



AVIATION PERFORMANCE SOLUTIONS

PAUL 'BJ' RANSBURY, AVIATION PERFORMANCE SOLUTIONS

# CRITICAL IMPORTANCE OF PREVENTION IN UPRT

LOSS OF CONTROL IN-FLIGHT (LOC-I)



APRAST 5 – Bangkok, Thailand: Sep 16-19, 2014

# TODAY'S AGENDA



LOSS OF CONTROL  
IN-FLIGHT



PREVENTION VS.  
RECOVERY



SCOPE OF  
PREVENTION



UPSET PREVENTION  
TOOLKIT



LEARN – APPLY –  
SHARE



QUESTIONS



LOSS OF CONTROL IN-FLIGHT

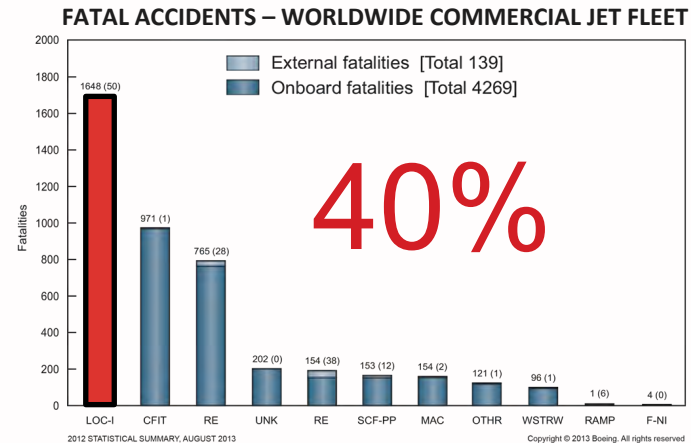
# LOSS OF CONTROL IN-FLIGHT

## LOC-I

Loss of Control In-flight

## SIMPLY PUT

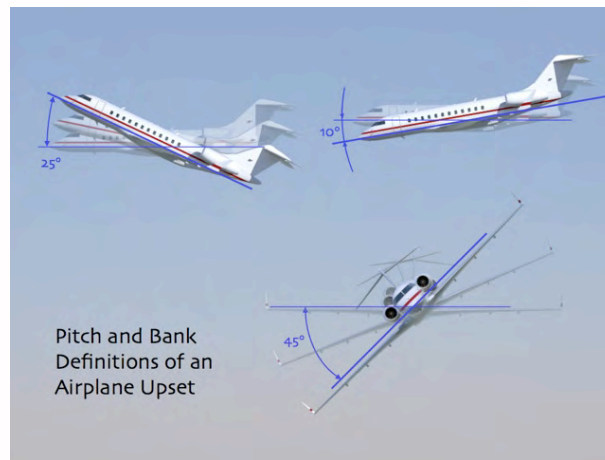
The Biggest Aviation Safety Risk



10 YEAR PERIOD: 2003 THROUGH 2012



# AIRPLANE UPSET



# CAUSES OF AIRPLANE UPSETS

## ENVIRONMENT

- Wake Turbulence
- Weather Phenomena
- Airframe Icing

## PILOT-INDUCED

- Inattention / Fatigue / Monitoring
- System Mismanagement
- Manual Handling
- Disorientation

## SYSTEM ANOMALY

- Flight Controls
- Auto-flight Systems
- Flight Instruments

## DOMINANT RESULT

**STALL**



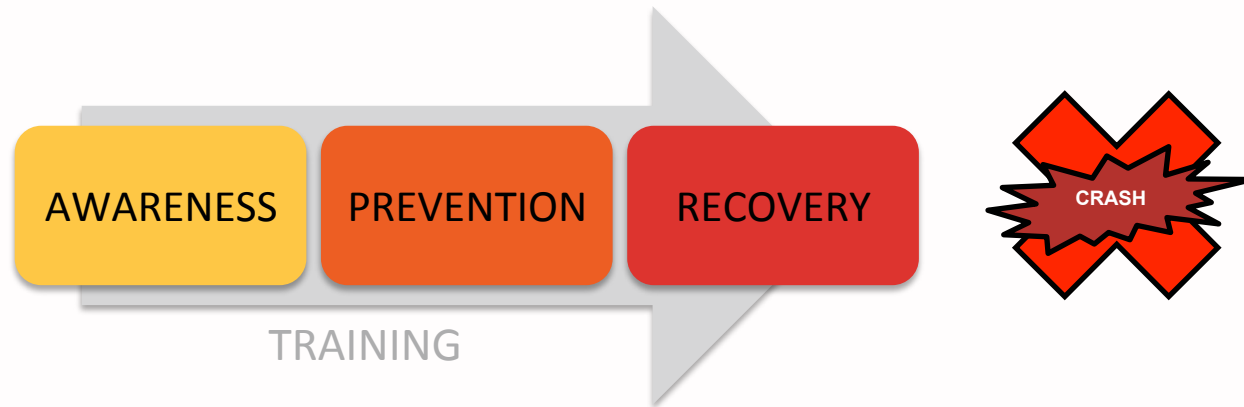
# REAL WORLD

Airbus A310  
Inattention – Systems – Luck





# LOC-I: A COMPLEX PROBLEM

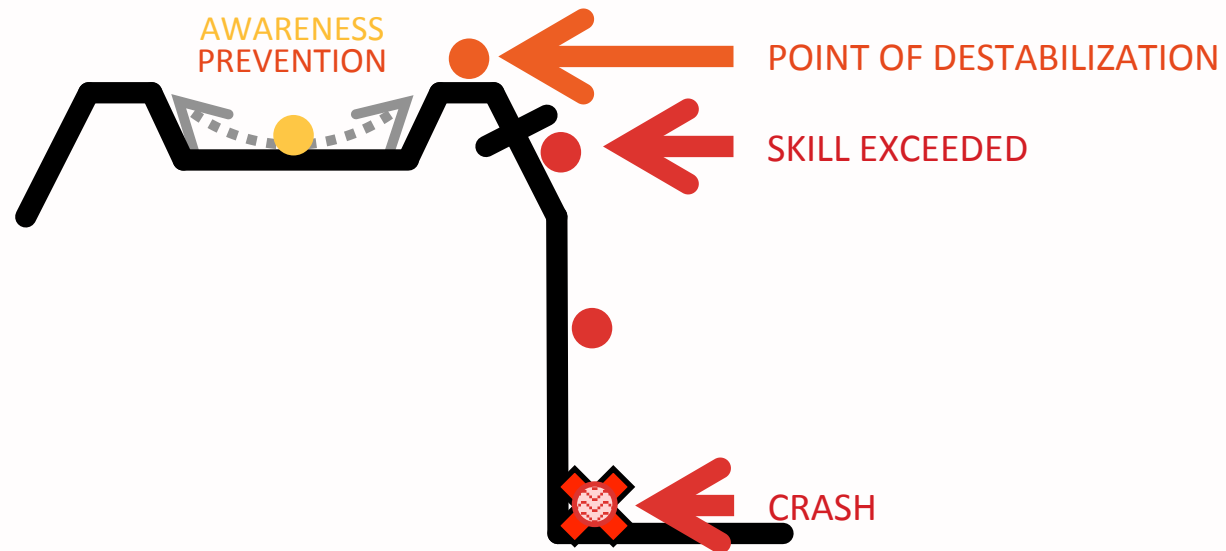


*No single, simple solution*

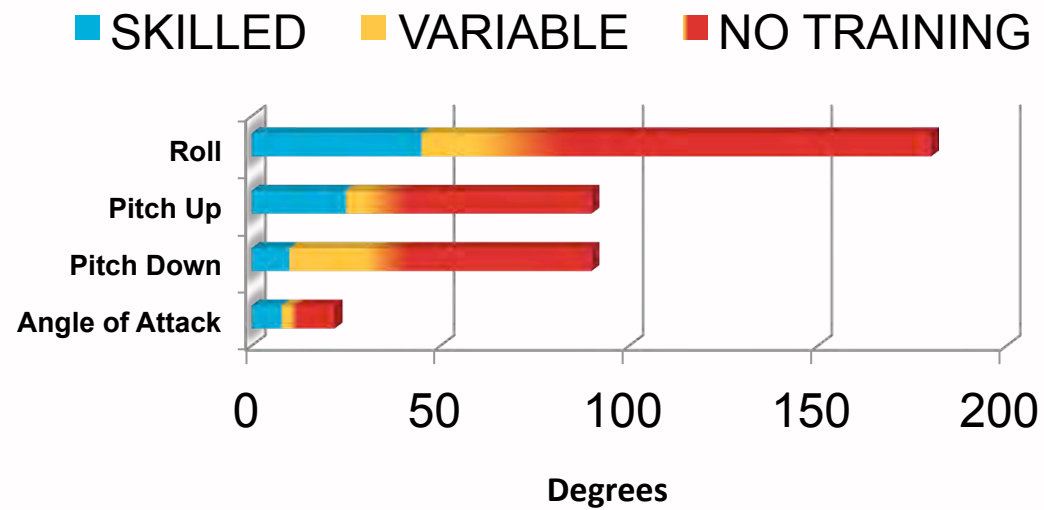


PREVENTION VS. RECOVERY

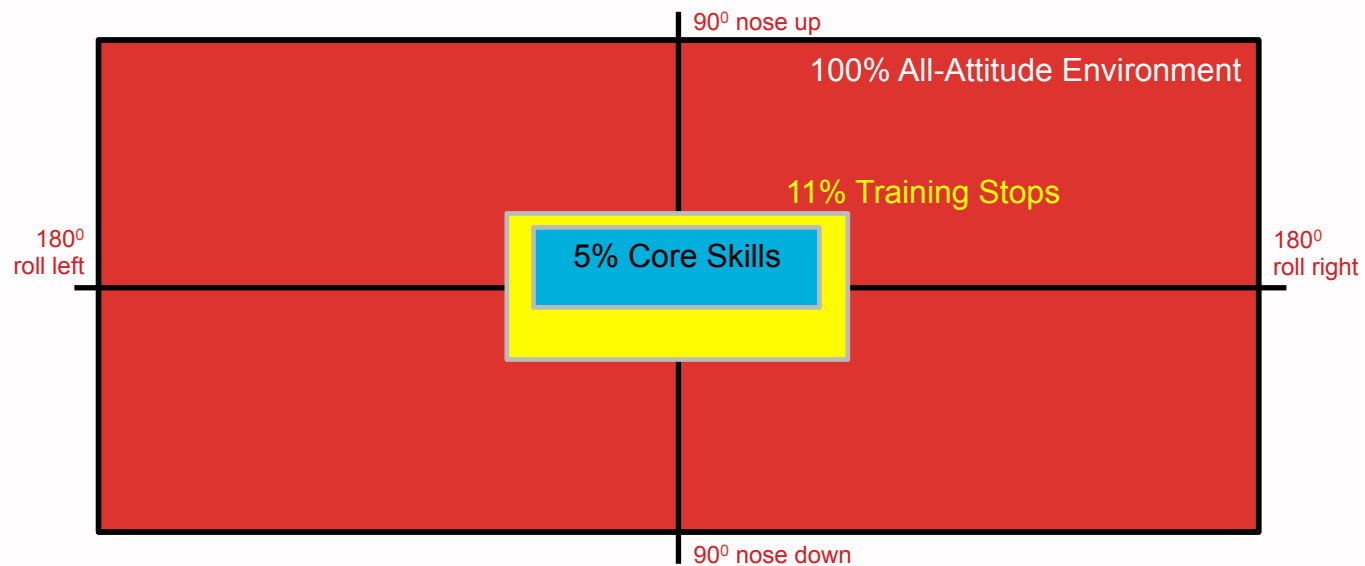
# LOC-I ACCIDENT MODEL



# PILOT SKILLSET

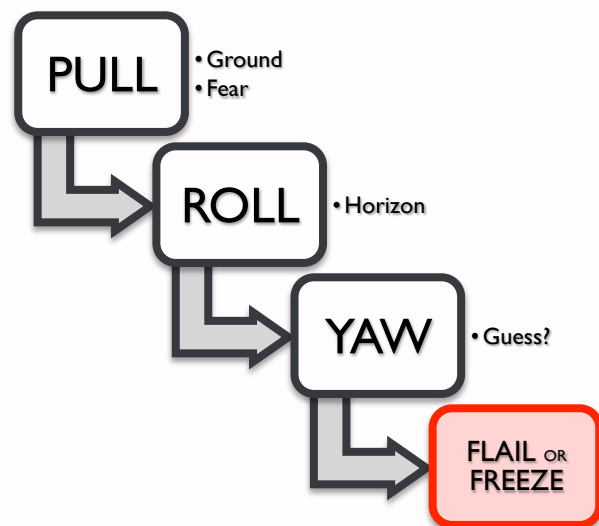


# PILOT SKILLSET

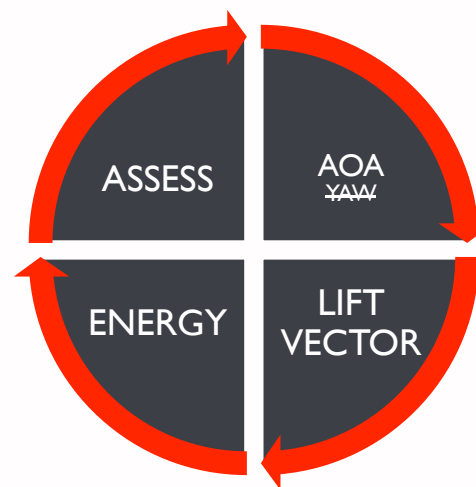


# RED ZONE UPRT SKILL ENHANCEMENT

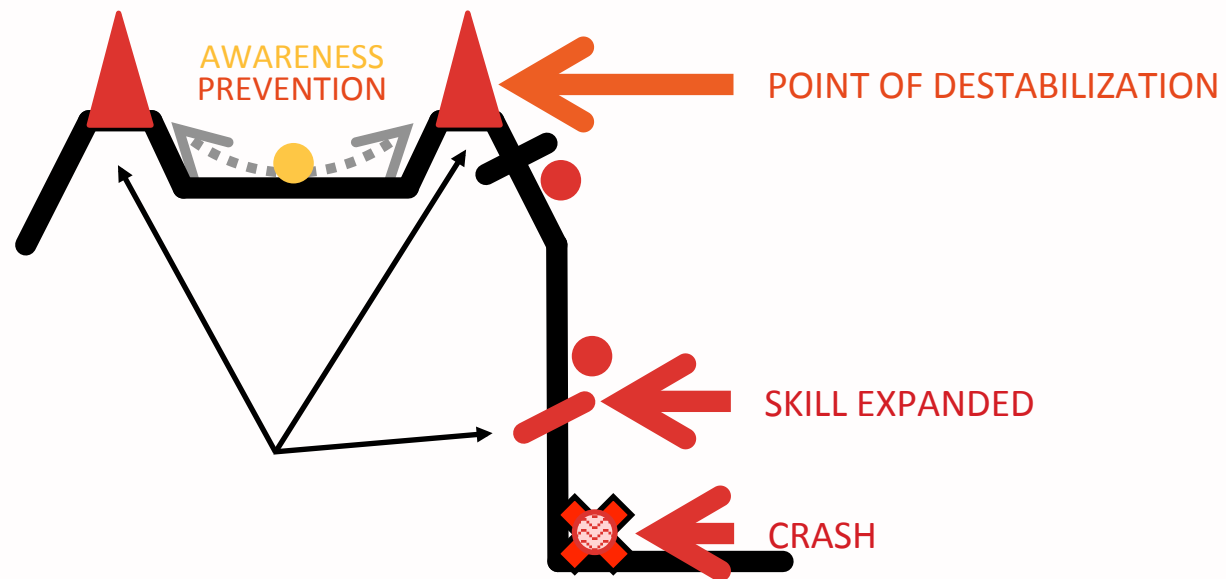
## INVALID / INSTINCT



## VALID STRATEGY



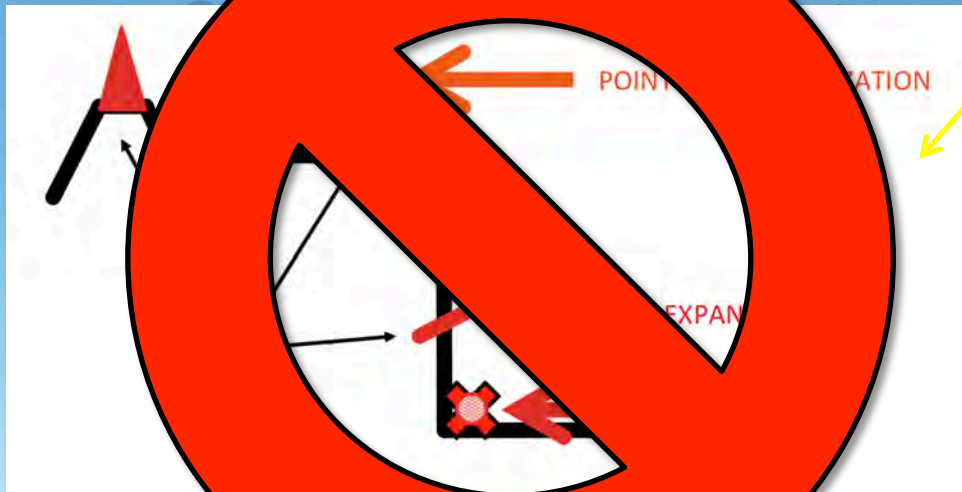
# LOC-I ACCIDENT MODEL



# ICATEE UPRT Footprint

Based on UP

How Important is This?



Startle  
Fear  
Discipline  
Psychological  
Factors  
Motion Cueing  
"Been there, seen  
that"

62%





SCOPE OF PREVENTION

# SCOPE OF PREVENTION



AWARENESS

AVOID EVENTS

PREVENTION

COUNTER EVENTS

RECOVERY

UNIQUE SKILL SET

## TWO TYPES OF PREVENTION

### TIME FAVORABLE PREVENTION

- Fatigue
- Aeronautical Decision Making
- Monitoring

MINUTES TO DAYS

### TIME CRITICAL PREVENTION

- Rapid Onset Event
- Undetected Insidious Event
- System Failure / Mismanagement

2 TO 10 SECONDS

NASA

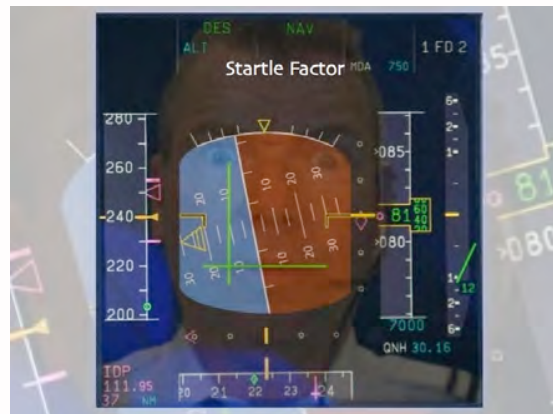


# REAL WORLD

How Long is 10 Seconds?



# TIME FAVORABLE PREVENTION



## DECISIONS + ALERTNESS

EXPERIENCE

SYSTEM KNOWLEDGE

MONITORING

DISTRACTION



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# REAL WORLD

10 Seconds in Aviation

ATSB Report AO-2010-019 VH-ANB Animation  
Released under Section 25 of the TSI Act 2003  
UTC: 00:39:34  
Countdown: -00:00:26



Roll Control (percent): 5



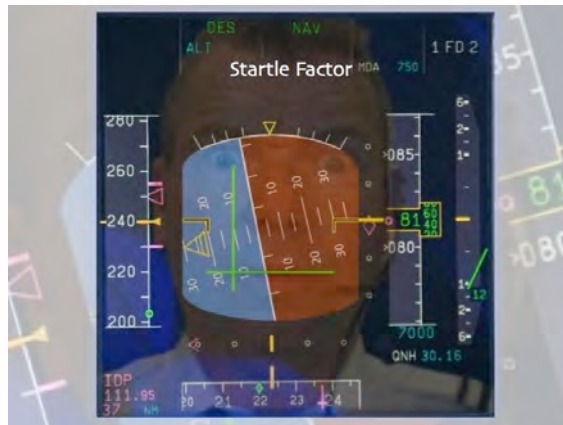
Rudder Pedal (percent)

Airport Elevation: 103 ft





# TIME CRITICAL PREVENTION



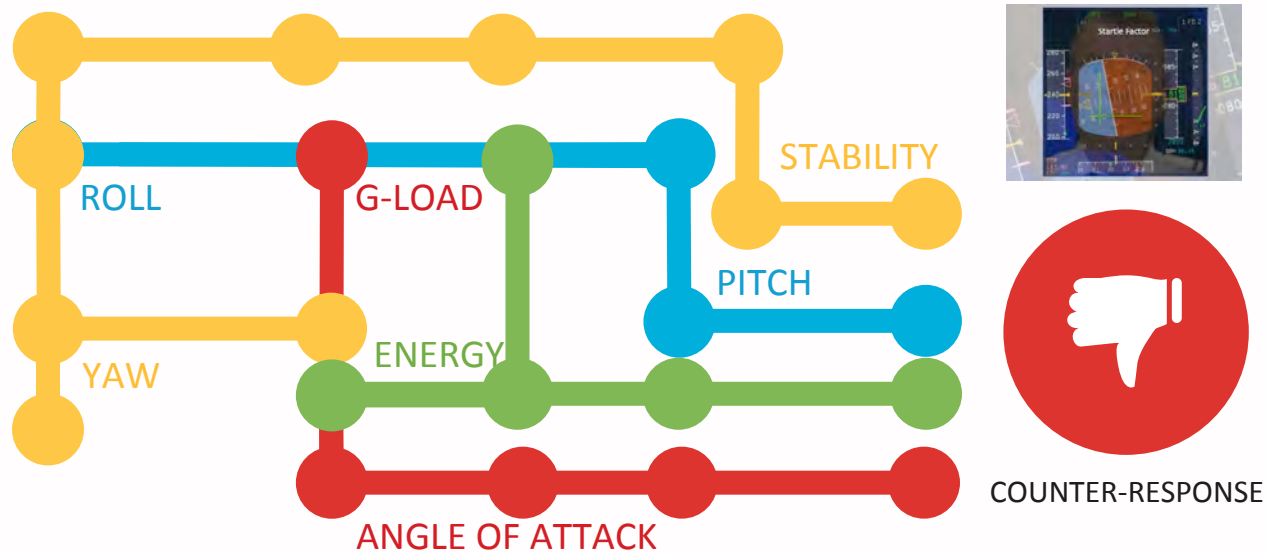
## TIME CRITICAL PREVENTION

- Rapid Onset Event
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2 TO 10 SECONDS

NASA

# TIME CRITICAL PREVENTION



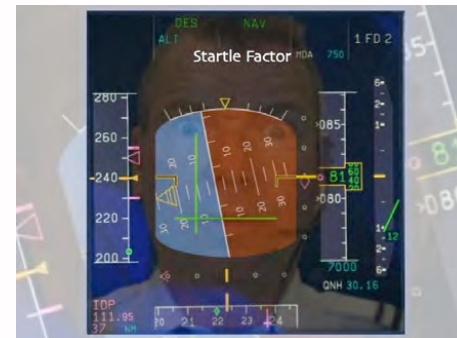
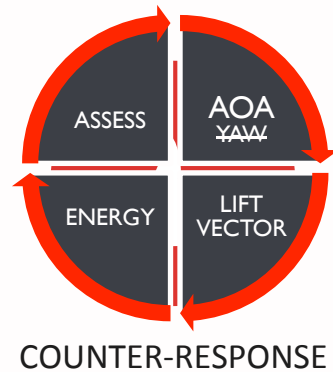
# TIME CRITICAL PREVENTION

AOA - YAW

LIFT VECTOR

ENERGY STATE

STABILIZED?





# UPSET PREVENTION TOOLKIT

# SAFETY MANAGEMENT

<div> <div> RISK OUTCOME  Low  Moderate  Significant  High </div> <div>LOC-I SMS MATRIX</div> </div>					
Likelihood	Consequence				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Almost Certain 5	5	10	15	20	25
Likely 4	4	8	12	16	20
Possible 3	3	6	9	12	15
Unlikely 2	2	4	6	8	10
Rare 1	1	2	3	4	5

# ATTENTION + PREVENTION = INTERVENTION



# FREE ASSESSMENT TOOL

## FIVE EASY QUESTIONS

What you get:

- Free Risk Assessment
- Free Web-based Course (\$300 Value)

No catch. No cost.

[APSTRAINING.COM/APRAST5](http://APSTRAINING.COM/APRAST5)

**3 days only**





LEARN – APPLY – SHARE



# ICAO MANUAL RELEASED



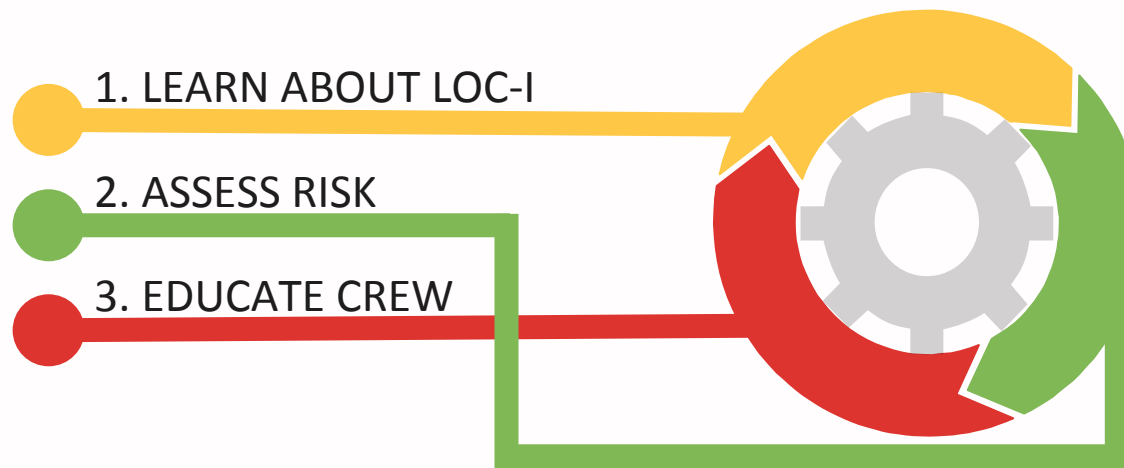
[tinyurl.com/icao10011](http://tinyurl.com/icao10011)

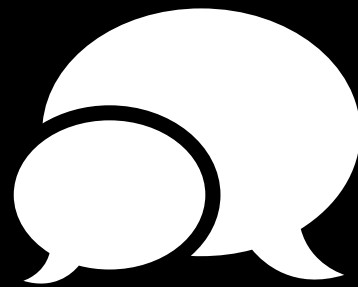
ACADEMIC TRAINING

ON-AIRCRAFT UPSET TRAINING

SIMULATOR UPSET TRAINING

# LEARN – APPLY – SHARE





QUESTIONS

[APSTRaining.COM/APRAST5](https://apstraining.com/aprast5)

Free LOC-I Course

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