

# Integration of Upset Prevention and Recovery Training into a Part 141 Reduced Hours Training Course Outline

Andrew Walton  
Director of Safety



**PREVAILANCE**  
AEROSPACE



**LIBERTY**  
UNIVERSITY

# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training

# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training

Fatal Flight Training  
**ACCIDENT REPORT**  
2000-2015

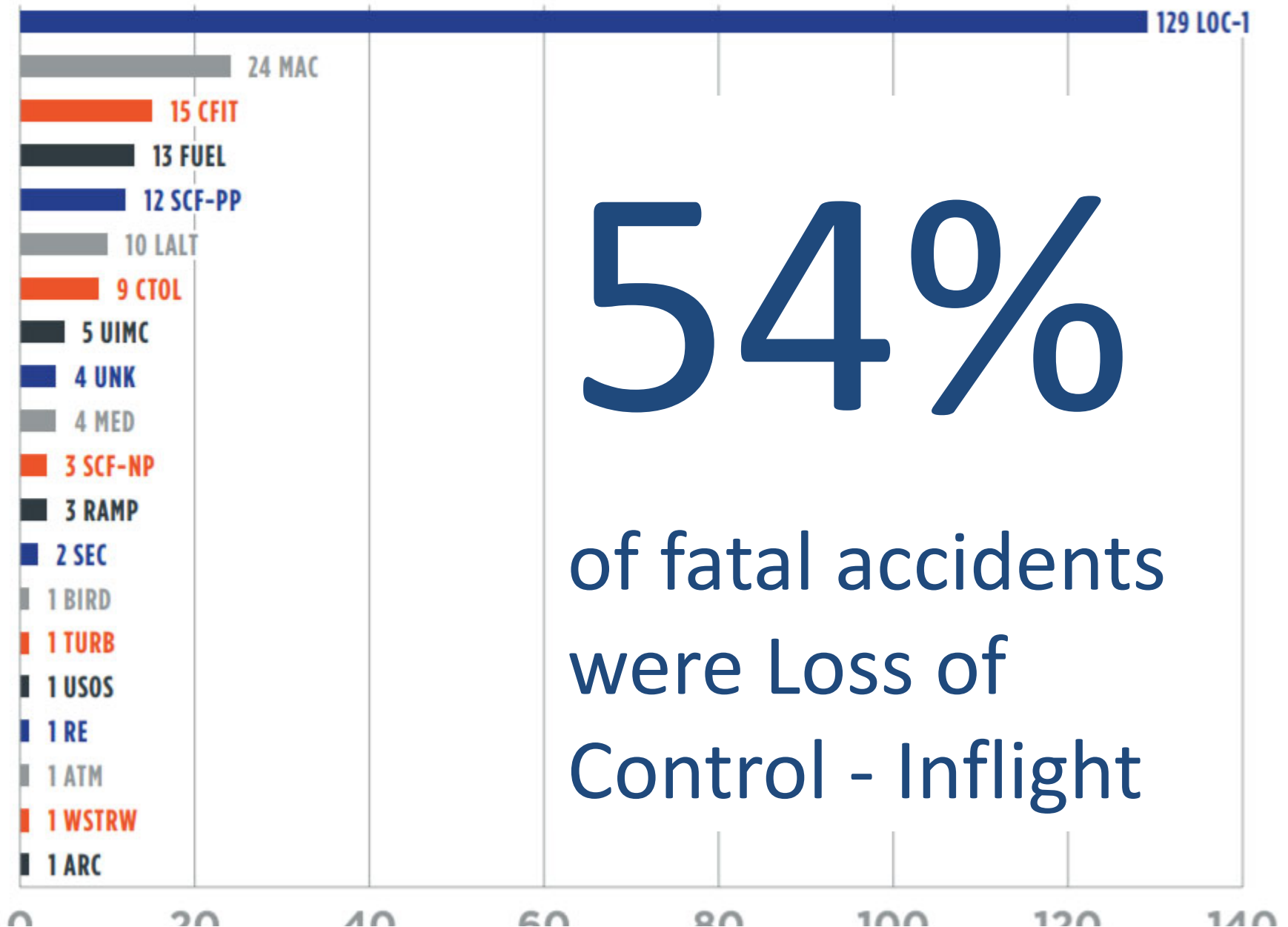


LIBERTY  
UNIVERSITY  
SCHOOL of AERONAUTICS

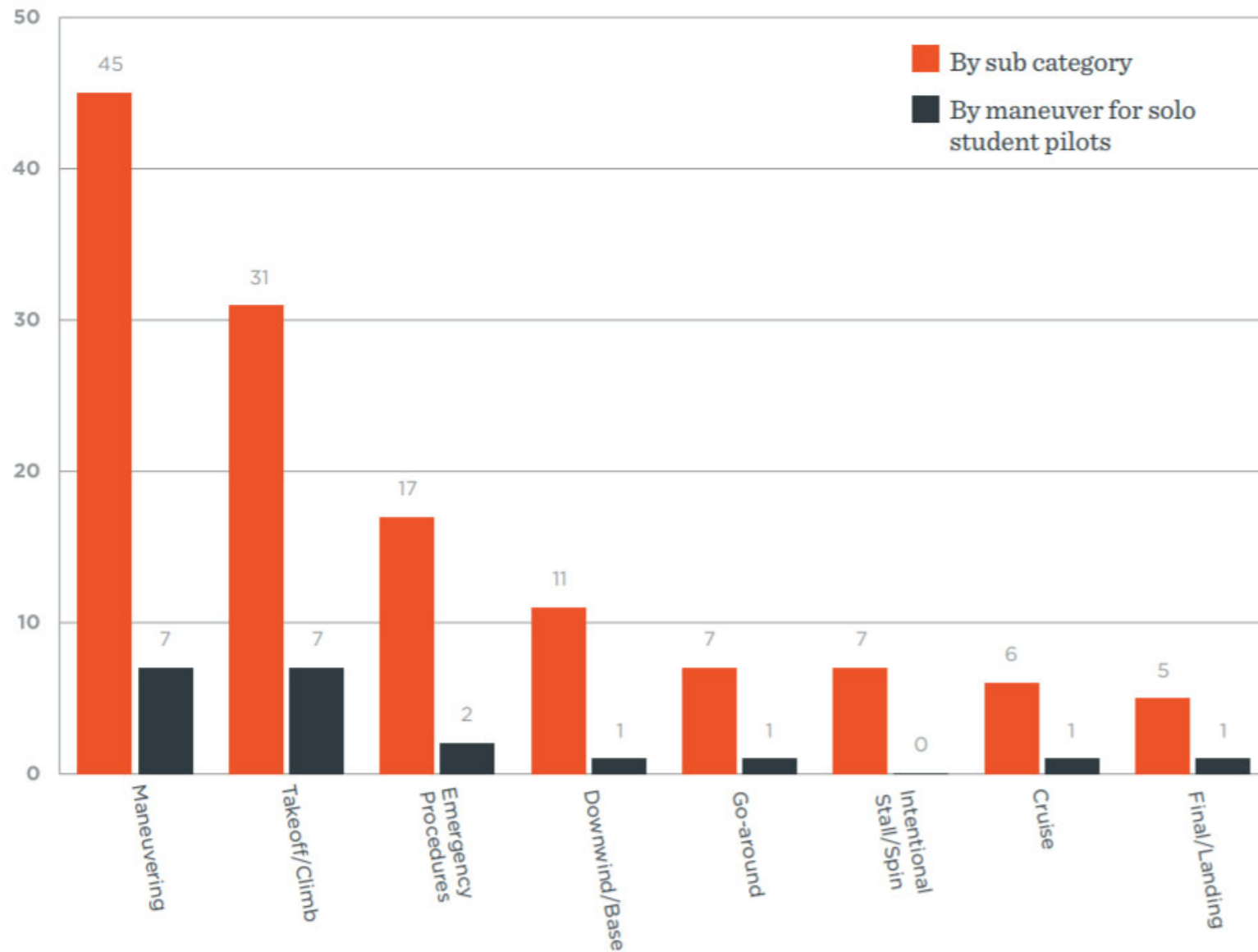


LIBERTY  
UNIVERSITY

## *Fatal Instructional Accidents by Primary Cause (2000–2015)*



**FIGURE 5.**  
*Loss of Control Inflight (LOC-I) (2000–2015)*



# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training



# Awareness

- CFI Orientation Training.
- What is safer: driving a car, or flying with students?

# CDC data

## Top Ten Risks

Motor Vehicle Accident

Suicide

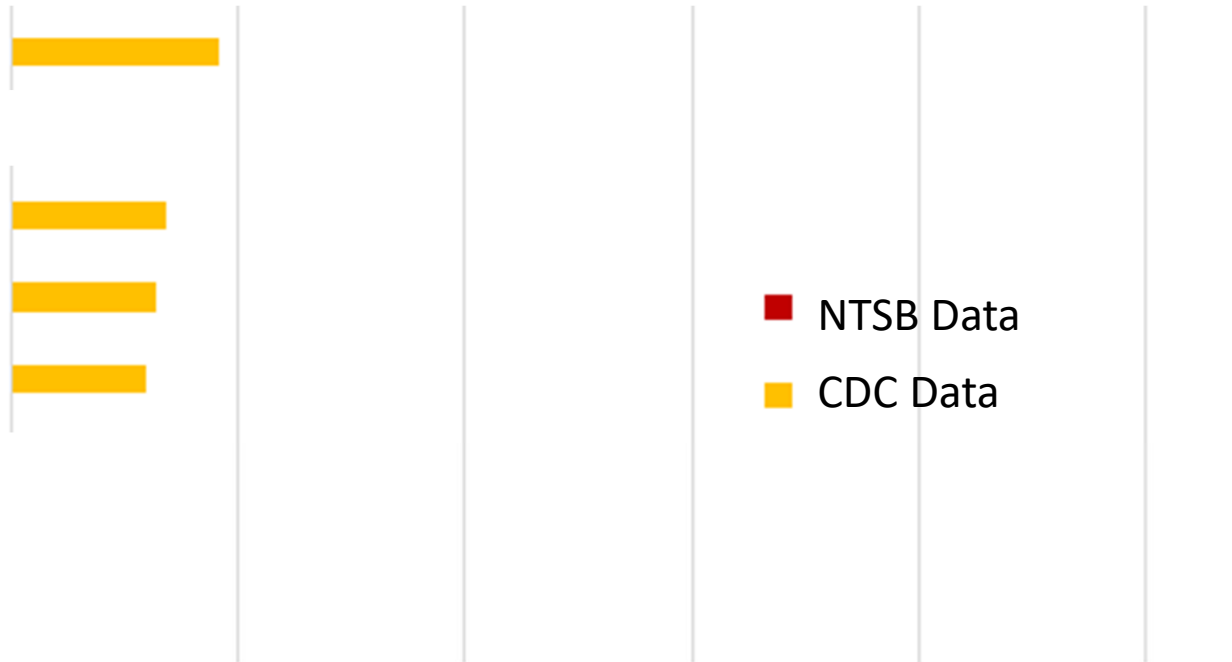
Homicide/Assault

Drug (legal and illegal)

■ NTSB Data

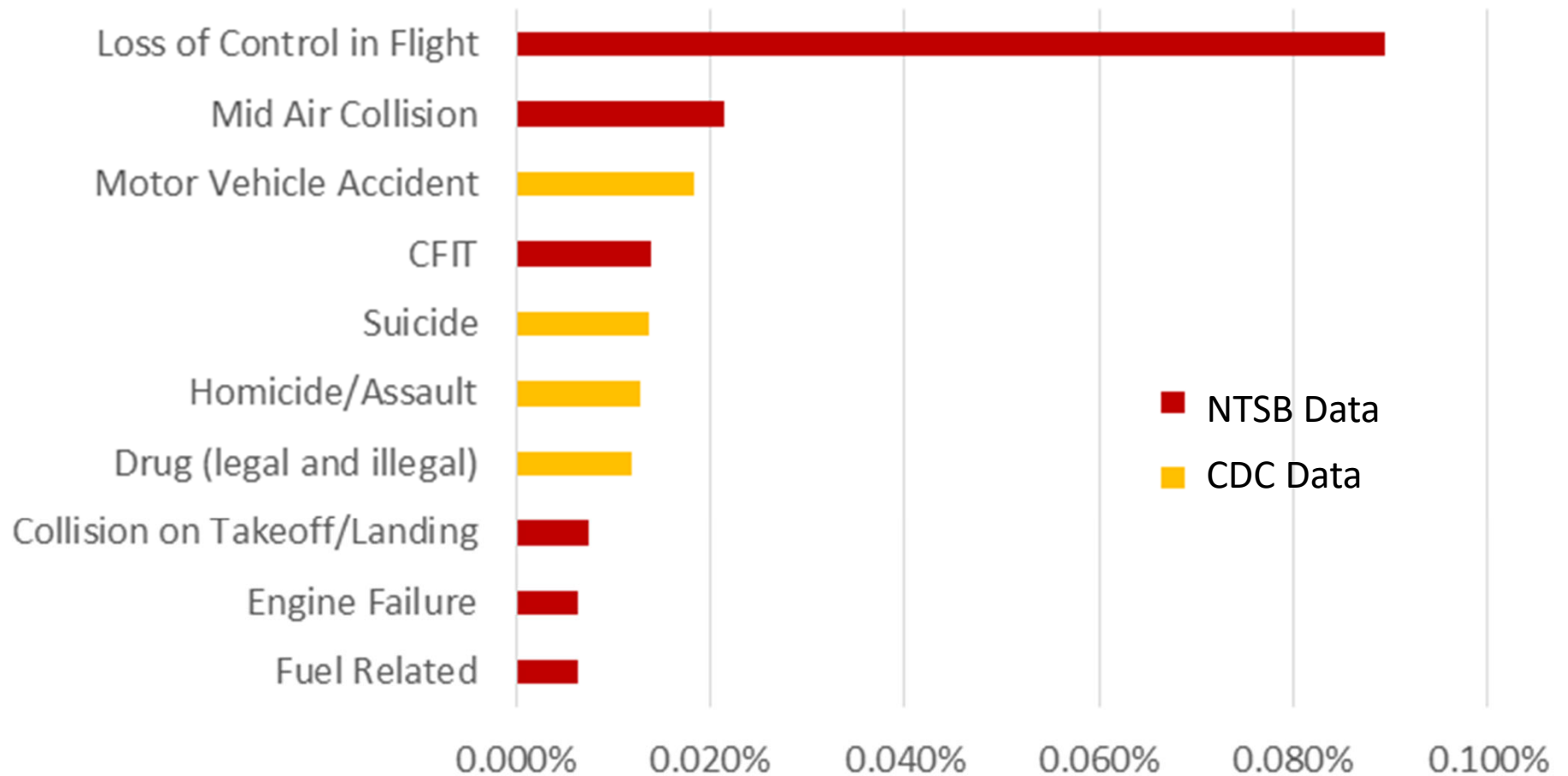
■ CDC Data

0.000% 0.020% 0.040% 0.060% 0.080% 0.100%



# CFI fatal accidents + CDC data

## Top Ten Risks



# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training

# Stall Training – AOA Reduction

- FAA Guidance
  - AC 120-109
  - AC 120-111
  - PTS and ACS rewrites
- Emphasizing recovery with elevator control

# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - **Technology**
  - Upset Prevention and Recovery Training

# Angle of Attack Indicators

- Add redundancy to the stall horn.
- Aural and visual alerts.

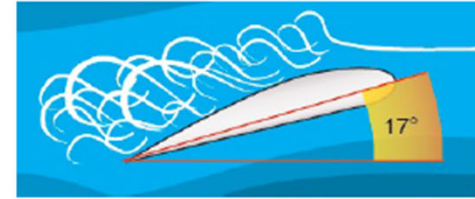
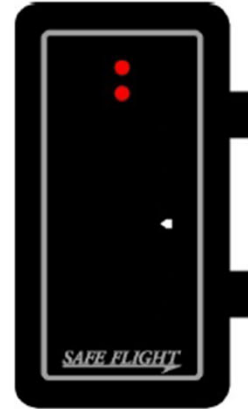


# Cost – Benefit Analysis



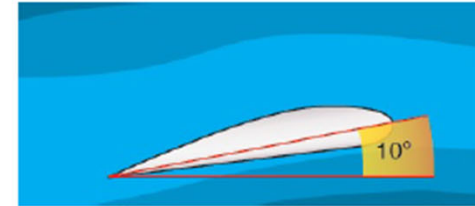
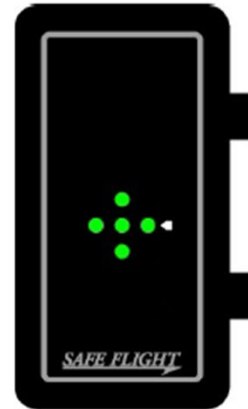
Stall Indication  
(High AOA)

$17^\circ \alpha$



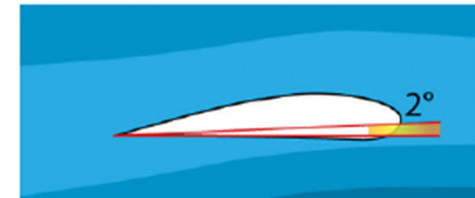
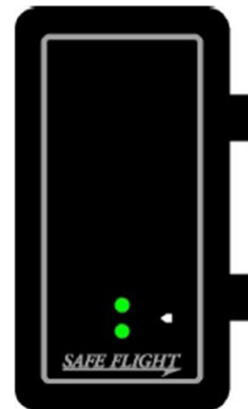
30% From Stall

$10^\circ \alpha$



Cruise  
(Low AOA)

$2^\circ \alpha$



# Loss of Control

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training

# Upset Prevention and Recovery

- Exposure to 360° flight envelope
- Extreme overbank recoveries
- Upright and inverted spin recovery training
- High quality training



# Simulated wake turbulence upset



  
**PREVAILANCE**  
AEROSPACE



**LIBERTY**  
UNIVERSITY

# Upright Spin



  
**PREVAILANCE**  
AEROSPACE



**LIBERTY**  
UNIVERSITY

# Quality of Training

- 3.5 hour briefings on Loss of Control factors, aerodynamics, startle, and recoveries.
- Military style pre-briefings showing stick position and showing what each maneuver will look and feel like.

# Loop - prebrief



# Accelerated Stall - prebrief





# TCO Integration

- 2016: Integrated into commercial TCO
  - 1:1 credit
  - ~ 50% participation
- 2019: Integrated into commercial TCO
  - 1:3 credit
  - ~ 75% participation

# TCO Verbiage

- Reduced hours commercial course
  - 14 CFR 141.55(d)
  - TCO graduation requirements reduced from 120 hours to 96.5, or 87.5 (with UPRT credit)
- “Students enrolled in this TCO may receive transfer credit upon successful completion of a Part 141 Upset Prevention Recovery Training (UPRT) course. If the student presents a graduation certificate from a Part 141 approved UPRT course, ... the total training time required to graduate from this approved training course will be 87.5 hours.”

# Summary

- Research
- Risk
- Mitigations
  - Awareness
  - Initial Training
  - Technology
  - Upset Prevention and Recovery Training