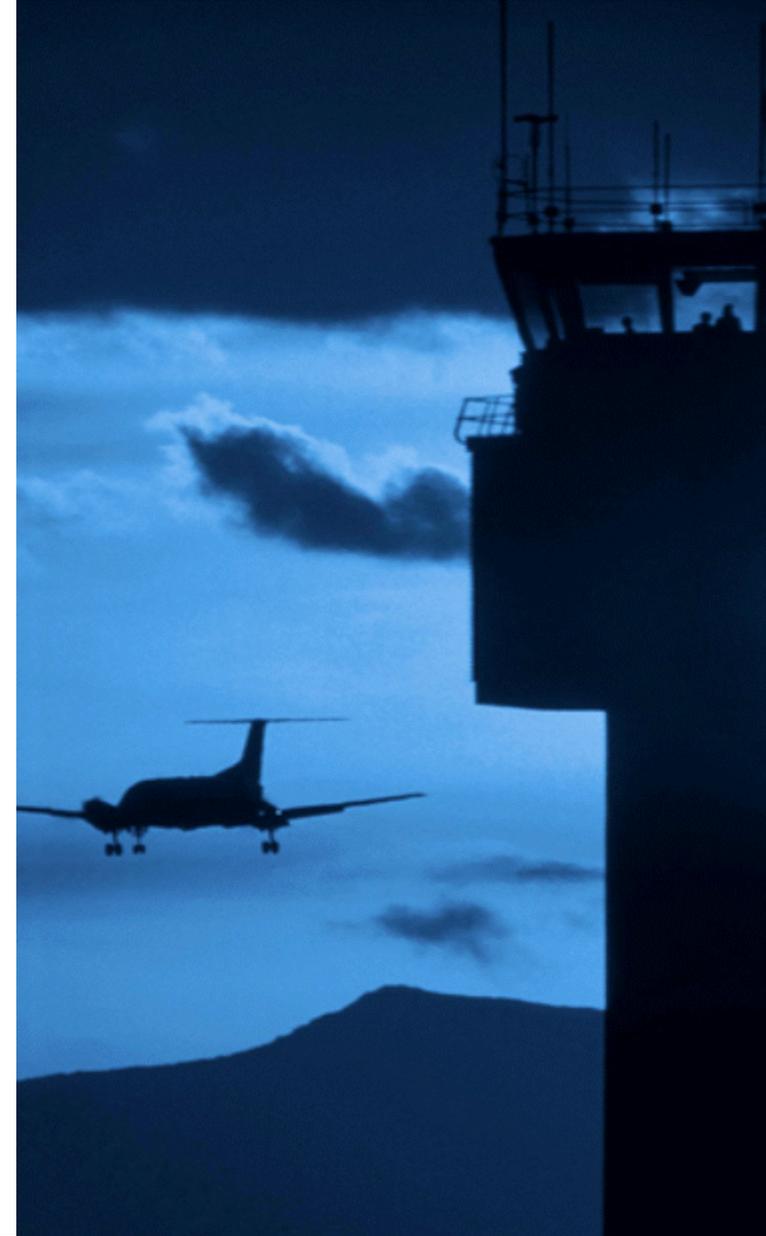


# Designee Safety Summit

St. Louis FSDO



Federal Aviation  
Administration

# WELCOME

*Designee Safety Summit*



**0830 - 1230**

**CELL PHONES – VIBRATE OR OFF**



# Objective

Attendees will be presented with concepts of risk management and the legal and insurance implications of managing those risks.

# TODAY'S TOPICS

*Designee Safety Summit*

## Practical Risk Evaluation Program

Fred Harms

## Legal Observations and Opinions

Lee Nelson

## Insurance Facts and Fiction

Jeff Edwards

## iPAD – Electronic Flight Bag

June Tonsing & John Teipen

# Practical Risk Evaluation

Fred Harms

Principal Operations Inspector



Federal Aviation  
Administration



# HOW DO WE EVALUATE RISK?







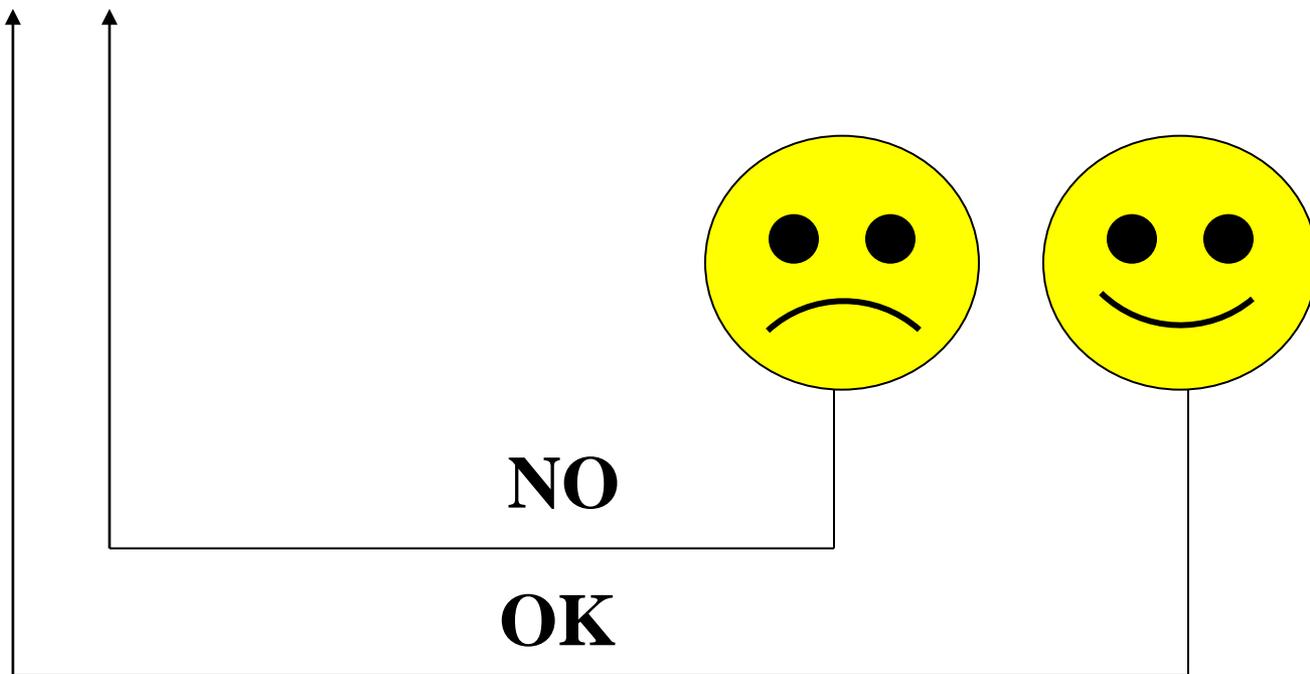
# TRADITIONAL RISK MANAGEMENT

- We expose ourselves to risk then evaluate the experience afterwards and decide whether we want to take that sort of risk again.
- If the outcome was successful, we place the risk in the “acceptable” category.
- The more times we gets away with a risk, the more we believe that risk is acceptable.

## **Outcome based behavior**



**Behavior** → **Outcome**



# The Focus of Flight Training

- Assumption – risk assessment skills will emerge as part of the training experience.
- Reality – we are trained within a specific operational environment and our experience is relatively selective. 2000 hours could easily be a 1-hour sight seeing flight – 2000 times!
- We have difficulty in accurately appraising our performance and anticipating hazards that we are likely to experience.

# The Great Lie

- “When pilots fail to admit the risks, the odds are they won’t do a good job of managing those risks.”
- “The vast majority of fatal accidents are caused by a failure in risk management, yet flight training is focused almost exclusively on skill.”
- “The answer is that instructors must teach, and pilots must learn a practical, proactive procedure to anticipate and manage risks.”

John King

# SHEL Model

- **Effective Safety Management means understanding the Aviation System and its interfaces:**
  - (S) Software (procedures, training, support, etc.)
  - (H) Hardware (machines and equipment)
  - (E) Environment (the operating circumstances in which the rest of the L-H-S system must function)
  - (L) Liveware (humans in the workplace)

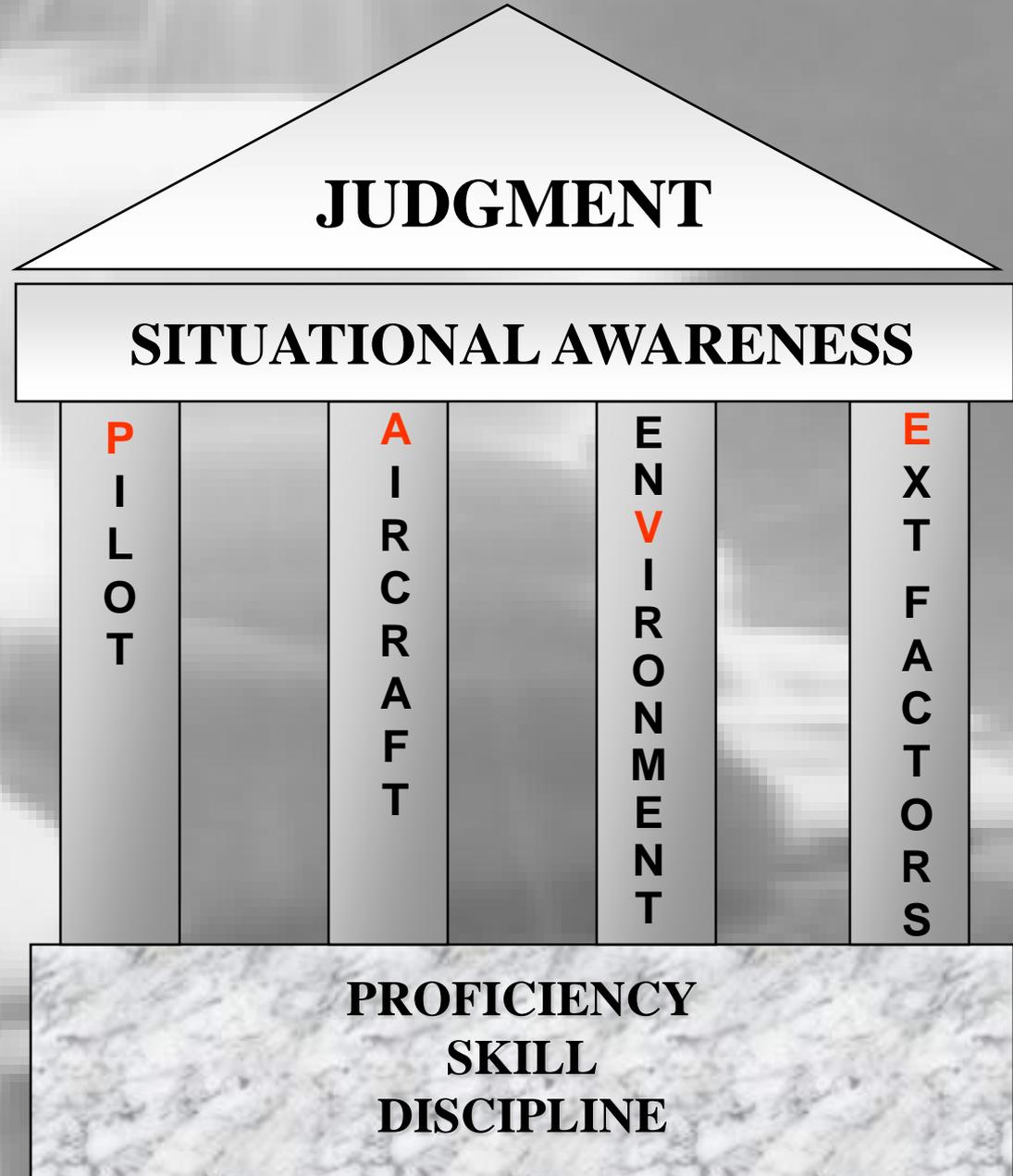
# Risk Management

- Risk management, as a part of the aeronautical decision making (ADM) process, relies on situational awareness, problem recognition, and good judgment.

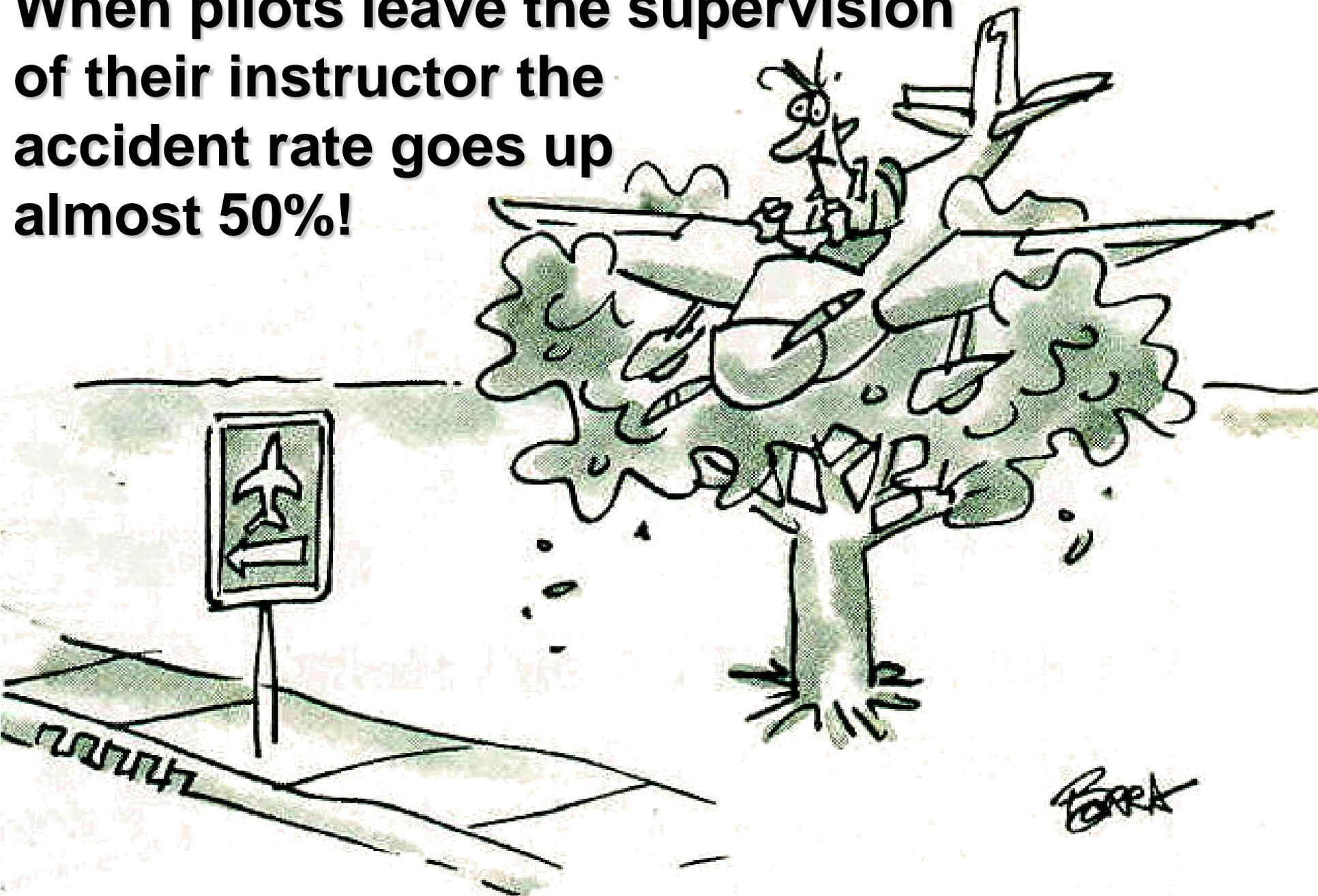
**CAPSTONE  
OUTCOMES**

**PILLARS OF  
KNOWLEDGE  
(RISK ELEMENTS)**

**BEDROCK  
PRINCIPLES**



**When pilots leave the supervision of their instructor the accident rate goes up almost 50%!**



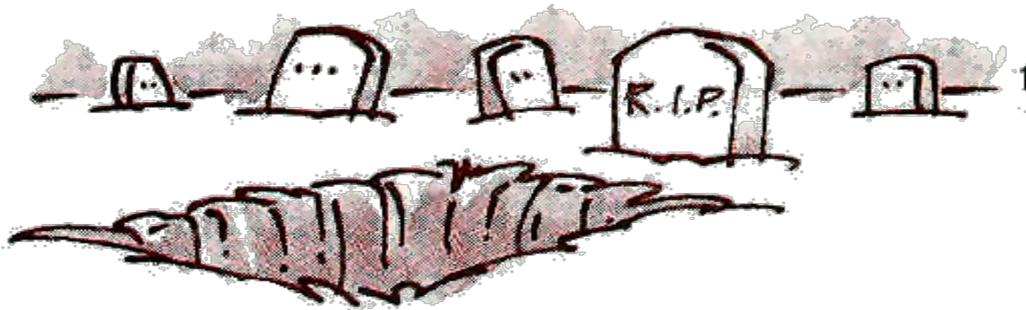
# Role of the Flight Instructor

- The CFI is the cornerstone of aviation safety.
- The FAA places full responsibility for training pilots on CFIs!
- The CFI is totally responsible for training pilots in all knowledge areas and the skills necessary to operate safely and competently.



**Most of us have learned risk management by outcome based behavior.**

**Flight instructors can teach pilots specific risk management skills by developing scenarios that require the pilot to use those skills.**



# Role of the Flight Instructor/DPE

- Present realistic conditions under which the student/applicant can demonstrate depth of knowledge.
- Include knowledge of supporting elements found in the system:
  - Checklists
  - Publications
  - Regulations

# Examiner's Responsibility (PTS)

- Throughout the practical test, the examiner evaluates the applicant's ability to use good aeronautical decision-making procedures in order to identify risks.
- The examiner accomplishes this requirement by developing scenarios that incorporate as many tasks as possible to evaluate the applicants risk management in making safe aeronautical decisions.

# Changes to the PTS

**JUDGMENT ASSESSMENT MATRIX**

<p align="center"><b>JUDGMENT ASSESSMENT MATRIX</b></p> <p align="center"><b>FLIGHT INSTRUCTOR INSTRUMENT</b></p> <p align="center">for Airplane and Helicopter</p>	<p align="center"><b>Acceptable Course of Action</b></p> <p align="center">Action of the Applicant is Acceptable Given the Dynamics of the Flight Environment</p>	<p align="center">Judgment Based Upon the Following SRM Areas</p>	Aeronautical Decision-Making	
			Risk Management	
			Task Management	
			Automation Management	
			Controlled Flight Into Terrain	
			Situational Awareness	
	<p align="center"><b>Unacceptable Course of Action</b></p> <p align="center">Action of the Applicant is Unacceptable Given the Dynamics of the Flight Environment</p>	<p align="center">Judgment Based Upon the Following SRM Areas</p>	Aeronautical Decision-Making	
			Risk Management	
			Task Management	
			Automation Management	
			Controlled Flight Into Terrain	
			Situational Awareness	
I. Fundamentals of Instruction				
II. Technical Subject Areas				
III. Preflight Preparation				
IV. Preflight Lesson on a Maneuver				
V. Air Traffic Control Clearances				
VI. Flight by Reference to Instruments				
VII. Navigation Systems				
VIII. Instrument Approach Procedures				
IX. Emergency Operations				
X. Postflight Procedures				



# A Judgment Assessment

- ADM
- Risk Management
- Task Management
- Situational Awareness
- Controlled Flight Into Terrain Awareness
- Automation Management

# Learning For Life

- What if there were a better way to impart risk management skills?
- What if risk assessment and mitigation was “built into” a pilot instead of added-on later?

# Practical Risk Evaluation Program (PREP)

## I. Preflight Preparation

A. Certificates and Documents (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
B. Airworthiness Requirements (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
C. Weather Information (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
D. Cross-Country Flight Planning (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
E. National Airspace System (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
F. Performance and Limitations (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
G. Operation of Systems (ASEL and ASEL)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
H. Water and Seaplane Characteristics (ASES)	Knowledge <u>N/A</u>	Application <u>N/A</u>	Consistency <u>N/A</u>	Environment <u>N/A</u>
I. Seaplane Bases, Maritime Rules (ASES)	Knowledge <u>N/A</u>	Application <u>N/A</u>	Consistency <u>N/A</u>	Environment <u>N/A</u>
J. Aeromedical Factors (ASEL and ASES)	Knowledge <u>40</u>	Application <u>40</u>	Consistency <u>40</u>	Environment <u>40</u>
<b>Preflight Preparation Totals</b>	Knowledge <b><u>320</u></b>	Application <b><u>320</u></b>	Consistency <b><u>320</u></b>	Environment <b><u>320</u></b>

**1280**

## II. Preflight Procedures

A. Preflight Inspection (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
B. Cockpit Management (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
C. Engine Starting (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
D. Taxiing (ASEL)	Knowledge ___	Application ___	Consistency ___	Environment ___
E. Taxiing and Sailing (ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
F. Before Takeoff Check (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
<b>Preflight Procedures Totals</b>	Knowledge ___	Application ___	Consistency ___	Environment ___

# Practical Risk Evaluation Program (PREP)

## I. Preflight Preparation

	A. Certificates and Documents (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	B. Airworthiness Requirements (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	C. Weather Information (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	D. Cross-Country Flight Planning (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	E. National Airspace System (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	F. Performance and Limitations (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	G. Operation of Systems (ASEL and ASEL)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	H. Water and Seaplane Characteristics (ASES)	Knowledge <u>N/A</u>	Application <u>N/A</u>	Consistency <u>N/A</u>	Environment <u>N/A</u>
	I. Seaplane Bases, Maritime Rules (ASES)	Knowledge <u>N/A</u>	Application <u>N/A</u>	Consistency <u>N/A</u>	Environment <u>N/A</u>
	J. Aeromedical Factors (ASEL and ASES)	Knowledge <u>10</u>	Application <u>10</u>	Consistency <u>10</u>	Environment <u>10</u>
	<b>Preflight Preparation Totals</b>	Knowledge <b><u>80</u></b>	Application <b><u>80</u></b>	Consistency <b><u>80</u></b>	Environment <b><u>80</u></b>

**Solo zone = 880**

**320**

## II. Preflight Procedures

	A. Preflight Inspection (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	B. Cockpit Management (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	C. Engine Starting (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	D. Taxiing (ASEL)	Knowledge ___	Application ___	Consistency ___	Environment ___
	E. Taxiing and Sailing (ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	F. Before Takeoff Check (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	<b>Preflight Procedures Totals</b>	Knowledge ___	Application ___	Consistency ___	Environment ___

<b>III. Airport and Seaplane Base Operations</b>				
A. Radio Communications and ATC Light Signals (ASEL and ASES)	Knowledge	Application	Consistency	Environment
B. Traffic Patterns (ASEL and ASES)	Knowledge	Application	Consistency	Environment
C. Airport, Runway and Taxiway Signs, Markings and Lighting (ASEL and ASES)	Knowledge	Application	Consistency	Environment
<b>Airport and Seaplane Base Operations Totals</b>	Knowledge	Application	Consistency	Environment
<b>IV. Takeoffs, Landings, and Go-Arounds</b>				
A. Normal and Crosswind Takeoff and Climb (ASEL and ASES)	Knowledge	Application	Consistency	Environment
B. Normal and Crosswind Approach and Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
C. Soft-Field Takeoff and Climb (ASEL)	Knowledge	Application	Consistency	Environment
<u>D. Soft-Field Approach and Landing (ASEL)</u>	Knowledge <b>10</b>	Application <b>10</b>	Consistency <b>10</b>	Environment <b>10</b>
E. Short-Field (Confined Area) Takeoff and Maximum Performance Climb (ASEL and ASES)	Knowledge	Application	Consistency	Environment
F. Short-Field Approach (Confined Area) and Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
G. Glassy Water Takeoff and Climb (ASES)	Knowledge	Application	Consistency	Environment
H. Glassy Water Approach and Landing (ASES)	Knowledge	Application	Consistency	Environment
I. Rough Water Takeoff and Climb (ASES)	Knowledge	Application	Consistency	Environment
J. Rough Water Approach and Landing (ASES)	Knowledge	Application	Consistency	Environment
K. Forward Slip to a Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
L. Go-Around/Rejected Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
<b>Takeoffs, Landings, and Go-Arounds Totals</b>	Knowledge	Application	Consistency	Environment

**V. Performance Maneuver**

Meets Standards 10 ----- 15 ----- 20 ----- 25 ----- 30 ----- 35 ----- 40 Unskilled

<b>III. Airport and Seaplane Base Operations</b>				
A. Radio Communications and ATC Light Signals (ASEL and ASES)	Knowledge	Application	Consistency	Environment
B. Traffic Patterns (ASEL and ASES)	Knowledge	Application	Consistency	Environment
C. Airport, Runway and Taxiway Signs, Markings and Lighting (ASEL and ASES)	Knowledge	Application	Consistency	Environment
<b>Airport and Seaplane Base Operations Totals</b>	Knowledge	Application	Consistency	Environment
<b>IV. Takeoffs, Landings, and Go-Arounds</b>				
A. Normal and Crosswind Takeoff and Climb (ASEL and ASES)	Knowledge	Application	Consistency	Environment
B. Normal and Crosswind Approach and Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
C. Soft-Field Takeoff and Climb (ASEL)	Knowledge	Application	Consistency	Environment
<u>D. Soft-Field Approach and Landing (ASEL)</u>	Knowledge <b>10</b>	Application <b>20</b>	Consistency <b>20</b>	Environment <b>25</b>
E. Short-Field (Confined Area) Takeoff and Maximum Performance Climb (ASEL and ASES)	Knowledge	Application	Consistency	Environment
F. Short-Field Approach (Confined Area) and Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
G. Glassy Water Takeoff and Climb (ASES)	Knowledge	Application	Consistency	Environment
H. Glassy Water Approach and Landing (ASES)	Knowledge	Application	Consistency	Environment
I. Rough Water Takeoff and Climb (ASES)	Knowledge	Application	Consistency	Environment
J. Rough Water Approach and Landing (ASES)	Knowledge	Application	Consistency	Environment
K. Forward Slip to a Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
L. Go-Around/Rejected Landing (ASEL and ASES)	Knowledge	Application	Consistency	Environment
<b>Takeoffs, Landings, and Go-Arounds Totals</b>	Knowledge	Application	Consistency	Environment

**V. Performance Maneuver**

---

Meets Standards 10 ----- 15 ----- 20 ----- 25 ----- 30 ----- 35 ----- 40 Unskilled

	Steep Turns (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	<b>Performance Maneuver Total</b>	Knowledge ___	Application ___	Consistency ___	Environment ___
<b>VI.</b>	<b>Ground Reference Maneuvers</b>				
	A. Rectangular Course (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	B. S-Turns (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	C. Turns Around a Point (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	<b>Ground Reference Maneuvers Totals</b>	Knowledge ___	Application ___	Consistency ___	Environment ___
<b>VII.</b>	<b>Navigation</b>				
	A. Pilotage and Dead Reckoning (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	B. Navigation Systems and Radar Services (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	C. Diversion (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	D. Lost Procedures (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	<b>Navigation Totals</b>	Knowledge ___	Application ___	Consistency ___	Environment ___
<b>VIII.</b>	<b>Slow Flight and Stalls</b>				
	A. Maneuvering During Slow Flight (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	B. Power-Off Stalls (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	C. Power-On Stalls (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	D. Spin Awareness (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___
	<b>Slow Flight and Stalls Totals</b>	Knowledge ___	Application ___	Consistency ___	Environment ___
<b>IX.</b>	<b>Basic Instrument Maneuvers</b>				
	A. Straight-and-Level Flight (ASEL and ASES)	Knowledge ___	Application ___	Consistency ___	Environment ___

B. Constant Airspeed Climbs (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
C. Constant Airspeed Descents (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
D. Turns to Heading (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
E. Recovery from Unusual Flight Attitudes (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
F. Radio Communications, Navigation Systems/Facilities and Radar Services (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>Basic Instrument Maneuvers Totals</b>	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>X. Emergency Operations</b>				
A. Emergency Approach and Landing (Simulated) (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
B. Systems and Equipment Malfunctions (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
C. Emergency Equipment and Survival Gear (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>Emergency Operations Totals</b>	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>XI. Night Operation</b>				
Night Preparation (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>Night Operations Total</b>	Knowledge ____	Application ____	Consistency ____	Environment ____
<b>XII. Postflight Procedures</b>				
A. After Landing, Parking, and Securing (ASEL and ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____
B. Anchoring (ASES)	Knowledge ____	Application ____	Consistency ____	Environment ____

C. Docking and Mooring (ASES)

Knowledge \_\_\_ Application \_\_\_ Consistency \_\_\_ Environment \_\_\_

D. Ramping/Beaching (ASES)

Knowledge \_\_\_ Application \_\_\_ Consistency \_\_\_ Environment \_\_\_

**Postflight Procedures Totals**

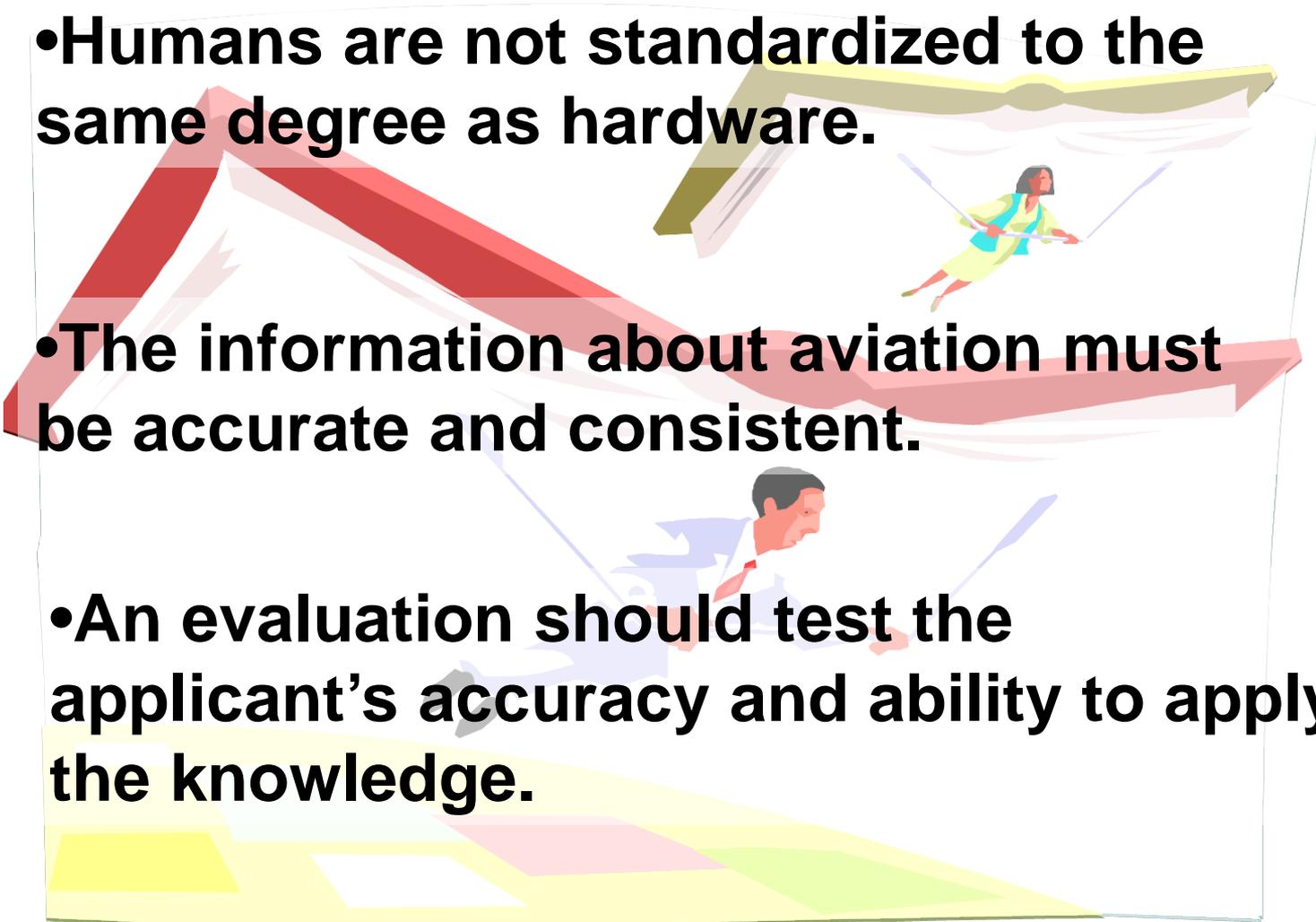
Knowledge \_\_\_ Application \_\_\_ Consistency \_\_\_ Environment \_\_\_

**Maximum "Highest Risk" Score for Unskilled ASEL Student 7520**

**Minimum "Lowest Risk" Score for Meets Standards ASEL Student 1880**

PREP for Safety

# KNOWLEDGE

- Humans are not standardized to the same degree as hardware.
  - The information about aviation must be accurate and consistent.
  - An evaluation should test the applicant's accuracy and ability to apply the knowledge.
- 
- A large, stylized graphic of a red arrow pointing downwards and to the right, with a yellow arrow pointing upwards and to the right, creating a diamond-like shape. Inside this graphic, a woman in a yellow and blue outfit is flying through the air, and a man in a white shirt and red tie is also flying. The background is white with some faint, colorful geometric shapes.

# APPLICATION

What situations would create a go vs. no-go decision?



# CONSISTENCY

con·sis·ten·cy

- marked by harmony, regularity, or steady continuity
- free from variation or contradiction
- harmony of conduct or practice with profession
- The quality of achieving a level of performance which does not vary greatly in quality over time

# Environment

- “The operating circumstances in which the rest of the L-H-S system must function.”
- Internal
  - Temperature.
  - Light
  - Noise
- External
  - Weather
  - Physical facilities
  - ATC

# ENVIRONMENT

Vision Restricted  
Cold  
Heat  
Lighting  
Seating and Restraints  
Controls and Switches  
Automation  
Workspace Incompatible with Human  
Personal Equipment Interference  
Inattention  
Channelized Attention  
Cognitive Task Over saturation  
Confusion  
Negative Transfer  
Distraction  
Lost  
Personality Disorder  
Psychological Disorder  
Psychosocial Problem  
Emotional State  
Personality Style  
Overconfidence  
Pressing  
Complacency

Motivation  
Overaggressive  
Excessive Motivation to Succeed  
Get-Home-Itis/Get-There-Itis  
Response Set  
Motivational Exhaustion (Burnout)  
Effects of G Forces (G-LOC, etc)  
Prescribed Drugs  
Operational Injury/Illness  
Unconsciousness  
Physical Illness/Injury/Deficit  
Physical Fatigue (Overexertion)  
Fatigue - Physiological/Mental  
Circadian Rhythm Desynchrony  
Motion Sickness  
Trapped Gas Disorders  
Hypoxia  
Hyperventilation  
Visual Adaptation  
Dehydration  
Physical Task Over saturation  
Learning Ability/Rate  
Memory Ability/Lapses  
Motor Skill/Coordination or Timing  
Technical/Procedural Knowledge

Illusion  
Misperception of Operational Conditions  
Misinterpreted/Misread Instrument  
Expectancy  
Auditory Cues  
Spatial Disorientation Incapacitating  
Temporal Distortion  
Crew/Team Leadership  
Cross-Monitoring Performance  
Task Delegation  
Rank/Position Authority Gradient  
Assertiveness  
Communicating Critical Information  
Standard/Proper Terminology  
Challenge and Reply  
Mission Planning  
Mission Briefing  
Task/Mission-In-Progress Re-Planning  
Miscommunication  
Physical Fitness  
Alcohol  
Drugs/Supplements/Self medication  
Nutrition  
Inadequate Rest  
Disqualifying Medical Condition

# So What's the Take Away?

- The causal factors for accidents and incidents have varied little despite improvements in design, reliability and technology. Doing things the same way will **not** make anything better!
- PREP is a step to reinforce the idea that risk management is the “safest” way to fly.
- Improve on the idea!

**A**

*Superior pilot*

is one who uses

*Superior Judgment*

to avoid situations that require

*Superior skill !*

# DESIGNEE SAFETY SUMMIT

## Thank You For Attending

**The Central Region FAA Safety Team (FAASTeam) is dedicated to Quality Customer Service and we would value your feedback. Please provide your feedback at:**

[www.faa.gov/about/office\\_org/headquarters\\_offices/avs/offices/af/s/qms](http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/af/s/qms)