

## **Task G: Risk Management**

References: FAA-H-8083-9

Objectives: The student should develop instructional knowledge of the elements related to managing and mitigating risk.

Elements:

1. Principles of Risk Management
2. Risk Management Process
3. Level of Risk
4. Assessing Risk
5. Mitigating Risk
6. IMSAFE Checklist
7. PAVE Checklist
8. 5P Checklist

### **What**

Risk management is a decision-making process designed to perceive hazards systematically, assess the degree of risk associated with a hazard, and determine the best course of action.

### **Why**

Flying is inherently dangerous, but there is no need for it to be unnecessarily dangerous. This lesson will describe ways to recognize and mitigate the risk involved with flying.

## **How:**

### **Principles of Risk Management**

1. Accept no Unnecessary Risk
  - a. Accept necessary risk
    - i. Flying is impossible without risk, do not make a situation more dangerous than necessary
2. Make Risk Decisions at the Appropriate Level
  - a. In single pilot situations, the pilot makes decisions
  - b. In other situations it may be beneficial to “go up the ladder” for decisions
    - i. i.e. Talk to the chief pilot or CFI about a potentially risky situation
  - c. Accept Risk When Benefits Outweigh the Costs
    - i. Analyse costs and benefits, make an informed decision
3. Integrate Risk Management into Planning at All Levels
  - a. Safety requires risk management planning in all stages of flight
    - i. Plan early and throughout to avoid unnecessary, amplified risk

## **Risk Management Process**

1. Step 1: Identify the Hazard
  - a. A hazard is any condition that can cause degradation, injury, illness, death, damage to or loss of equipment/property.
2. Step 2: Assess the Risk
  - a. Determine the level of risk associated with the identified hazards
3. Step 3: Analyze Risk Control Measures
  - a. Look into ways to reduce, mitigate, or eliminate the risk
  - b. All risks have 2 components: Probability of occurrence & Severity of the hazard
    - i. Try to reduce/eliminate at least one component
  - c. Use Cost/Benefit analysis to decide if it is worth it
4. Step 4: Make Control Decisions
  - a. Choose the best controls based on steps 1 & 2
5. Step 5: Implement Risk Controls
  - a. Make a plan to apply #4 (time, materials, personnel, etc)
6. Step 6: Supervise and Review
  - a. Reevaluate and make necessary changes

## **Level of Risk**

1. The level of risk posed by a given hazard is measured in terms of:
  - a. Severity (extent of possible loss)
  - b. Probability (likelihood that a hazard will cause a loss)

## Assessing Risk

- Pilots must differentiate in advance between a low-risk flight and a high-risk flight
- Establish a review process and develop strategies to minimize risk on the high and low risk flights
- Risk Matrix is a helpful risk assessment model
  - a. Assesses the likelihood of an event occurring and the consequences of that event
    - i. Likelihood (probability of occurrence): Probable, Occasional, Remote, Improbable
      - 1. Likelihood of a pilot flying MVFR to encounter IFR conditions
    - ii. Severity: Catastrophic, Critical, Marginal, Negligible
      - 1. If pilot is not IFR rated how severe could the consequences be
  - b. High Probability/Severity is bad and vice versa:

| Risk Assessment Matrix |         |              |          |          |            |
|------------------------|---------|--------------|----------|----------|------------|
| Likelihood             |         | Severity     |          |          |            |
|                        |         | Catastrophic | Critical | Marginal | Negligible |
| Probable               | High    | High         | Serious  |          |            |
| Occasional             | High    | Serious      |          |          |            |
| Remote                 | Serious | Medium       |          | Low      |            |
| Improbable             |         |              |          |          |            |

**Figure 9-2.** *This risk matrix can be used for almost any operation by assigning likelihood and severity. In the case presented, the pilot assigned the likelihood of occasional and the severity as catastrophic falls in the high-risk area.*

## Mitigating Risk

1. After determining the level of risk, the pilot needs to reduce the risk
  - a. Analyze options that can reduce unnecessary risk
    - i. Cancel/delay flight, bring CFI or more experienced pilot, etc

## IMSAFE Checklist

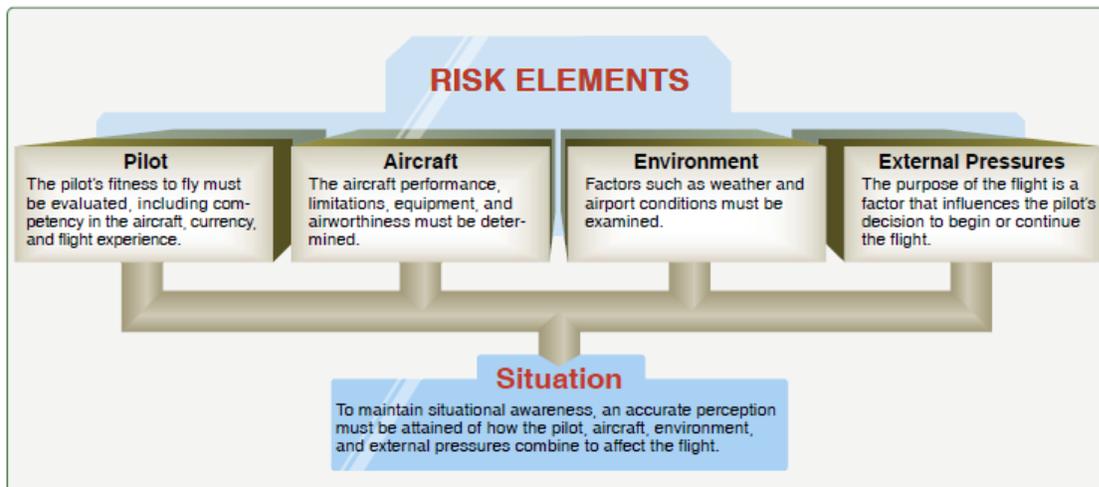
Mitigate risk by determining physical and mental readiness for flight



**Figure 9-3.** *Prior to flight, pilots should assess their fitness, just as they evaluate the aircraft's airworthiness.*

## PAVE Checklist

- Another way to mitigate risk
- Divides risk into 4 categories to assess
  - a. Pilot in Command: Am I ready (IMSAFE Checklist)
  - b. Aircraft: Is the aircraft appropriate for the trip
    - i. Maintenance, Landing Distance, Equipment, Fuel load, altitude, etc
  - c. Environment: Weather, terrain, airports, airspace, day/night, etc
  - d. External Pressures: Influences outside of the flight that create pressure to complete the flight often at the expense of safety
    - i. The most important key to risk management because it is the one risk factor category that can cause a pilot to ignore all the other risk factors
    - ii. Personal SOPs, plan for delays, manage passenger's expectations are all ways to reduce external pressure



*Figure 9-4. One of the most important decisions that the pilot in command must make is the go/no-go decision. Evaluating each of these risk elements can help the pilot decide whether a flight should be conducted or continued.*

## **5P Checklist**

- The 5 Ps are used to evaluate the pilot's current situation at key decision points during the flight, or when an emergency arises
  - Very helpful portion of Single Pilot Resource Management (SRM)
  - The process is simple; at least 5 times before/during the flight, review and consider the 5 P's and make the appropriate decision required by the current situation
    - Usually during preflight, before TO, Midpoint of flight, Descent, & prior to FAF

## **The 5 P's:**

1. The Plan
  - a. The Mission. It contains: planning, weather, route, fuel, publication currency, etc
  - b. The plan is always changing (weather changes, delays, restrictions, etc), adjust with it
2. The Plane
  - a. Condition, abilities, equipment, etc
3. The Pilot
  - a. IMSAFE
  - b. Allows the pilot to recognize and review his/her physiological situation
4. The Passengers
  - a. Passengers desire can have an influence on decision making and risk management
    - i. Plan ahead as much as possible
  - b. Ensure passengers are involved in decision making process
    - i. Ensure they understand risk involved in situations
      1. IFR approach below mins or TO with IFR below landing mins
  - c. Understand what passengers want to do
    - i. They may be more risk averse than you
5. The Programming
  - a. Plan in advance when and where programming approaches/route changes, and airport information gathering should be accomplished as well as times it should not

- b. Pilot familiarity with the equipment, the route, the local air traffic control environment, and personal capabilities should drive when, where, how the automation is programmed and used
- c. Always consider pilot capabilities in relation to programming

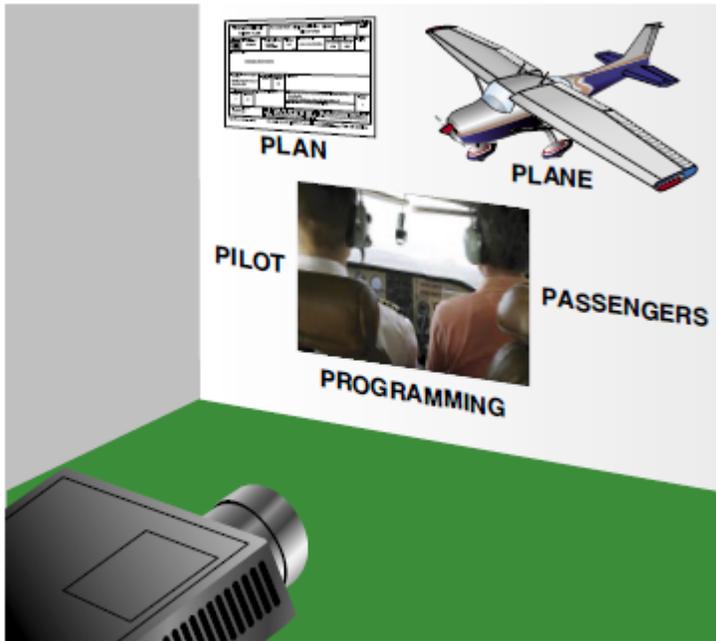


Figure 9-8. *The 5P checklist.*

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