Aeronautical Decision Making

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ADM

- So what exactly is ADM? In AC 60-22, the FAA defines ADM as a *systematic approach* to the mental process of *evaluating* a *given set of circumstances* and *determining the best course of action*

The P3 Model to ADM

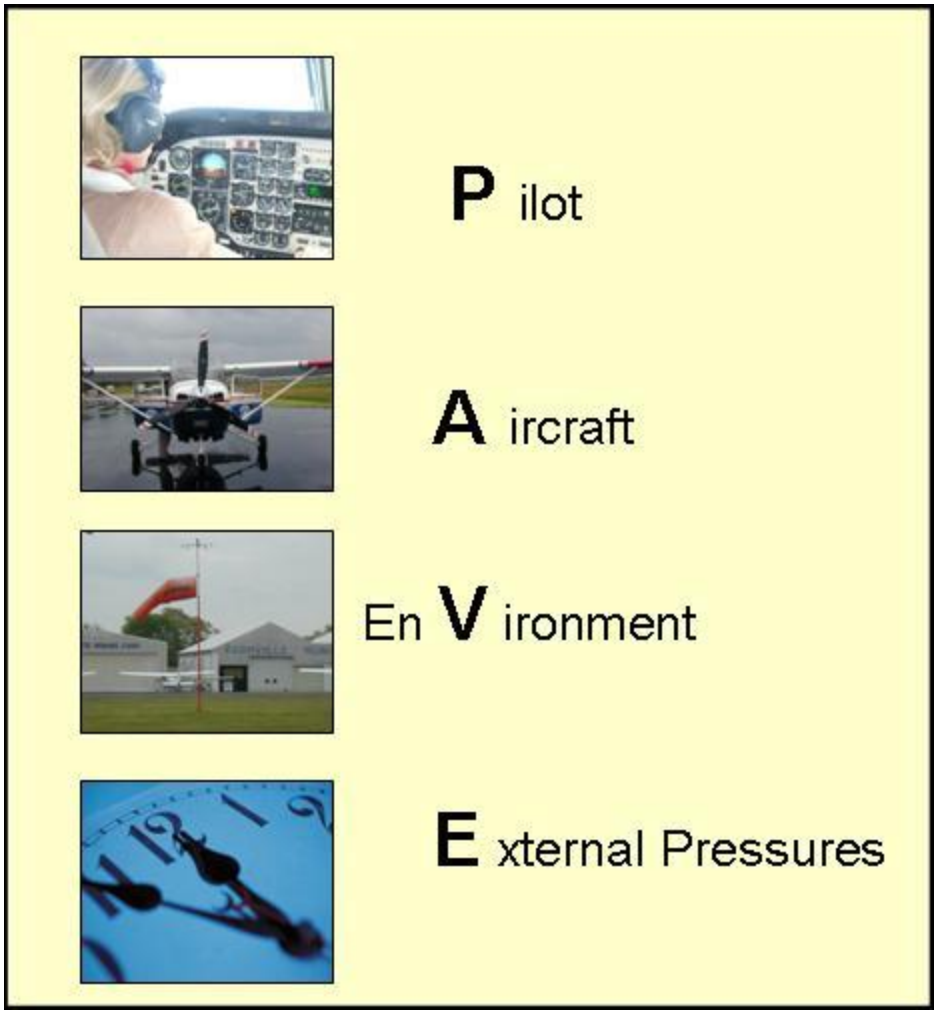
Perceive the “given set of circumstances” for your flight.

Process by evaluating their impact on flight safety.

Perform by implementing the best course of action.

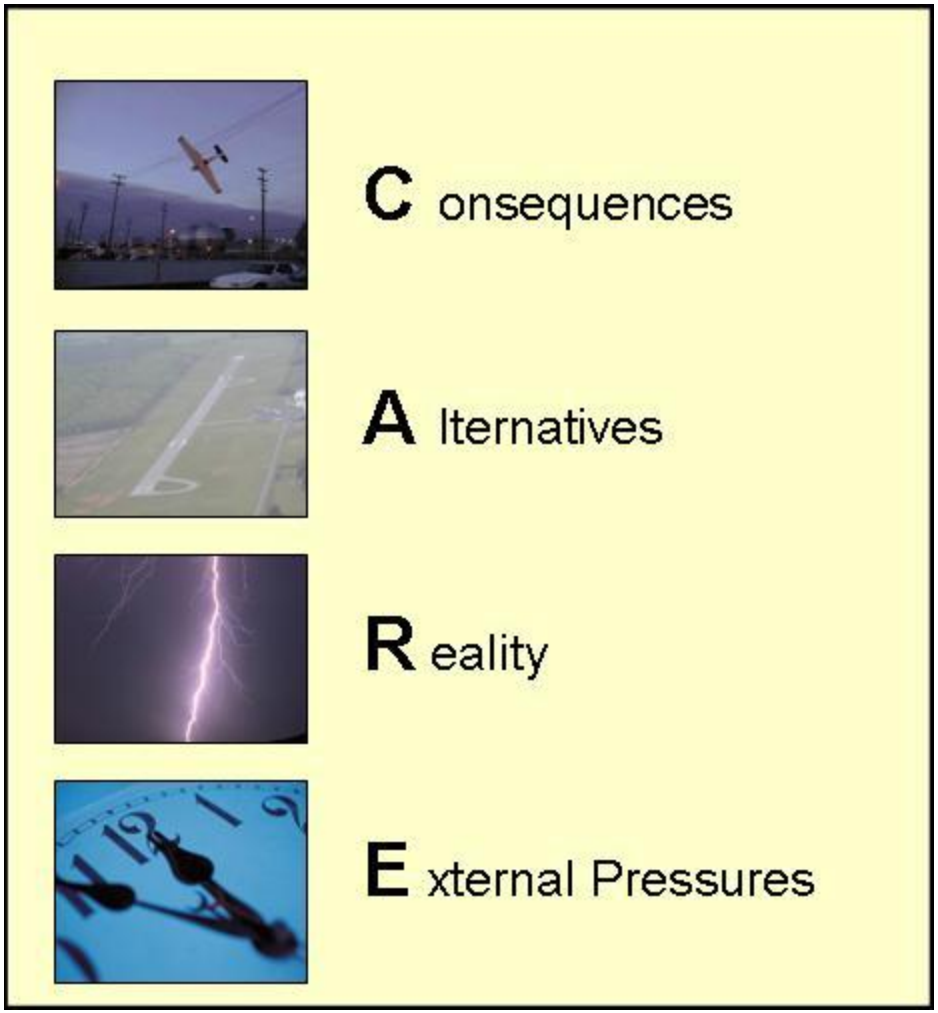
Perceive

- It Begins With Examining the Total Set of Circumstances
- The PAVE Model Helps Us Here



Process

- ***C*** onsequences (loss of situational awareness, spatial disorientation)
- ***A*** lternatives (land at the nearest airport? return to home airport? continue?)
- ***R*** eality (can you avoid being distracted by the failure? by the instruments?)
- ***E*** xternal pressures (will my business meeting pressure me to an unsafe decision?)



Perform

- **Mitigate**
- **Eliminate**
- **Evaluate**

M itigate or eliminate risk

E valuate outcome of action(s)

• Using a ***personal minimums checklist***.

• Use your ***alternatives***. In questionable weather, for instance, land at one of your pre-identified alternates and get answers before you proceed.

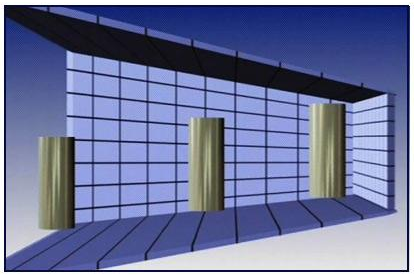
• ***Preflight your passengers*** by preparing them for the possibility of delay and diversion, and involve them in your evaluation process.

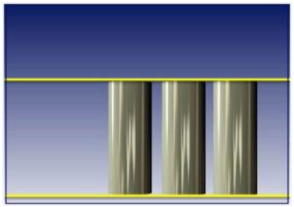
Human Errors

- **Filtering**
  - The brain's working memory capacity is limited to about seven (7) pieces, or “chunks,” of information at one time, so one of the life skills we acquire is the ability to filter the flood of information arriving through our senses.
  - When We Filter, Vital Information May be Ignored

Human Errors (cont.)

- **Filling In the Gaps**
  - When there is more information than the brain can accurately *PERCEIVE* and *PROCESS*, it compensates by filling in the gaps and producing an interpretation that is not correct.





Human Errors (cont.)

- **Patterns and Expectations**
  - The brain uses existing knowledge and experience as a shortcut to processing new information
  - E.g., If previous experience at a familiar airport leads you to expect a clearance to land on runway 13, you may "hear" a clearance to land on “one-three,” even if the controller in fact clears you to land on runway 17

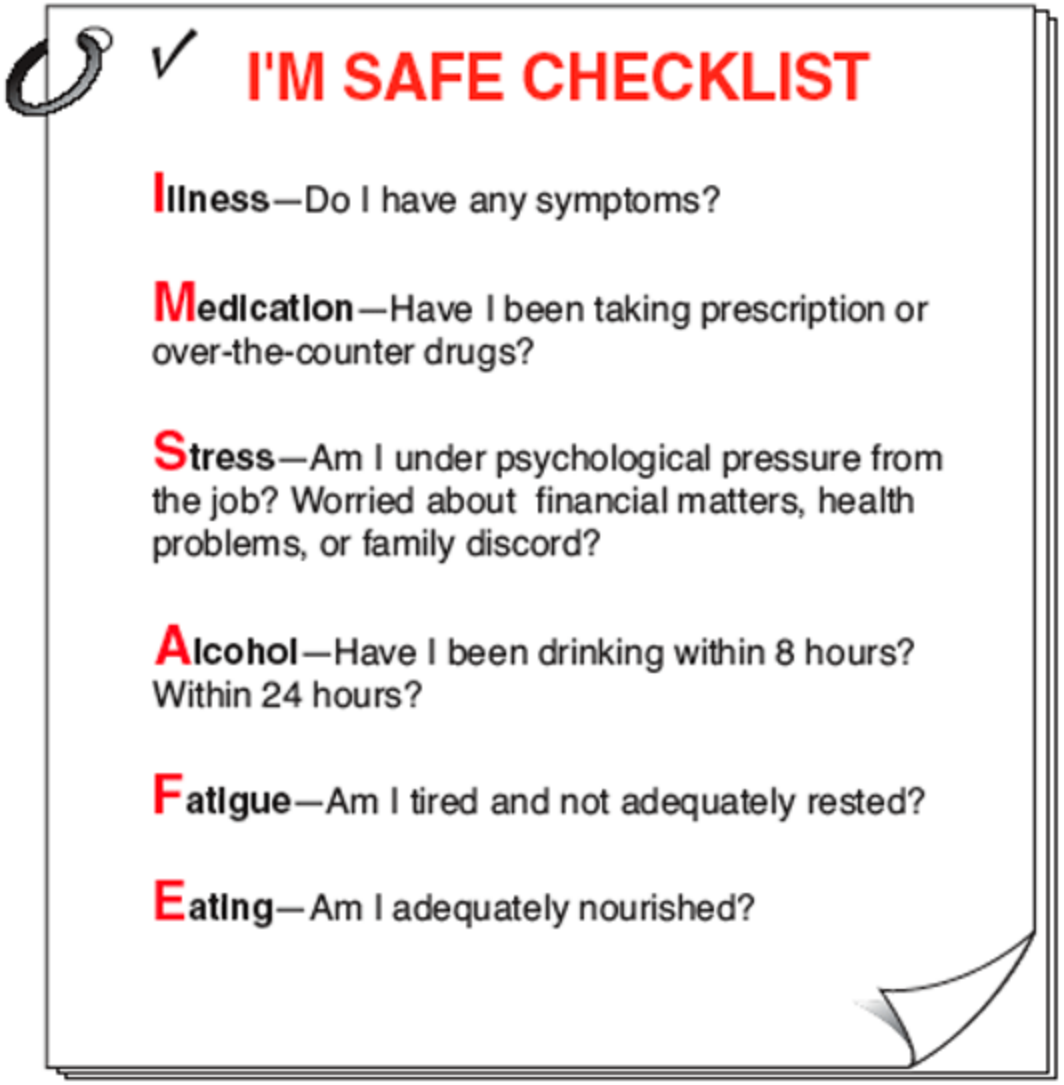
Human Errors (cont.)

- **Confirmation Bias**
  - Human beings also have a tendency to look for information that confirms a decision we have already made. For example, imagine that you have decided to continue a flight you have already started. You call Flight Watch for updated weather information on several nearby airports, but you might unconsciously give more weight to the information that supports your decision to press ahead.

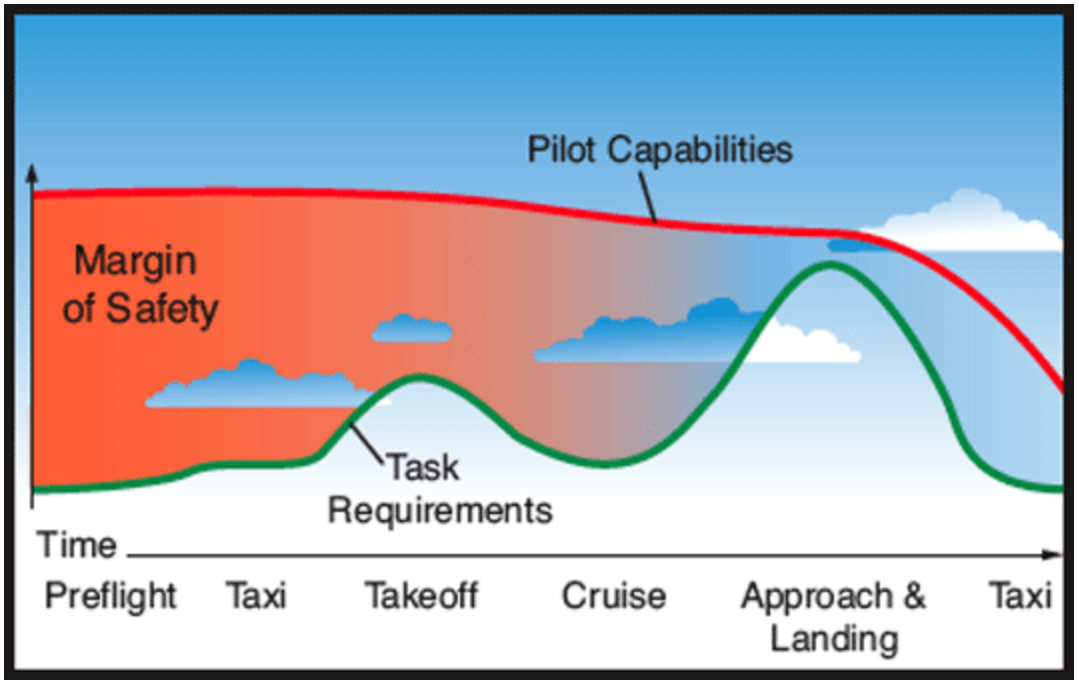
Human Errors (cont.)

- **Framing**
  - When you evaluate options for a decision, be sensitive to how you state, or "frame," your alternatives. Assume you are deciding whether to continue a flight in deteriorating weather. If you frame the “continue” decision in positive terms (e.g., “I can save a lot of time and inconvenience if I go on”), you are probably more likely to decide on continuing. If, on the other hand, you frame the decision in negative terms (e.g., “I could get myself in real trouble if I push on”), you are more likely to divert to a safer destination.

Self Evaluation



Margins of Safety



Scenario

- Low time Private Pilot, only 3 hours of night flight since receiving pilot license
- Plan a 275 nm night cross-country after working 8 hours into an airport in Class B airspace
- Weather VFR along route, but some convective activity within 70 nm of route; destination airport TAF indicates VFR but with a ceiling dropping from 5,000’ to 2,100’ 1 hour after planned ETA.
- Familiar with airplane (C-172), but intercom has been acting up, FBO states it is ‘working fine’
- Taking a co-worker that has never flown in a light airplane before

Discuss – Not Always a Correct Answer

- Use 3P Model
- How does PAVE Model help here?
- What is Biggest Factor that Might Serve to Make This Flight Unsafe?
- Use CARE model to Examine WX factors
- If you decide to go, how could you mitigate the risks?