

Ground Lesson: Aeronautical Decision Making

Objectives:

1. to understand the concepts of Aeronautical Decision Making
2. to understand risk management and how to recognize hazardous situations
3. to be able to properly evaluate operational situations, and react to them properly

Justification:

1. an understanding of ADM helps a pilot evaluate situations and themselves systematically and safely.
2. knowledge of ADM is required for the private pilot checkride

Schedule:

Activity	Est. Time
Ground	1.0
Total	1.0

Elements Ground:

- overview
- decision making process
- risk management
- decision making factors
- self assessment
- hazardous attitudes
- workload management
- situational awareness
- operational pitfalls

Completion Standards:

1. when the student exhibits knowledge relating to aeronautical decision making

Presentation Ground:

overview

1. *systematic approach to the mental process used by airplane pilots to consistently determine the best course of action in response to a given set of circumstances*

- (1) originally developed by the airline industry in response to the fact that 75%+ of accidents have been attributed to pilot error
- (2) adopted by general aviation as applicable to single pilot operations

decision making process

1. define the problem
2. choose a course of action
3. implement the decision
4. evaluate the outcome
5. the acronym DECIDE can help remember this process
 - (1) **D**etect a change
 - (2) **E**stimate the need to counteract the change
 - (3) **C**hoose a desirable outcome
 - (4) **I**dentify actions that would result in successful results
 - (5) **E**valuate the effect of the action

risk management

1. there are four risk elements associated with every flight operation
 - (1) the pilot
 - (2) the airplane
 - (3) the environment
 - (4) the operation
2. the pilot
 - (1) competency, health, fatigue, mental and physical state, etc.
3. the airplane
 - (1) performance, equipment, airworthiness
4. the environment
 - (1) weather, ATC, nav aids, airports, etc
5. the operation
 - (1) purpose of flight, outside pressures, etc
6. all these risk elements combine to create the "situation" to be evaluated.

decision making factors

1. pilot self-assessment
 - (1) to properly evaluate one's ability to fly in their current state remember I'M SAFE
 - i. **I**llness
 - ii. **M**edication
 - iii. **S**tress
 - iv. **A**lcohol
 - v. **F**atigue
 - vi. **E**ating
2. hazardous attitudes

- (1) certain attitudes can impinge on the pilots ability to make sound decision before and during flight operations.
- (2) five hazardous attitudes each have an “antidote” to help self correct the attitude

hazardous attitude	antidote
<u>anti-authority</u> - “don’ tell me”	follow the rules, they are usually right
<u>impulsivity</u> - “do it quickly”	not so fast, think first
<u>invulnerability</u> - “it won’t happen to me	it could happen to me
<u>macho</u> - “i can do it”	taking chances is foolish
<u>resignation</u> - “what’s the use”	i’m not helpless. I can make a difference

3. workload management

- (1) stress :*the person s normal reaction to abnormal situations*
 - i. for a certain amount of time, stress helps a person perform better than normal
 - ii. if stress is too much, or too long, the stress level can exceed a person’s ability to cope with it, causing an impairment of one’s ability
 - iii. techniques can be used to help cope, and reduce the stress accumulated over time
 - (i) meditation, physical fitness, time management, etc
- (2) workload can be a big source of stress in the cockpit, and thus must be managed to maintain a stress level, and task level that can be handled
 - i. planning, prioritizing, and sequencing tasks help maintain an even level of workload throughout a flight
 - ii. remember “Aviate, Navigate, Communicate”
 - (i) this is the most basic form of workload management...in an emergency remember to fly the plane!
- (3) recognition of overload is important to managing important tasks
 - i. instead of doing everything incorrectly, it is more important to do the most needed things correctly

4. situational awareness

- (1) :*the accurate perception of the operational and environmental factors that affect a given situation at a given time*
- (2) when “situationally aware”, a pilot has an accurate overview of the total operation, and isn’t fixated on one thing
- (3) all the techniques of ADM assist in maintaining situational awareness
- (4) obstacles to awareness
 - i. fatigue, stress and work overload can impair one’s ability to maintain awareness
 - ii. complacency can also cause a pilot to maintain awareness of the overall situation

5. operational pitfalls

- (1) :*common causes of incorrect decision making before, and during flight operations*
- (2) peer pressure, mind set, “get-there-itis”, duck under syndrome, scud running are all operational pitfalls