

**PILOT STRESS:**  
**Factors Affecting Performance**

Dr. Jim Giordano, AGI, IGI  
Aviation Safety Counselor  
409-895-8947

# STRESS

- Environmental challenges that induce a non-specific set of neurologic and hormonal responses:
  - Increased cardiac output
  - Increased respiration
  - Sympathetic nervous system arousal
  - Redistribution of bloodflow

# STRESSOR

- Any environmental *change, novelty* and/or *instability* that *eludes control*
- *Change in the ability to exert control*
  - Can be inherently unpleasant (*distressor*)
  - Can be inherently pleasant (*eustressor*)

# STRESS DIATHESIS

- A condition of increased biological susceptibility to stresses that can lead to increased reactivity to various stressors
- Each individual has distinct diatheses
  - Some are biologically determined
  - Some are environmentally conditioned
  - Some are interactive

# STRESS RESPONSE:

## General Adaptation Syndrome

- Three-stage response of hierarchical biological systems:
  1. Alarm Stage: immediate, short-term
  2. Resistance Stage: mobilization against threat
  3. Exhaustion Stage: biological fatigue

# 8 Types of Stress Factors

- Conscious Factors: thought, judgement, decision making
- Unconscious Factors: past influences, memories
- Personality Factors: character and temperament
- Psychological Factors: emotional condition
- Physiologic Factors: biological influences/condition
- Environmental Factors: noise, comfort, ergonomics
- Experiential Factors: situational influences
- Sociocultural Factors: family, finances, life-changes

## 8 Interactive Stress Variables

- Intensity: magnitude (low vs high)
- quality: insignificant vs significant
- Duration/frequency: short vs long; high/low
- Focus of Stressor: vulnerability (high vs low)
- Extent of Stress: scope of influence (isolated vs extensive)
- Mental/Physical Status: hardiness (high vs low)
- Resistance: active vs inactive
- Perception: reductive vs magnifying

# Identified Pilot Stressors

- Flying alone
- Congested airspace/busy airports\*
- Emergencies
- Night flying
- Check rides
- Flying over water
- Getting lost/landing at wrong airport
- Losing medical certificate/grounding
- Violating FARs/grounding\*
- Miscomprehension of ATC\*
- Making a fool of oneself
- Crashing/midair collision\*

# Stressful Aspects of Flight

1. Approach/landing (Demand = Stress)
2. Takeoff (Demand > Stress)
3. Cruise (Demand > Stress)
4. Taxi (Demand > Stress)

# Stress, Performance & Error

- **Under low perceived stress:**
  - Boredom/complacency may be high
  - Performance = low, with high potential for poor judgement
  - **Under high perceived stress:**
    - Performance degrades due to decreased skill and/or diminished endurance
    - Poor judgement and error potential increase

# “Ideal” Stress Level

- “Stress Comfort Zone”: environment in which *eustressors* outnumber *distressors* to increase arousal within response limits, while generating peak performance
  - Low boredom factor
  - Low potential for poor judgement
  - Low potential for error

# Stress-coping Patterns/Behaviors

- Denial: Ostrich effect “This isn’t happening to me”
- Suppression: “I’m OK...I’ll be fine”
- Humor: “Pagliacci effect”
- Projection: “I’m OK, you’re the one who’s stressed out!”
- Intellectualization: “Let’s examine the data...”\*
- Rationalization: “What are some options here...”\*
- Decompensation: Pass the Xanax and could I wash it down with some gin, please?

# Overcoming Stress

- It's not the stressor, it's your reaction to it!
- Every stress *Activates* a particular set of *Beliefs* that drive your *Cognitions* to evoke Consequences. (A - B - C)
- Access the ABCs of any stressor you encounter
- *Dispute* your irrational Beliefs to generate new **Expectations** and **Feelings** (D - E - F)

# Preparation is the Key

- Through preparation, you can gain knowledge to rationally dispute beliefs that lead to inadequate behavioral consequences
- Such preparatory safety is not a fable...remember

## AESOP

- Aircraft factors
- Environmental factors
- Situational factors
- Options
- Personnel factors