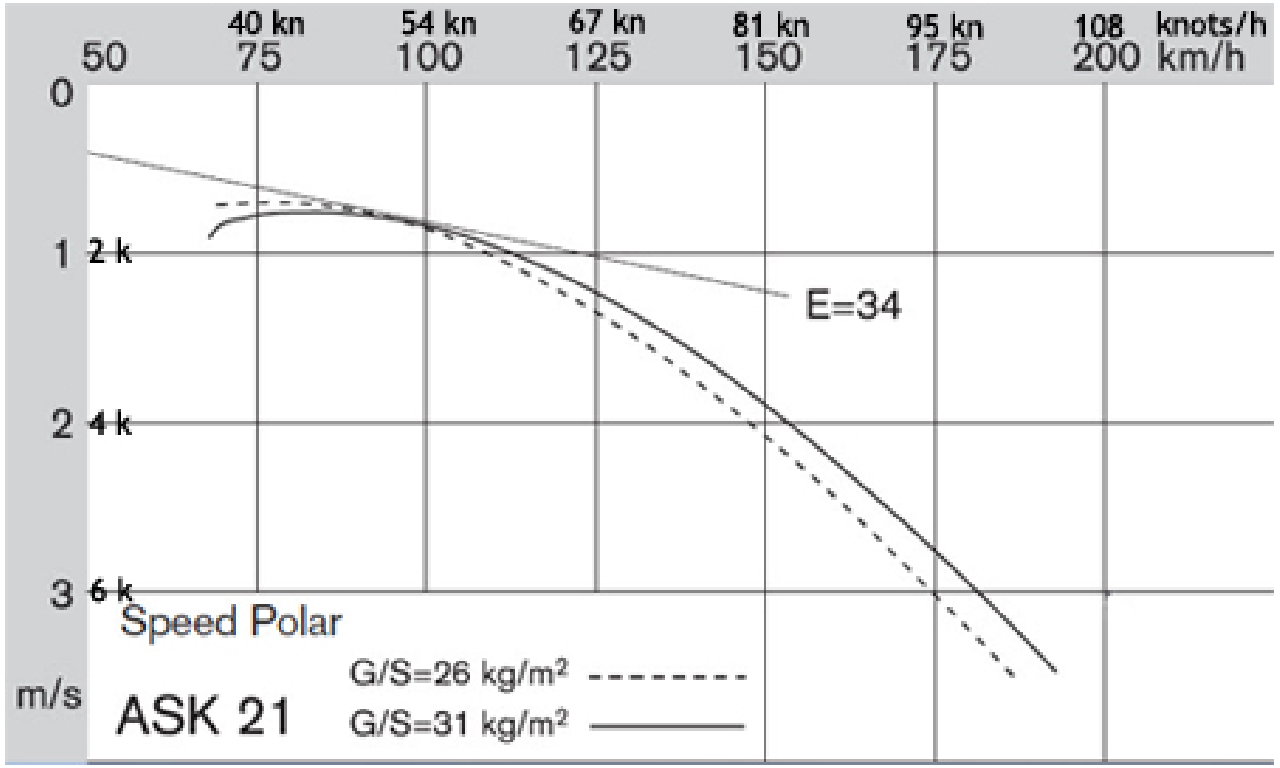
SOARING SAFETY FOUNDATION
"SAFETY THROUGH TRAINING"

PT3 and Pattern Speed Considerations

- ASK-21
- Stall Speed
  - Airbrakes Retracted V_{SO} 35 kts
  - Airbrakes Extended V_{S1} 37 kts
- *"The most favorable approach speed is 49 kts"* (where did I find this?)
- Yellow Triangle is 1.3 V_{S1} 49 kts
- GFH Recommended Approach Speed is 1.5 V_{SO} 51kts
- Best L/D 51 kts
  - On most gliders, Best L/D is very close to 1.5 Vso

SSF Recommended Approach Speed

- Best L/D + 5 kts + ½ wind (above 10 kts)
- 56 kts
- Why?



Launch Failure (PT3)

What do you do if the Launch Failure Happens?

1. **Fly the aircraft**

    a. Establish a Pitch Attitude for a Pre-briefed Airspeed

        Best L/D plus 5 knots is a start

        (45 deg AOB stall speed is 1.2 V_{S1} or 44 kts)

2. Execute your Pre-briefed Plan

    a. Take a second or two to orient yourself and calmly begin to execute your plan.

    b. Smoothly fly the aircraft. Maintain target airspeed and keep the turn coordinated.

3. Do not Rush

Premature Termination of the Tow (PT3)

- Have a plan
  - Appropriate for the conditions
- Brief and Review the Plan prior to EVERY flight
  - Airline pilots do it
- Fly the Glider
  - Fly the Glider
    - When in doubt, fly the glider
- Think before you act (Have a reason for your action)
  - “I heard a bang”

Low Energy Landing

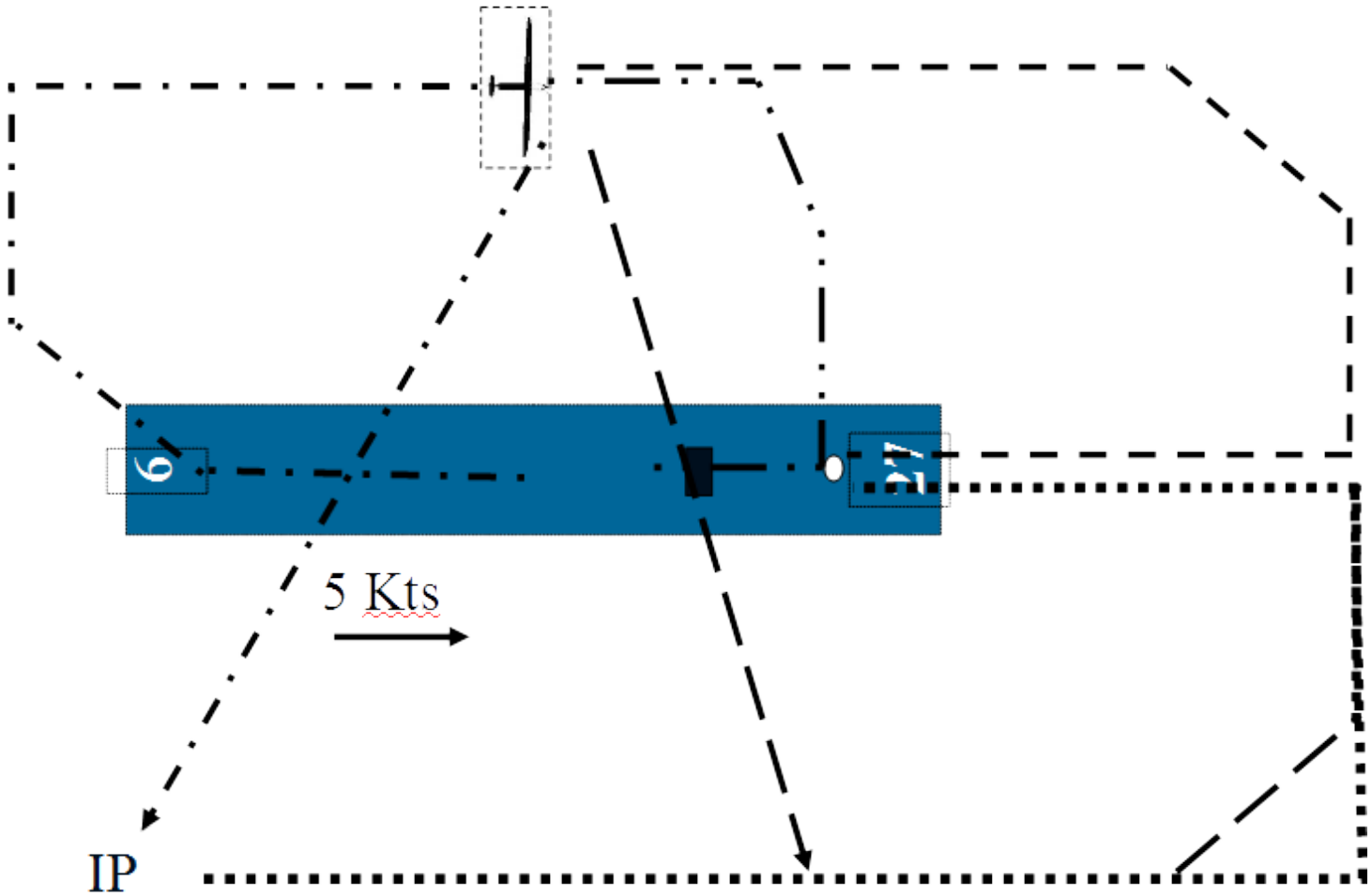
- Low Energy Approach or Low Energy Landing?
- What is the goal?
- How would you do it?

Low Energy Landing

- Normal Speed
  - 56 kts
- Steep Approach
  - ½ spoilers or more
- Carrier Landing
  - Aggressive round-out with firm main wheel touchdown
- Full Spoiler on Touchdown
  - Think airliners landing
- Aggressive Braking

What is the goal?

Which Approach should I use?



Where am I prone to “Loss of Control”?

Low Altitude Thermalling *DON'T*

Establish a personal "hard deck"

Stick to it!

Low Altitude Thermalling DON'T

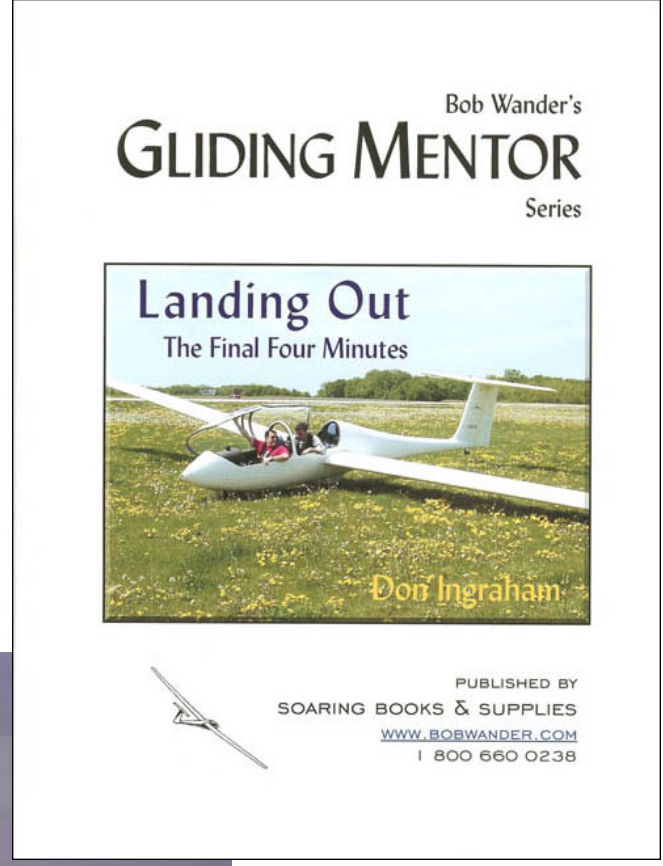
If someone starts to tell you about their great "low save"

Treat them like they just lit up a smoke in the coffee shop

The Sorenson Doctrine

3-2-1 Rule

- Above 3000 ft AGL : I am cross country flying
- Below 3000 ft AGL : I am cross country flying, but actively looking for a place to land
- Below 2000 ft AGL : Searching for lift but still able to get to my field
- Below 1000 ft AGL : I am in the landing pattern



Question Time