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AERONAUTICAL DECISION MAKING FOR COMMERCIAL PILOTS

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16. Abstract <p>Aviation accident data indicate that the majority of aircraft mishaps are due to judgement error. This training manual is part of a project to develop materials and techniques to help improve pilot decision making. Training programs using prototype versions of these materials have demonstrated substantial reductions in pilot error rates. The result of such tests were statistically significant and ranged from approximately 10% to 50% fewer mistakes.</p> <p>This manual is designed to explain the risks associated with commercial flying activities, the underlying behavioral causes of typical accidents, and the effects of stress on pilot decision making. It provides a means for the individual pilot to develop an "Attitude Profile" through a self-assessment inventory and provides detailed explanations of pre-flight and in-flight stress management techniques. The assumption is that pilots receiving this training will develop a positive attitude toward safety and the ability to effectively manage stress while recognizing and avoiding unnecessary risk.</p> <p>This manual is one of a series on Aeronautical Decision Making prepared for the following pilot audiences: (1) Student and Private (2) Commercial (3) Instrument (4) Instructor (5) Helicopter (6) Multi-Crew</p>					
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FOREWORD

This aeronautical decision making training manual for commercial pilots is the second of three reports in the Professional Pilot Series. The first in this series, "Aeronautical Decision Making for Instrument Pilots" contains introductory and other material necessary for the completion of the judgment course and should be read first. Material contained in that manual and not included here includes The Pilot Decisional Attitude Questionnaire, Risk Analysis, and Stress Coping. The chapters in this manual are numbered in sequence beginning with "10" to indicate a continuation of the material from the first. The third manual in this series focuses on aeronautical decision making for multi-person crews referred to as Cockpit Resource Management.

This three-part Professional Pilot Series is the second half of a six part series of manuals on aeronautical decision making which is the result of ten years of research, development, testing, and evaluation of the effectiveness of teaching pilot decision making. The first half, called the "Basic Pilot Series," consists of training manuals developed for student, instructor, and helicopter pilots.

The teaching technique used is to expose the student to flight situations and ask for responses. Feedback about the responses is given to help the student learn to make better decisions. In all cases, situations are taken from real-world incidents or accidents. That is, all scenarios have actually happened to someone in the aviation community. We have used these sources because they are more likely to leave a lasting impression than created stories.

The term "pilot error" is often used to describe an accident cause and is an oversimplification, implying that the pilot intended to have an accident. Pilots usually intend to fly safely, but they sometimes make decisional errors. Their skill or luck is often sufficient to get them out of situations resulting from poor judgment. The objective of this manual is to teach commercial pilots the techniques to avoid situations that require luck or skill greater than their capabilities. Good judgment means avoiding situations that require superior skill to overcome.

The authors wish to thank the following sources for scenarios, in part, because, until now, they have been responsible for most of our pilot judgment training:

"I Learned about Flying from that," Flying
"Aftermath," Flying
"Never Again," AOPA Pilot
"Callback," ASRS
"Pilot's Logbook," Private Pilot
Approach, U.S. Navy
"Grampaw Petibone," Naval Aviation News
Flying Safety, U.S. Air Force
"A Flight I'll Never Forget," Plane and Pilot
"Selection of Judgment Incidents," ASRS
Pilot Error, Editors of Flying

"Arm Chair Aviator"
Weather Flying, Robert Buck
Illusions, Richard Bach
"The Bush Pilot Syndrome, " Michael Mitchell
Various accident report briefs, NTSB
OSU Pilot Judgment Survey
Personal contacts
Personal experience

Richard S. Jensen and Janeen Adrion

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Chapter 10: INTRODUCTION

Aeronautical knowledge, skill, and judgment have always been regarded as the three basic faculties that pilots must possess. The requisite knowledge and skills have been imparted in academic and flight training programs and are evaluated as a part of the pilot certification process. In contrast, judgment has sometimes been considered to be a trait that pilots innately possess or an ability that is acquired as a byproduct of the flying experience. Thus, as shown in Figure 1, the aviation industry has extolled judgment as a "virtue" while ignoring it as a potential training requirement. The advent of improved accident investigation technology, including the use of cockpit voice recorders, along with a more systematic analysis of accident statistics, has produced a growing recognition of the importance of pilot judgment errors. Furthermore, new cockpit technology has tended to place even more importance on the pilot as an information processor, decision maker, and manager. Recent studies have shown that good pilot judgment is not an innate ability but one that can be learned when one is properly motivated and provided with the appropriate material. This manual is part of a series that attempts to provide the information needed to learn good pilot judgment.

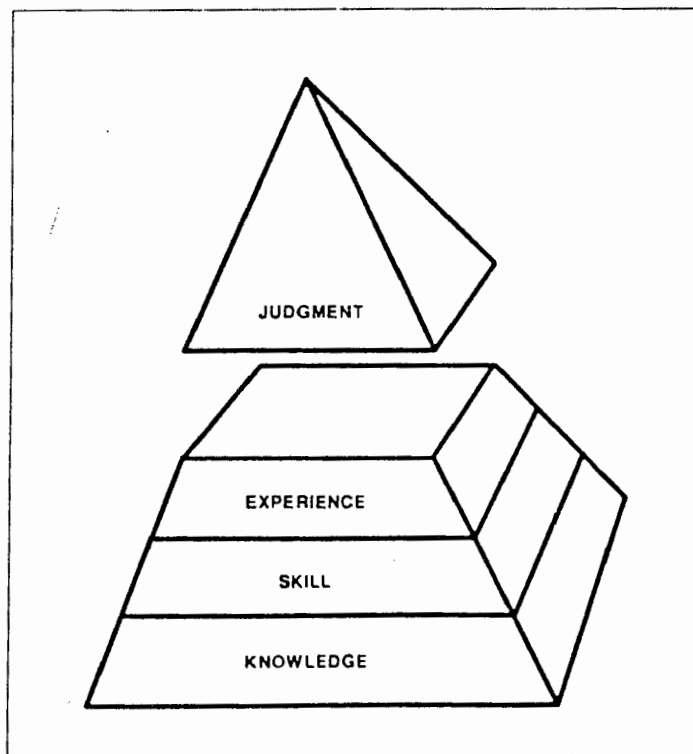


Figure 1. Building blocks for aviation safety and effectiveness.

The commercial pilot, in particular, is faced with some of the most difficult decisions in aviation today. As in all commercial enterprises, the bottom line is to make money. Both pilots and flight operations managers have decided that, in the larger sense, to make money is worth the risk that flying poses. Unfortunately, pilots flying for hire are often faced with the need to balance financial reward with safety on a day to day basis. In these situations they may be faced with pressures by superiors, peers, and/or passengers who are more in tune with the financial or convenience side of the balance than with the safety side. These people usually assume that the pilot will withstand their strong pressure to press on to the destination if there were any "real" danger. The pilot, conversely, wonders whether a decision against the wishes of his/her superiors will cost his/her job.

Judgment Definition

Aeronautical decision making (ADM), which can be equated with pilot judgment, is broadly defined as the mental process that pilots use in formulating decisions. Judgment is present in all flying decisions that involve uncertainty either in the information used or in the potential outcome. When this process is broken down into its two components, good pilot judgment is defined as:

1. The ability to search for and establish the relevance of all available information regarding a flying situation, to establish alternative courses of action, and to determine expected outcomes from each alternative.
2. The motivation to choose and authoritatively execute a suitable course of action within the time frame permitted by the situation.

Where:

- a. "Suitable" is an alternative consistent with societal norms.
- b. "Action" includes no action, some action, or action to seek more information.

The first component of the definition refers to intellectual abilities or "headwork." It is "knowledge based" and relies upon the pilot's capabilities to sense, store, retrieve, and integrate information. It is purely rational, and if used alone, would allow problem solving in much the same manner as a computer.

The second component in the definition, motivation is where the decision is made, indicating that it can be affected, both, by motivation and attitude. It implies that pilot decisions are sometimes based on tendencies to use non-safety related information, such as job demands, convenience, economics, commitment, emotion, etc., in choosing a course of action.

Both components are essential to aviation safety. The intellectual component is important because it causes the pilot to get the facts, organize thoughts, and diagnose problems, not only in the air but on the

ground. The motivation component (usually referred to as "attitude") is important because, when properly developed, it tends to make the pilot cautious, critical, and conservative.

Motivations give us reasons for flying. Without them flight would not be possible. Good judgment, on the other hand, requires the proper development of attitudes, recognizing that they can inhibit or override the intellectual component of judgment. Controlling such interference requires the development of personal leadership styles that can overcome influences and related pressures that lead to bad decisions.

The Wright brothers owe a great deal of their success to the fact that they exercised good judgment at a time when many of their colleagues were killing themselves by considering flight to be no more than a thrill or adventure. Wilbur Wright remarked in 1901 that "Carelessness and overconfidence are usually more dangerous than deliberately accepted risks." The Wright brothers both knew and respected the risks involved in flying. These are the two keys to good judgment.

A Note to Management

Service industries are the toughest of all businesses to operate. Aviation is probably the most difficult of all service industries. The difficulty is centered in the often conflicting requirements to maintain a viable corporation, earn a living, keep the employees happy, satisfy the requirements of all the government agencies (FAA, State, Airport Authority, etc.), and serve the customers. Serving the customer is the name of the game and management is often the buffer between all of the opposing forces. How does decision making come into play from the managers' standpoint? Educating your crews in aeronautical decision making is well worth the time and effort invested. There is no doubt that the benefits of such training will, over time, show up where it counts to you -- on your bottom line.

In the meantime, your pilots and training personnel need your support and cooperation to make the program a success. Decision making skills for your pilots are a life and death subject. Open communication, the sharing of new ideas and the willingness to discuss grievances are vital to success in business. Your attitudes towards your employees will contribute to the life of your business, as well as to the lives of your pilots.

Air-Taxi Operations. Regulations concerning air-taxi operations were created to accommodate generally smaller aircraft with less load capability than air carrier operators. These regulations created a new level of operation in air commerce. As operators/managers of air taxi operations, you (and your staff/pilots) must adhere to the many regulations regarding the qualification of pilots, certification of aircraft, operations specifications, maintenance and record keeping (paperwork). Managers of many air-taxi operations also double as director of operations, chief pilot, director of training, etc. resulting in the additional pressure of being both "one of you" and "one of them". In the realm of aeronautical decision making, your influence can be (and is) applied in many ways by your pilots.

Commuter Management. How many times must the up-and-coming commercial pilot fend off the words "fly that airplane, or I'll find someone who will!" before he/she makes the mistake and does? The following accounting of just one such episode will no doubt hit home to many who have been working to find their place in the aviation industry. As you read this scenario, keep in mind how the pressures from management affect your decision making. The recommendations put forth by the pilot in this situation would no doubt be among the best solutions.

The following story relates to a small transport aircraft operated by a commuter airline in Florida. The pilot's narrative is quite descriptive of the many glitches we find in the system today.

After a successful career with Air Carrier "A" (a carrier that failed to make it financially), I found myself in dire need of a job. The first opportunity was with Commuter "B". My training records were falsified and I was "turned loose." One of the aircraft had a sick right engine, however the other pilots (all inexperienced in my opinion) were flying it. I departed Miami enroute to Sarasota IFR (Autopilot was inoperative) and had a communication failure at 12,000 feet over LBU (due apparently to having no static wicks on the aircraft and/or other effects of precipitation). Communication was restored descending through 5000 feet. On final at Sarasota, the right engine quit. During ensuing phone conversation with the boss, he begged me to continue and promised the engine would be repaired that night. I refused to carry passengers, but stupidly succumbed to ferry the aircraft to Ft. Lauderdale. Descending into Ft. Lauderdale, the right engine quit again.

After ground maintenance performed some form of aeronautical voodoo on the engine, I was supposed to continue flying trips in this aircraft. After an unsuccessful run-up, I returned to the hangar refusing to fly the aircraft. Within the hour the "Hero" of the operation (his first flying job) was airborne with passengers. Several days later, I was fired for refusing to fly another aircraft which had previously had 19 write-ups, all of which were signed off "ground checked normal", none of which were fixed. Three other pilots quit shortly thereafter. The other "more experienced" pilots were replaced soon with more "time builders."

These are not isolated instances, everyday was more of the same. Noteworthy comments to me were: "This isn't the airlines" (even though they are operating as Air Carrier "X" and 75% of the passengers believed they were on Air Carrier "X"). "If you won't fly this airplane we'll find someone who will" (They did). "If you think this is bad, you should see so and so (from the pilots).

The pilot summarized his feelings about the situation. "Yes, I am bitter about the demise of Air Carrier "A". Out of 13 civilian flying jobs to date, it was the only one that attempted to do things by the book.

Maybe it would still be around if we had falsified training and "ground checked normal."

His suggestions for a resolution to this situation were two-fold. One was for more Government supervision to force compliance with the Regulations. His second was to ask management to fly with the pilots on every flight. Do you think that may change their behavior?

Owner/Operator Management

Another example addresses the same type management issue. The pilot had a disagreement with his employer (who owned the aircraft) just prior to departing on a trip from Casper, Wyoming to Oklahoma City, Oklahoma. As he described it, "I was not able to suppress my desires to be out of this man's (his boss) reach any longer." He admits to flying the small jet after consuming alcoholic beverages five hours before the flight and to flying single pilot although the aircraft was not certified single pilot. He attributed his disregard for the rules and good sense to lack of rest resulting from the heavy flying schedule imposed upon him by the boss over the previous week.

The pilot's recommendations included mandatory courses or seminars for the owners of high performance and turbine aircraft on pilot stress, crew rest, and accepting pilot judgment. He felt that this would aid corporate pilots greatly by relieving a great deal of stress and tension. As it stands, if the corporate pilot says, "no go" for a legitimate reason, there is a good chance the owner/boss will find another (probably less experienced) pilot that will go. Unfortunately, the new pilot may eventually become an accident report statistic, along with the boss.

You have no doubt encountered similar situations, and have dealt with them in your own manner. Understanding management's point of view is not difficult; but, is quite unfair, particularly, when it comes to piloting an unsafe aircraft or making a trip in unsafe conditions, the decision-making management person remains on the ground.

Pilots - Rules, Regs, Right and Wrong. Another aspect of the "management push," in both commercial and air-taxi operations is flying experience. Generally, you will be flying high performance aircraft and most often multi-engine. However you managed to obtain the minimum required hours (remember "no experience, no job," but how do you get the experience?), you probably started your first commercial job as green as could be. Now you are experienced and must face your own limitations as well as those of your equipment, the weather and other factors. When assigned a trip now, will you automatically go as expected? When did you last or when did you ever admit that perhaps the situation was worse than you thought you could tackle? How would your management react to your request for a co-pilot in a particular single-pilot IFR operation? How would they react to a "no-go" decision?

In learning to make better decisions regarding your aviation endeavors, whether they are immediate (in-flight) or long-term career decisions, take into consideration all of the factors that have been discussed thus far. Minimums and standards for all anticipated situations

should be established before such situations arise. In the heat of a situation, your motive component of judgment could be placed under greater pressure than you can bear. Decisions made on the ground, will follow you into the skies.

Commercial Bush Flying. The pressures to compromise safety in "bush flying" are well known to most astute in "hangar flying." Bush flying illustrates to the extreme the pressures that we, as commercial pilots can face. Passengers unfamiliar with flying safety, particularly, those "Macho" passengers who love to hunt and fish, are fond of playing on the likewise, "Macho" attitude of the pilot. The following untrue story (from AOPA's Russ Lawton) illustrates:

A pilot flew into the bush to pick up some hunters who he had left the week before and found that they had two moose to take out. He said to them, "I told you, when I left that this airplane will only carry one moose!" His macho passengers responded with, "The pilot who flew us in last year flew out with two moose!" This pilot, feeling responsible for the maintenance of the macho pilot image said, "Ok, I'll give it a try." So he packed everything, started the engine of his float plane, taxied around to stir up the glassy water and opened the throttle for takeoff. He hung for quite some time in the ground effect before gaining some altitude. He barely cleared the tree tops at the water's edge before he realized that he just could not beat the rise in the terrain. He mushed it into the trees at full power about a mile from the edge of the lake. Fortunately, none of his passengers was hurt. He turned to his passengers and said, "I guess I just don't have what the other pilot did to get out of here." One of them responded, "Oh, you did very well. The last pilot only made it a half mile!"

A safety investigator in Alaska, Dr. Michael Mitchell, has made an extensive study of the factors that may contribute to the high accident rate in commercial operations in that state. He found that pilots are often paid after successful completion of their flights and some have been threatened with the loss of their jobs if they refuse to take a flight that they think would be unsafe. This practice is so blatant that, in some cases, the blame for an accident should be shared with the operators and/or managers. Mitchell goes on to suggest four forms of action that could be taken to reduce or eliminate these pressures on pilots:

1. Change the method of remuneration for the pilots.
2. Alter the training program to address the handling of such pressures.
3. Consider the ability of pilots to resist such pressure as a part of pilot evaluation.
4. Transfer some of the negligence normally assigned to the pilot for poor judgment to management or others causing undue pressure.

The thrust of this manual is on training to reduce the effect of such pressure. However, you as a commercial pilot remain ultimately responsible for recognizing such pressure and avoiding it, whether or not your management is sensitive to your concerns for safety. The following is a true story:

A pilot for a large university transportation service was asked to make a flight to a large midwestern city. Drawing upon his considerable experience and good judgment, he determined that the weather was not sufficiently safe for such a trip for a single-engine aircraft because there was moderate icing reported in the clouds. His chief pilot, a personal friend of the passengers who had persuaded them to fly instead of drive, was angry with the pilot's decision to cancel the flight considering that the passengers had already arrived at the airport. The chief pilot himself hastily loaded the passengers into the aircraft and took off on the original flight plan for the destination. Nearing the destination uneventfully, he was asked to hold - an almost routine occurrence at this busy airport with adverse weather.

It was at this point, that he realized that he had not fueled the aircraft prior to takeoff and was quite uncertain about the amount of fuel remaining. Not wanting to appear concerned however (He had the "Right Stuff."), and feeling there is "always" more fuel left than the gauges show, he sought no special handling until the engine quit due to fuel starvation. Luckily, he managed to crash-land the airplane in a field near a gravel quarry. He came away unhurt, but one of his friends was disabled for life.

This situation contains many hazardous attitudes fostered by economics and personal commitment. The pilot who decided not to make the flight was vindicated for his decision, but the price was very high! This accident shows that managers need to be especially aware of the pressure that they can place on pilots to make bad decisions.

Risk management in aeronautical decision making has been discussed in detail in the instrument manual of this series. The manager, who is faced with the decision as to just how hard to push that pilot to "go," becomes a party to the risk management process. It is understandable from an economic point of view that the "mail, checks, boss, passenger, whatever, must get through." The question of "when is the success of the task not worth the risk?", must be kept in mind during all decision making and dispatching of aircraft and crew.

The DECIDE Model

One of the best ways to help yourself to make good aeronautical decisions from the standpoint of the intellectual side of pilot judgment is through the use of the DECIDE model. This method is described in greater detail in the "Instrument" volume of this series. The steps in the DECIDE process are:

1. DETECT - The decision maker detects the fact that change has occurred.
2. ESTIMATE - The decision maker estimates the need to counter or react to the change.

3. CHOOSE - The decision maker chooses a desirable outcome (in terms of success) for the flight.
4. IDENTIFY - The decision maker identifies actions which could successfully control the change.
5. DO - The decision maker takes action to adapt to the change.
6. EVALUATE - The decision maker evaluates the effect(s) of the action countering the change.

The six elements of the DECIDE model represent a continuous loop decision process which can be used to assist you in the decision making process when you are faced with a change in your situation that may require judgment. This model is primarily focused on the intellectual component, but can have an impact on the motivational component of judgment as well. If you will practice using this model in all decision making, it will become very natural for you, and it will result in better decisions under all types of uncertainty.

The remainder of this manual will address the motivation or attitude component identified in the second half of the judgment definition. It should be studied in conjunction with the results of the Attitude Inventory taken in Chapter 4 of the instrument manual from this series.

Chapter 11

IDENTIFICATION AND PRACTICE: Better Decision Making Through Practice

This chapter is designed to help you identify and understand the five hazardous attitudes defined for you in the instrument manual of this series and to see how they can influence your reaction to situations requiring judgment. The example situations given here are concerned with commercial operations. As you recall, the five hazardous attitudes are:

- | | | |
|-----|-----------------|-----------------------------------|
| I | ANTI-AUTHORITY | "The Regs are for someone else." |
| II | IMPULSIVITY | "I must act now-there's no time." |
| III | INVULNERABILITY | "It won't happen to me." |
| IV | MACHO | "I'll show you. I can do it." |
| V | RESIGNATION | "What's the use?" |

Refer back to the instrument manual of this series, Chapter 4, and review the explanations of the hazardous attitudes. Once you have refreshed your memory with the definitions, continue with this exercise.

Below you will find another series of true flying situations involving numerous air-taxi and commercial pilots and managers. At the end of each situation, you will be asked to select the alternative which best illustrates the reactions of a pilot who has a particular hazardous attitude or response pattern. After you select what you feel is the best alternative, look immediately at the next page for the proper response. This page will tell you if your answer is correct or incorrect. If you answered correctly, go on to the next situation. If you answered incorrectly, you will be told why. Then go back to the situation and select another alternative.

KEEP SELECTING ALTERNATIVES UNTIL YOU SELECT THE CORRECT ONE. Do not be concerned if you select a wrong alternative. You will learn something from the feedback given to you. The lessons are deliberately repetitious and thus, get easier as you proceed.

THE ANTI-AUTHORITY HAZARDOUS ATTITUDE

From the five choices following each situation, pick the ONE choice that is the best example of an anti-authority hazardous attitude. Check your answers on the next page before continuing. REMEMBER--if you did not choose the correct answer, select another until you choose the correct one.

Situation 1:

During a training flight in a medium twin, the instructor pilot fails the inboard engine while in a 60 degree steep turn. After a shaky recovery you continue the training. Which of the following alternatives best illustrates the ANTI-AUTHORITY reaction?

- a. You think to yourself, "if the Feds could see us now!"
- b. You are sure the instructor pilot knew what he was doing.
- c. You can make these airplanes can do a lot more than the manual says.
- d. Nothing has gone wrong in training before.
- e. You need to get as much training as you can, as quickly as possible.

A GOOD JUDGMENT THOUGHT..."Recognize and discuss any potentially dangerous situations that occur during training."

Situation 2:

Your passengers have showed up almost an hour late. You are going to an airport that requires a reservation. Which of the following alternatives best illustrates the ANTI-AUTHORITY reaction?

- a. If you hurry, you may still make it in time.
- b. Those reservation rules don't apply to you.
- c. You'll figure a way to get in, you always do.
- d. You can't help it that your passengers were late.
- e. They wouldn't keep me out.

A GOOD JUDGMENT THOUGHT..."The rules are for everyone."

RESPONSE LIST 1

THE ANTI-AUTHORITY HAZARDOUS ATTITUDE

Situation 1:

Alternative a: Correct. "The Regs are for someone else" attitude is portrayed by this statement. You are thinking in an anti-authority manner. Go on to Situation 2.

Alternative b: Here you are assuming someone else has the responsibility for you. This is the resignation hazardous attitude. Go back to Situation 1 and select another alternative.

Alternative c: No. This is the macho attitude, where you get to show what you can do. Go back to Situation 1 and select another alternative.

Alternative d: This is the idea that nothing would happen to you, which implies you are invulnerable. Go back to Situation 1 and select another alternative.

Alternative e: Here you are saying that this possibility couldn't happen to you, as if you are invulnerable. Go back to Situation 1 and select another alternative.

Situation 2:

Alternative a: The hazardous attitude of impulsivity is exhibited by this statement. Go back to Situation 2 and select another alternative.

Alternative b: Absolutely. This is the anti-authority attitude saying the "Regs are for someone else." Go on to the next hazardous attitude.

Alternative c: No. This is the macho attitude where you show how you can do it. Go back to Situation 2 and select another alternative.

Alternative d: Whenever you indicate that you have no control over the situation, then you exhibit the "what's the use attitude" of resignation. Go back to Situation 2 and select another alternative.

Alternative e: This kind of attitude shows that you feel invulnerable. Go back to Situation 2 and select another alternative.

THE IMPULSIVITY HAZARDOUS ATTITUDE

From the five choices following each situation, pick the ONE choice that is the best example of an impulsivity hazardous attitude. Check your answers on the next page before continuing. REMEMBER - if you did not choose the correct answer, select another until you choose the correct one.

Situation 1:

The owner of the jet you are to fly tonight, is anxious to get to his destination to make a presentation at a convention. The tops of the level V thunderstorms were reported to be 5,000 feet above your aircraft's service ceiling. Which of the following alternatives best illustrates the IMPULSIVITY reaction?

- a. You are sure you can push the aircraft up over the tops. The service ceiling is a conservative guess and you're light anyway.
- b. You can't change the weather, so you might as well go.
- c. You just have to show this guy you can get him there.
- d. A little storm won't stop you.
- e. You want to hurry and get going, before things get worse.

A GOOD JUDGMENT THOUGHT... "Base your decisions on fact, not fantasy."

Situation 2

The aircraft you are flying has just recently been in the shop to have a new generator installed. The generator "hot" light comes on thirty minutes into your three hour flight. Which of the following alternatives best illustrates the IMPULSIVITY reaction?

- a. It's probably just the indicator light, it is a new generator.
- b. You immediately shut down that engine.
- c. You figure it will be okay for a while and continue on to your destination. Nothing can happen that you can't handle.
- d. Well, they just fixed it and there is nothing you can do.
- e. You really don't need two generators, the regulations are too stringent.

A GOOD JUDGMENT THOUGHT... "Refer to your checklist in response to a warning indication."

RESPONSE LIST 2

THE IMPULSIVITY HAZARDOUS ATTITUDE

Situation 1:

Alternative a: No, this exhibits the anti-authority attitude by disregarding the flight manual's recommendations. Go back to Situation 1 and select another alternative.

Alternative b: Once again you are resigning yourself to the fact that you cannot control the situation (weather). Go back to Situation 1 and select another alternative.

Alternative c: You are being macho in your thinking when you want to "show-off" your skills in this manner. Go back to Situation 1 and select another alternative.

Alternative d: This kind of attitude reflects the hazardous thought of invulnerability. Go back to Situation 1 and select another alternative.

Alternative e: You're correct. This is an example of the impulsivity hazardous attitude by "acting now, there's no time." Go on to Situation 2.

Situation 2:

Alternative a: You are using the invulnerability hazardous attitude in this case as if nothing could happen to you. Go back to Situation 2 and select another alternative.

Alternative b: This is the correct answer. The impulsivity hazardous attitude responds by acting now. Go on to the next hazardous attitude.

Alternative c: This macho attitude is saying, "I'll show you." Go back to Situation 2 and select another alternative.

Alternative d: Putting the responsibility on someone else shows the attribute of resignation. Go back to Situation 2 and select another alternative.

Alternative e: No. This is the anti-authority attitude that the "Regs are for someone else" and don't really apply to you. Go back to Situation 2 and select another alternative.

THE INVULNERABILITY HAZARDOUS ATTITUDE

From the five choices following each situation, pick the ONE choice that is the best example of an Invulnerability Hazardous attitude. Check your answers on the next page before continuing. REMEMBER - if you did not choose the correct answer, select another until you choose the correct one.

Situation 1:

You've made this approach at least 100 times, many times down to minimums. The early morning ground fog these summer mornings presents even a more challenging picture. As you reach the MDA, you peer through the muck, straining to see that familiar scene. Just as the "TO/FROM" indicator flips, you catch a glimpse of what you know must be the end of the runway. You go for it. Which of the following alternatives best illustrates the INVULNERABILITY reaction?

- a. You've made this approach so many times, you could do it with your eyes shut.
- b. You know the minimums can be fudged, just a bit.
- c. There's really nothing to this, all's well that ends well.
- d. Land it now, there's no time to waste.
- e. I hope luck is with me now, it's out of my control.

A GOOD JUDGMENT THOUGHT..."Make sure that the runway is in the eye of the beholder."

Situation 2:

While pre-flighting the pressurization system, you discover that the rate-control is inoperative. Knowing that you can manually control the cabin pressure, you opt to disregard this discrepancy and depart on your trip. You'll just have to handle the system yourself. Which of the following alternatives best illustrates the INVULNERABILITY reaction?

- a. It's too late to fix it now.
- b. You can handle a little problem like this.
- c. What is the worst that could happen?
- d. You certainly didn't break it, it isn't your fault.
- e. You barely need the pressurization at the filed altitude anyway, you can hedge on the regs.

A GOOD JUDGMENT THOUGHT..."Opt for operating systems."

RESPONSE LIST 3

THE INVULNERABILITY HAZARDOUS ATTITUDE

Situation 1:

Alternative a: No. This is the macho attitude. Go back to Situation 1 and select another alternative.

Alternative b: Thinking "the Regs are for someone else is the hazardous thought of anti-authority. Go back to Situation 2 and select another alternative.

Alternative c: Correct. "It won't happen to me" is the attitude of being invulnerable. Go on to Situation 2.

Alternative d: No. "I must act now-there's no time" is the hazardous attitude of impulsivity. Go back to Situation 1 and select another alternative.

Alternative e: Figuring the situation is out of your control is thinking in the resignation hazardous attitude mode. Go back to Situation 1 and select another alternative.

Situation 2:

Alternative a: This is the attribute of impulsivity, where "there is no time." Go back to Situation 2 and select another alternative.

Alternative b: Wrong. This is the macho attitude showing through. Go back to Situation 2 and select another alternative.

Alternative c: Right! Nothing bad is going to happen to you because of your invulnerability. Go on to the next hazardous attitude.

Alternative d: No. This is the resignation syndrome, where someone else is responsible. Go back to Situation 2 and select another alternative.

Alternative e: This is denying the regulations in an anti-authority pattern. Go back to Situation 2 and select another alternative.

THE MACHO HAZARDOUS ATTITUDE

From the five choices following each situation, pick the ONE choice that is the best example of a Macho Hazardous attitude. Check your answers on the next page before continuing. REMEMBER - if you did not choose the correct answer, select another until you choose the correct one.

Situation 1:

Your company's Part 135 operating certificate has just been suspended, but you have several flights going out today. You decide to complete at least the scheduled flights while taking care of the paperwork necessary to reinstate your Part 135 status. Which of the following alternatives best illustrates the MACHO reaction?

- a. There is really nothing you can do about the situation, so business as usual.
- b. You'll show them that your company can fly.
- c. They may take your certificate, but they can't take your company.
- d. Dispatch those flights fast, there's no time to waste.
- e. Who needs a certificate anyway?

A GOOD JUDGMENT THOUGHT..."Play by the rules, or you may not play at all."

Situation 2:

On an IFR flight plan you emerge from a cloud to find yourself within 300 feet of a helicopter. Which of the following alternatives best illustrates the MACHO reaction?

- a. You're not too concerned, everything will be alright.
- b. You should fly a little closer, just to show him...
- c. It's not your responsibility to know he was there.
- d. You quickly turn away and dive, to avoid a collision.
- e. With events like this, why should you ever follow the rules?

A GOOD JUDGMENT THOUGHT..."Fly defensively."

RESPONSE LIST 4

THE MACHO HAZARDOUS ATTITUDE

Situation 1:

Alternative a: No, this is the resignation hazardous thought, where the situation is out of your control. Go back to Situation 1 and select another alternative.

Alternative b: Correct. The macho attribute is one of "I'll show you." Go on to the Situation 2.

Alternative c: This is the invulnerability attitude, where "it wouldn't happen to me" is the theme. Go back to Situation 1 and select another alternative.

Alternative d: The "hurry, there's no time" attitude is one of impulsivity. Go back to situation 1 and select another alternative.

Alternative e: This is incorrect. Denying the rules is an attitude of anti-authority. Go back to Situation 1 and select another alternative.

Situation 2:

Alternative a: No. This is the attitude that you have never had problems before and it would never happen to you. Go back to Situation 2 and select another alternative.

Alternative b: That's it. Macho hazardous thoughts include "I'll show you." Go on to the next hazardous attitude.

Alternative c: Taking for granted that you are not in control is the hazardous attitude of resignation. Go back to Situation 2 and select another alternative.

Alternative d: This is acting on impulse. "I must act now, there's no time." Go back to Situation 2 and select another alternative.

Alternative e: An attitude that the rules do not have to be followed shows the anti-authority hazardous thought pattern. Go back to Situation 2 and select another alternative.

THE RESIGNATION HAZARDOUS ATTITUDE

From the five choices following each situation, pick the ONE choice that is the best example of a Resignation hazardous attitude. Check your answers on the next page before continuing. REMEMBER - if you did not choose the correct answer, select another until you choose the correct one.

Situation 1:

Your co-pilot shows up for duty and his behavior is somewhat out of the ordinary. You know he has had a cold and when questioned he said maybe it was the antihistamine he took the night before. Although your aircraft requires a crew of two, you decide to ignore your co-worker's drowsiness and inattention. Which of the following alternatives best illustrates the RESIGNATION reaction?

- a. You could fly this jet by yourself anyway.
- b. You two have flown together many times, and everything has always worked out fine.
- c. What else can you do? He was assigned this flight, too.
- d. He might not be within the regs, but he says he's okay and that's what counts.
- e. There's really no time to call another co-pilot now.

Situation 2:

You are flying the local television broadcast crew to an away football game of the hometown college. When the passengers show up, there is an additional person and a thousand extra pounds of camera equipment which, with the existing fuel load, puts you over the maximum gross weight for takeoff. Which of the following alternatives best illustrates the RESIGNATION reaction?

- a. You can't wait around to de-fuel, they have to get there on time.
- b. There is no way you would let them think you had made a mistake.
- c. There really isn't any problem, you'll burn it off soon enough.
- d. Weight and balance is a formality forced on us by the government.
- e. Well, nobody told you about the extra weight.

RESPONSE LIST 5

THE RESIGNATION HAZARDOUS ATTITUDE

Situation 1:

Alternative a: This "I can do it" attitude is one of the macho trait. Go back to Situation 1 and select another alternative.

Alternative b: "Nothing could happen to you" is the invulnerability attitude. Go back to Situation 1 and select another alternative.

Alternative c: Absolutely. When you feel as if it is out of your control, you are exhibiting the resignation attitude. Go on to Situation 2.

Alternative d: When the rules and regulations do not apply to you, this is the anti-authority hazardous attitude. Go back to Situation 1 and select another alternative.

Alternative e: No. This is the "there's no time" component of the impulsivity hazardous attitude. Go back to Situation 1 and select another alternative.

Situation 2:

Alternative a: No. This is the "I must act now-there's no time" hazardous attitude of impulsivity. Go back to Situation 2 and select another alternative.

Alternative b: When what other people think affects your judgment like this, you are thinking in the macho attitude. Go back to Situation 2 and select another alternative.

Alternative c: The fact that you feel nothing bad will happen to you is one of invulnerability. Go back to Situation 2 and select another alternative.

Alternative d: Ignoring the rules is the attitude of anti-authority. Go back to Situation 2 and select another alternative.

Alternative e: Yes. When the responsibility is assumed to be someone else's, you are in the hazardous thinking pattern of resignation. Go on to the next exercise.

Chapter 12

ANTIDOTES FOR HAZARDOUS ATTITUDES

From working with the five hazardous attitudes in the previous chapter, you should be more aware of, and alert to, these attributes in your own thinking. This is an important first step in eliminating them from your decisions. This chapter also uses commercial flight operation examples, to teach you ways to counteract the hazardous attitudes with positive responses to each situation.

Since you cannot think about two things at the same time, one way to keep from thinking in a hazardous manner is to consciously alter your pattern of thought. By telling yourself something divergent from the hazardous thought, you are, in effect, "taking an antidote" to counteract that hazardous thought pattern. You remove a hazardous thought by substituting the antidote or proper thought process. Thus, if you discover yourself thinking, "It won't happen to me," mentally tell yourself, "That is a hazardous attitude." Recognize the hazardous attitude, correctly label it, and then say its antidote to yourself.

To do this, you must MEMORIZE THE ANTIDOTES for each of the hazardous attitudes. Know them so well that they will automatically come to mind when you need them.

THE FIVE ANTIDOTES

<u>Hazardous Attitude</u>	<u>Antidote</u>
ANTI-AUTHORITY "The Regs are for someone else."	"Follow the rules. They are usually right."
IMPULSIVITY "I must act now, there's no time."	"Not so fast. Think first."
INVULNERABILITY "It won't happen to me."	"It could happen to me."
MACHO "I'll show you. I can do it."	"Taking chances is foolish."
RESIGNATION "What's the use?"	"I'm not helpless, I can make a difference."

HAZARDOUS ATTITUDE AND ANTIDOTE IDENTIFICATION EXERCISE

Each of the following scenarios is a description of a flight situation and, more importantly, the thought pattern running through the pilot's head. Each situation contains several examples of hazardous attitudes. After reading the situation, identify as many hazardous attitudes as you can. Underline and number each sentence that contains a hazardous attitude. Then write the name of the hazardous attitude and the ANTIDOTE in the space provided at the end of the page.

Check your responses with those identified in the key after you have completed the scenario. Your responses should closely match the hazardous attitude responses found in the key. Although some situations can be interpreted in more than one way, your answers should agree with a majority of the hazardous attitudes and you should be able to write the antidotes WORD FOR WORD in your responses.

Situation 1

The young pilot is "building time" flying freight at night with the hopes of someday getting on with one of the major airlines. He figures that he will be so good after a year of this type of flying that he will be able to by pass the commuters and proceed straight to his choice of airlines. He is a college graduate with a degree in engineering, though his grades were mediocre.

His nightly route takes him to five major airports in the midwest. This particular December night, the whole area has low ceilings and moderate mixed icing forecast and reported. The aircraft he usually flies is down for maintenance, so he is in a model that he has minimum time in. This really is no concern for him as he knows he can fly it well, regardless of the weather.

It is cold and windy on the ramp, with blowing snow. The pilot performs a brief pre-flight and thinks to himself, "this is a much nicer plane than the other, I'm sure everything is alright." He did notice some slush build-up in the wheel wells, but didn't clean them out because they would just get filled-up again anyway. There really isn't anything he can do about the snow on the ramp and his cargo was arriving. He needs to get moving.

Though the snow plows have been working round-the-clock, the wind is such that the taxi-ways and runways are still snow covered. The blowing snow makes it difficult to see. As he taxis out, he discovers the defroster is inoperative. He thinks to himself, "boy, these guys should take better care of this equipment."

He is cleared for takeoff and as he takes the active, he looks around the cockpit for his flashlight. As he begins his takeoff roll, he remembers he left it in the hanger. "Oh well," he thinks, "nothing is going to happen to the electrical system. It's a dumb rule to require a flashlight on board, especially with redundant electrical systems." He proceeds into the clouds.

Sentence

Hazardous Attitude

Antidote

1

2

3

4

5

6

7

8

Key to Situation 1

Compare your responses in Situation 1 with those given below. Remember, your responses may not be identical to those in this key. Still, you should have identified most of the hazardous thoughts indicated.

Situation 1

The young pilot is "building time" flying freight at night with the hopes of someday getting on with one of the major airlines. He figures that (1) he will be so good after a year of this type of flying that he will be able to by pass the commuters and proceed straight to his choice of airlines. He is a college graduate with a degree in engineering, though his grades were mediocre.

His nightly route takes him to five major airports in the midwest. This particular December night, the whole area has low ceilings and moderate mixed icing forecast and reported. The aircraft he usually flies is down for maintenance, so he is in a model that he has minimum time in. (2) This really is no concern for him as he knows he can fly it well, regardless of the weather.

It is cold and windy on the ramp, with blowing snow. The pilot performs a brief pre-flight and thinks to himself, (3) "this is a much nicer plane than the other, I'm sure everything is all right." He did notice some slush build-up in the wheel wells, but didn't clean them out because they would just get filled-up again anyway. (4) There really isn't anything he can do about the snow on the ramp and his cargo was arriving. (5) He needs to get moving.

Though the snow plows have been working round-the-clock, the wind is such that the taxi-ways and runways are still snow covered. The blowing snow makes it difficult to see. As he taxis out, he discovers the defroster is inoperative. He thinks to himself, (6) "boy, these guys should take better care of this equipment."

He is cleared for takeoff and as he takes the active, he looks around the cockpit for his flashlight. As he begins his takeoff roll, he remembers he left it in the hanger. "Oh well," he thinks, (7) "nothing is going to happen to the electrical system. (8) It's a dumb rule to require a flashlight on board, especially with redundant electrical systems." He proceeds into the clouds.

- (1) Macho - "Taking chances is foolish."
- (2) Macho - "Taking chances is foolish."
- (3) Invulnerability - "It could happen to me."
- (4) Resignation - "I'm not helpless, I can make a difference."
- (5) Impulsivity - "Not so fast. Think first."
- (6) Resignation - "I'm not helpless, I can make a difference."
- (7) Invulnerability - "It could happen to me."
- (8) Anti-Authority - "Follow the rules, they are usually right."

Situation 2

The company has been called to transport via helicopter a premature baby in an incubator from the hills of West Virginia to Pittsburgh. The infant needs to arrive in Pittsburgh within the next 48 hours and the company that is called has the only available aircraft in the area. The pilots have been flying medical evacuation flights for several years.

Upon calculating the performance needs and weight and balance for the trip, the co-pilot determines they will be right at maximum gross weight for takeoff, with minimum allowable fuel. There is no fuel available at the destination airport. He's not concerned however, because they've gotten in and out of tighter situations before.

The usual spring fog is forecast for the area. When the medical crew arrives, their equipment is loaded and the co-pilot makes a final weather check. When he tells the captain that the field is at minimums, the captain replies "well, now's the time to prove just how good we really are." They depart in VFR conditions but as they near the destination airport, a thick fog layer has indeed formed over the hills. They can see the tops of the hills protruding through the fog, but the airport is in the valley. The co-pilot looks at the fog and thinks "what's the use, we can't change it," but the captain decides to go for it.

There is no current weather observation available on the field so they will attempt the VOR approach into the field. The captain is flying, while the co-pilot strains to see the runway environment. They just have to get in, there really is no time and not enough fuel to return home. They miss the approach but as they pass over the top of the airport, the co-pilot could actually see the ramp and the ambulance waiting. "Let's try it again" he suggests, knowing that they are already below legal fuel requirements for the return trip. He tells himself that those reserve fuel requirements don't really apply in this situation.

They attempt the approach again while the captain thinks, "I've got to show them we can do it." He decides to fudge just a little on the MDA; there are no obstacles indicated on the chart. Just at the MAP the co-pilot calls the runway in sight and the captain thinks, "I've got to act now and get this thing on the ground." As they taxi in through the fog, the co-pilot comments, "see, we always get in, with no trouble."

Sentence	Hazardous Attitude	Antidote
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____

Sentence

Hazardous Attitude

Antidote

7

8

9

10

Key to Situation 2

Compare your responses in Situation 2 with those given below. Remember, your responses may not be identical to those in this key. Still, you should have identified most of the hazardous attitudes indicated.

Situation 2

The company has been called to transport via helicopter a premature baby in an incubator from the hills of West Virginia to Pittsburgh. The infant needs to arrive in Pittsburgh within the next 48 hours and the company that is called has the only available aircraft in the area. The pilots have been flying medical evacuation flights for several years.

Upon calculating the performance needs and weight and balance for the trip, the co-pilot determines they will be right at maximum gross weight for takeoff, with minimum allowable fuel. There is no fuel available at the destination airport. (1) He's not concerned however, because they've gotten in and out of tighter situations before.

The usual spring fog is forecast for the area. When the medical crew arrives, their equipment is loaded and the co-pilot makes a final weather check. When he tells the captain that the field is at minimums, the captain replies (2) "well, now's the time to prove just how good we really are." They depart in VFR conditions but as they near the destination airport, a thick fog layer has indeed formed over the hills. They can see the tops of the hills protruding through the fog, but the airport is in the valley. (3) The co-pilot looks at the fog and thinks "what's the use, we can't change it," but (4) the captain decides to go for it.

There is no current weather observation available on the field so they will attempt the VOR approach into the field. The captain is flying, while the co-pilot strains to see the runway environment. (5) They just have to get in, there really is no time and not enough fuel to return home. They miss the approach but as they pass over the top of the airport, the co-pilot could actually see the ramp and the ambulance waiting. "Let's try it again" he suggests, knowing that they are already below legal fuel requirements for the return trip. He tells himself that (6) those reserve fuel requirements don't really apply in this situation.

They attempt the approach again while the captain thinks, (7) "I've got to show them we can do it." (8) He decides to fudge just a little on the MDA; there are no obstacles indicated on the chart. Just at the MAP the co-pilot calls the runway in sight and the captain thinks, (9) "I've got to act now and get this thing on the ground." As they taxi in through the fog, the co-pilot comments, (10) "see, we always get in, with no trouble."

- (1) Invulnerability - "It could happen to me."
- (2) Macho - "Taking chances is foolish."
- (3) Resignation - "I'm not helpless, I can make a difference."
- (4) Macho - "Taking chances is foolish."
- (5) Impulsivity - "Not so fast. Think first."

- (6) Anti-Authority - "Follow the rules. They are usually right."
- (7) Macho - "Taking chances is foolish."
- (8) Anti-Authority - "Follow the rules. They are usually right."
- (9) Impulsivity - "Not so fast. Think first."
- (10) Invulnerability - "It could happen to me."

Situation 3

The mayor of the city has chartered an aircraft to take himself and members of his staff to a nearby city where he is to present the key to his city to a visiting dignitary. The passengers are to be picked-up in Oakland and taken to a northern California city for this affair. Special catering has been arranged and the most senior pilots from the company have been scheduled for this important trip.

On the short hop to Oakland, the co-pilot experiences some minor problems with the new EFIS system recently installed. He disregards the potential problems, however, figuring this is the best system around and it will operate just fine. Besides, it is VFR and they really don't need all those electronics anyway. They flew just fine without them in the past. They arrive at Oakland with plenty of time to spare and await the arrival of their passengers. The group arrives and are boarded.

On restart out of Oakland, one of the alternators trips off-line, but comes back up after recycling. The captain figures there's nothing he can do about it. It probably has something to do with the new electronics.

Shortly after take-off, the mayor's assistant buzzes the co-pilot to inform him that the mayor has forgotten the key to the city and must go back to get it. The co-pilot immediately asks ATC for clearance to return to the airport and places a phone call to the mayors' office to have the key brought to the airport. Although quite high for the approach the captain accepts a straight-in approach thinking "we've got to get down and I know I can make the first taxi-way as well. Just watch."

When they arrive back at the ramp, a messenger is waiting to meet them with the key. Although it is a company policy to shut down all engines when enplaning or deplaning, the captain opts to leave one running. They are in a pinch for time.

The alternator went off-line again on restart, but the flight is continued and they arrive in time for the mayor to make his presentation. As the pilots wait for their passengers to return, they watch the sunset and the clouds roll in over the ocean. The co-pilot queries the captain as to what he thinks may be wrong with the alternator. The captain replies, "Oh, it's just flaky, there's nothing we can do about it now. Anyway, nothing's going to happen to it that we can't handle. Right, buddy?"

Sentence	Hazardous Attitude	Antidote
1	_____	_____
2	_____	_____

Sentence

Hazardous Attitude

Antidote

3

4

5

6

7

8

9

10

Key to Situation 3

Compare your responses in Situation 3 with those given below. Remember, your responses may not be identical to those in this key. Still, you should have identified most of the hazardous attitudes indicated.

Situation 3

The mayor of the city has chartered an aircraft to take himself and members of his staff to a nearby city where he is to present the key to his city to a visiting dignitary. The passengers are to be picked-up in Oakland and taken to a northern California city for this affair. Special catering has been arranged and the most senior pilots from the company have been scheduled for this important trip.

On the short hop to Oakland, the co-pilot experiences some minor problems with the new EFIS system recently installed. (1) He disregards the potential problems, however, figuring this is the best system around and it will operate just fine. (2) Besides, it is VFR and they really don't need all those electronics anyway. They flew just fine without them in the past. They arrive at Oakland with plenty of time to spare and await the arrival of their passengers. The group arrives and are boarded.

On restart out of Oakland, one of the alternators trips off-line, but comes back up after recycling. The captain figures (3) there's nothing he can do about it. It probably has something to do with the new electronics.

Shortly after take-off, the mayor's assistant buzzes the co-pilot to inform him that the mayor has forgotten the key to the city and must go back to get it. The co-pilot (4) immediately asks ATC for clearance to return to the airport and places a phone call to the mayors' office to have the key brought to the airport. Although quite high for the approach the captain accepts a straight-in approach thinking (5) "we've got to get down and (6) I know I can make the first taxi-way as well. Just watch."

When they arrive back at the ramp, a messenger is waiting to meet them with the key. Although it is a company policy to shut down all engines when enplaning or deplaning, (7) the captain opts to leave one running. (8) They are in a pinch for time.

The alternator went off-line again on restart, but the flight is continued and they arrive in time for the mayor to make his presentation. As the pilots wait for their passengers to return, they watch the sunset and the clouds roll in over the ocean. The co-pilot queries the captain as to what he thinks may be wrong with the alternator. The captain replies, (9) "Oh, it's just flaky, there's nothing we can do about it now. (10) Anyway, nothing's going to happen to it that we can't handle. Right, buddy?"

- (1) Invulnerability - "It could happen to me."
- (2) Invulnerability - "It could happen to me."
- (3) Resignation - "I'm not helpless, I can make a difference."

- (4) Impulsivity - "Not so fast. Think first."
- (5) Impulsivity - "Not so fast. Think first."
- (6) Macho - "Taking chances is foolish."
- (7) Anti-Authority - "Follow the rules. They are usually right."
- (8) Impulsivity - "Not so fast. Think first."
- (9) Resignation - "I'm not helpless, I can make a difference."
- (10) Macho - "Taking chances is foolish."

Situation 4

The scheduled trip from Miami to Atlanta is routine for this pilot. The company he flies for is based in Miami, with an office in Atlanta. He makes this trip at least once a week. The executives are scheduled to depart at 4 p.m., but arrive an hour early. The aircraft has not been refueled, but the pilot calculates there is enough to make the trip. He is hedging on reserves, but those regulations are for folks that don't know how to manage their fuel as well as he does. He really needs to get going especially with the company executives waiting.

He decides to get updated weather enroute so he can save some time and show the execs that he can handle any situation like a pro. A little schedule change isn't going to get him rattled. In his haste to get loaded and airborne, the pilot failed to notice the luggage strap hanging from the nose baggage compartment. He hustles to get the passengers on board and calls for his clearance.

While taxiing out he muses to himself, "I always figure a way to get things rolling, right down to persuading the controllers to give me the runway I want." The pilot has chosen the closest runway to the hanger and although there is a hefty tailwind, he does this all of the time and he's never had any problem.

When he is finally cleared for take-off and he "thinks" I would have been cleared sooner if that trainee wasn't working tower frequency. Don't they know we've got business to do?" On climb-out there is a rumbling noise appearing to come from the nose of the aircraft. The pilot is not quite sure what it is, but knows enough to return and land, immediately. Back on the ground, he discovers the cargo strap and tells his passengers how the line guys really messed-up. "What's the use" he mumbles as he climbs back in the cockpit, "it's not my fault those guys can't load luggage right."

Now he really has to do some fancy flying to impress these guys. He'll check the weather later. It can't be too bad.

Sentence	Hazardous Attitude	Antidote
1	_____	_____
2	_____	_____
3	_____	_____

Sentence	Hazardous Attitude	Antidote
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____
11	_____	_____
12	_____	_____

Key to Situation 4

Compare your responses in Situation 4 with those given below. Remember, your responses may not be identical to those in this key. Still, you should have identified most of the hazardous attitudes indicated.

Situation 4

The scheduled trip from Miami to Atlanta is routine for this pilot. The company he flies for is based in Miami, with an office in Atlanta. He makes this trip at least once a week. The executives are scheduled to depart at 4 p.m., but arrive an hour early. The aircraft has not been refueled, but the pilot calculates there is enough to make the trip. (1) He is hedging on reserves, but those regulations are for folks that don't know how to manage their fuel (2) as well as he does. (3) He really needs to get going especially with the company executives waiting.

He decides to get updated weather enroute (4) so he can save some time and (5) show the execs that he can handle any situation like a pro. A little schedule change isn't going to get him rattled. In his haste to get loaded and airborne, the pilot failed to notice the luggage strap hanging from the nose baggage compartment. He hustles to get the passengers on board and calls for his clearance.

While taxiing out he muses to himself, (6) "I always figure a way to get things rolling, right down to persuading the controllers to give me the runway I want." The pilot has chosen the closest runway to the hanger and although there is a hefty tailwind, he does this all of the time and (7) he's never had any problem.

When he is finally cleared for take-off and he "thinks" I would have been cleared sooner if that trainee wasn't working tower frequency. (8) Don't they know we've got business to do?" On climb-out there is a rumbling noise appearing to come from the nose of the aircraft. The pilot is not quite sure what it is, but knows (9) enough to return and land, immediately. Back on the ground, he discovers the cargo strap and tells his passengers how the line guys really messed-up. (10) "What's the use" he mumbles as he climbs back in the cockpit, "it's not my fault those guys can't load luggage right."

(11) Now he really has to do some fancy flying to impress these guys
(12) He'll check the weather later. It can't be too bad.

- (1) Anti-Authority - "Follow the rules. They are usually right."
- (2) Macho - "Taking chances is foolish."
- (3) Impulsivity - "Not so fast. Think first."
- (4) Impulsivity - "Not so fast. Think first."
- (5) Macho - "Taking chances is foolish."
- (6) Macho - "Taking chances is foolish."
- (7) Invulnerability - "It could happen to me."
- (8) Impulsivity - "Not so fast. Think first."
- (9) Impulsivity - "Not so fast. Think first."
- (10) Resignation - "I'm not helpless, I can make a difference."

- (11) Macho - "Taking chances is foolish."
- (12) Invulnerability - "It could happen to me."

Chapter 13

PSYCHOLOGICAL FACTORS

There are a few additional factors concerning normal human behavior that should be considered because they impact judgment and can, therefore, have an important effect on aeronautical decision making. In addition, there are several other flying phenomena with psychological implications that are discussed in this chapter because of their known affect on judgment.

Perception

The human mind tends to focus like a camera lens either consciously or subconsciously. In so doing, part of the reality of a situation is filtered out, thus, ignored or rejected. Psychologists use the term perception to describe this process which tends to affect our judgment by reducing the effectiveness of data that are available to us. Each of us has a different perceptual makeup because our realm of experience is different. We live by our own particular view of a given situation.

For this reason, as pilots, it pays to check out:

From where did I get these 'filters'?

Are they valid in this situation?

How can I widen my perception to get a more complete view?

The following are well established facts concerning how we, as normal humans, select what goes through our minds. This selection process is a natural method by which our minds focus on what is most important for human survival and happiness. It is not a new found process by any one individual, but rather one which has been developed over centuries with each of us having our own style of application resulting from our unique experience. This process should, in no way, be construed as lazy or negligent, but rather very natural to human existence.

Selective Exposure: we tend to go to places and put ourselves in positions to see and hear what we want to hear or agree strongly with.

Selective Attention: in any situation we tend to focus our attention on those aspects of the scene which are of special interest to us.

Selective Perception: we tend to see and hear anything which strong beliefs cause us to expect.

Selective Rejection: we tend at times to fail to perceive things that we do not wish to see or hear, or that offend our beliefs.

Each of these four factors cause our data acquisition and processing for decision making to be less than perfect. Therefore, as we consider decisions, we must be aware of the fact that there may be sources of bias and conflicting information that must be countered with careful examination of the relevant information from our own, and if available, from other sources. In other words, if you are at all uncertain about the way you are perceiving a situation, ask another knowledgeable person.

Theory of the Situation. To further expand on this concept, Dr. Lee Bolman of Harvard University has developed a theory of human behavior that he calls the "Theory of the Situation." This theory states that we operate (including making decisions), imperfectly, based on our own theory or beliefs about the present situation. The following five factors are important to this theory:

Values and beliefs: Abstract concepts, such as honesty, courage, justice, etc. These are not directed at any one thing or person.

Attitudes: Viewpoints adopted in regard to organizations, people, things, work groups. They produce a predisposition to act in some way. They can be changed through training and persuasion.

Personality: Predispositions to behave in certain ways ingrained in us from early years. These are very difficult to change.

Behavior: What we do or say in a situation - heavily influenced by our attitudes. This provides the basis on which other people judge our attitudes, competence, and leadership.

Espoused theory: our values and beliefs together with logic produce our view of what should happen in a particular situation. We can check this theory by asking another person to give us his or her belief about it.

Theory in use: what we actually do when placed in the situation. It can only be checked by observation. It is influenced strongly by prevailing attitudes towards the components of the situation.

There is often a difference between the espoused theory and the theory in use. Extensive training should be undertaken to ensure that the two are identical in crucial situations, e.g., emergency procedures. Differences are much more prevalent in the human world because of attitudes towards people and the powerful effect of selective perception.

Is the situation routine? When situations seem routine it means that there appears to be no variety from any other flight, or at least viewed through one person's, eyes everything is standard. This is, in truth, a rare situation - people are different, circumstances are different, the route is possibly different, the weather is different and always changing, etc. These things can be reconciled when we realize it is the level of generalization and depth of awareness of our views which condition our reactions.

For example, two situations, if looked at with a global view, may appear identical. However, if we take a deeper level observation or inquiry, we may see several differences between them. Finally, if we take a highly sensitive, and comprehensive view we may see that the two situations are totally different.

The degree of control which we try to exercise in these two situations will always depend upon:

- * The amount of discipline over our mind that we exercise to make ourselves aware of the situation.
- * Our ability to analyze the parts of each situation using available tools to identify and think about what is happening.
- * Our active use of these tools.
- * Our ability to adapt our behavior and make appropriate use of the awareness.

There is a natural human tendency to attempt to simplify our world as much as possible by generalizing things, especially in relation to human affairs, as our experience increases.

Other Psychological Traps

There are a number of other psychological traps into which pilots have been known to fall. These can generally be avoided or corrected by adhering to the principles advocated earlier for combating hazardous attitudes. For example, to the naive public, pilots often hold the "Macho" image. One of the problems pilots have is that they feel it is their duty to uphold that image. However, the fact is that a large segment of the pilot population does not have this attribute. Even those who do, can have it shattered quite easily by a noticeable failure or error in flight. The much talked about "Right Stuff" is a fragile image revealed in Allen Shepard's prayer on top of the Redstone rocket where he said, "Please God, don't let me ##### up." (From the movie, The Right Stuff).

The fact is that there are numerous examples of incidents of poor aeronautical decision making in which the pilot simply failed to take charge in a situation where action was needed. These types of situations are difficult to reveal in scenarios. They are best placed under the hazardous decisional attitude, "Resignation". However, the explanation offered for this attitude, "What's the use," fails to fully describe the problem. The following discussion expands on this aspect of the resignation attitude.

The tentative pilot. The following story illustrates a feeling most pilots have faced at one time or another in their flying careers. A young private pilot was "transitioning" to tailwheel airplanes from a tricycle gear airplane in which he received his private certificate. Although he had soloed the tailwheel airplane for some hours, he had not really learned the proper deliberate control technique for making "wheel"

landings in a strong crosswind. He found himself needing to make a crosswind landing on the north runway at Elgin, IL with a moderate wind from the west. As the airplane bounced down the runway, he had that helpless feeling as the aircraft became quite out of control for some moments prior to and after the first two or three touchdowns. Luck was with him that day because he bent no metal and recovered with a very receptive attitude toward more dual instruction in crosswind landings.

In the sport of tennis, coaches often uses the word "tentative" to describe this attitude. As in tennis, tentative decision making in pilots can lead to disaster just as easily as the macho attitude. Although most pilots become less tentative with increased flying experience, such experience alone contains no absolute preventative, particularly when their fragile egos have been shattered. It can also be the result of life stress events, such as divorce or a death in the family. These events can cause one to have "tunnel vision" which can obscure relevant information that otherwise would clearly point to a problem. You must be aware of this possibility and take special care to be deliberate in your decision making when such feelings arise - whatever the source.

The lesson from this example is that a tentative attitude can lead to decisional errors in flying. The factors leading to these attitudes result from insecurities present to some degree in all of us. Pilots must learn to make command decisions through disciplined thinking to overcome these insecurities when they are faced with making decisions in marginal flying situations.

Get-there-itis. One of the most often mentioned factor (or excuse) for flying into adverse weather or taking on challenges beyond one's capability is known as "get-there-itis." Pilots on their way home from a trip feel a very compelling pressure to ignore mounting flight adversity to satisfy a need to get home or to a destination. The pressure may come from within one's self or from commitments made to other people.

In the early 1980's, two young male flight students on a return trip to Columbus at night, in a Cessna 172 landed in Wilmington, PA with a load of ice. Witnesses, including a King Air pilot (who decided not to fly because of the ice), a state patrolman, and local FBO persons saw them attempting to remove the ice by banging on the wings with wooden sticks. They were told by everyone that it would be foolhardy to takeoff into that ice again. Nevertheless, they did. They reached 3,000 feet and could not get through the ice. They crash-landed in trees on a hill top not far from Wilmington. Luckily, they were unhurt and spent the night in the plane until they were found by hunters the next day.

It is difficult to imagine the extent of the pressure of get-there-itis that could cause them to make such a decision. However, it is real and we must be prepared for it. The best way to counter get-there-itis is to mentally remove yourself from the pressure and focus your thinking on the safety factors in the flight. This may mean telling passengers that the decision to proceed must be based on the environmental factors instead of their needs.

Duck-under. On instrument approaches pilots experience a compelling urge to descend, "just a little bit," below the approved minimum for the approach in an attempt to get into the airport. This urge is especially strong on second and third tries for an airport. The pilot feels falsely secure having an illusory feeling of being in a world of his own in the clouds quite apart from the buildings, trees, and rocks that exist out there as well. This is a case of denial of the existence of the real situation. It is best combatted by fully realizing that the ground does exist out there, probably within the clouds and not necessarily below the clouds and that the regulations are there for your protection.

Scud running. VFR pilots are more likely to fall into the trap of scud running than commercial/instrument pilots but even the most experienced instrument pilots sometimes fall victim, either because their equipment is VFR only or they don't want to go through the trouble of filing IFR. Scud running is the practice of flying as low as necessary over the ground to avoid the clouds. The danger is that the ceiling and/or visibility may change for the worse at any moment. At the altitude of most scud running, these changes may occur undetected by the pilot which greatly increases the chance of running into the terrain. Pilots, who have an invulnerability attitude, may convince themselves that they can make it through visually just by going a little lower or a little slower, especially when present conditions are reported VFR at the weather stations. They go about it ignoring the fact that the weather between reporting stations may be well below what it is at the stations. There may be pressures to get somewhere with less than IFR equipment on board. Scud running is best countered through the realization (headwork) that you are putting yourself at great risk when challenging unknown weather.

Continued VFR flight into IMC conditions. This is the most frequent cause of general aviation accidents. It is not as frequent in commercial operations because more of these flights are made IFR. However, it does happen. It is most likely to happen in conditions such as those mentioned for scud running where there is a strong need to get somewhere in a less than IFR equipped aircraft or the pilot fails to file IFR. It is a symptom of invulnerability because the pilot believes that no one is likely to be in the airspace where he is flying and he'll be visual again momentarily. The drive to continue visually may be countered by realizing that the practice is, literally, a game of Russian Roulette. The risks are very high and the penalty for being wrong - fatal.

Falling behind the aircraft. Anyone can get into circumstances in which they find themselves "behind the aircraft," but it is most likely to occur as a result of lack of experience, especially, in the type of aircraft being flown. The phenomenon consists of too many tasks to complete in the apparent time allotted, perhaps, coupled with the failure to understand or complete satisfactorily, one or more of the tasks. A commercial pilot could fall behind his aircraft if a new piece of avionics, such as RNAV or FMS, is added and he depends on it without fully understanding it. Another common time for commercial pilots to get behind the aircraft is when encountering an emergency, e.g., an engine failure in a multi-engine aircraft. Lack of recent experience may result in the pilot being over stressed in the situation to the point of causing a reduced capability to complete the basic tasks of navigation and flight

control. The best way to counter falling behind the aircraft is not to accept flight tasks until you are thoroughly familiar with the equipment involved in all modes of operation including failures.

Loss of position or situational awareness. Whole books have been written on the problem of maintaining situational awareness. It is most often associated with inexperienced pilots but can also happen to the most competent commercial pilots. One particular time this may occur is while on radar vectors. An instrument pilot may not continue to maintain an awareness of his position with his navigation system because under radar vectoring, the controller is doing that task for him. Pilots then get into trouble when cleared for the approach and are asked to resume normal navigation. Equipment failure can cause one to be drawn so deeply into the solution of the problem that one forgets everything else about the situation. This is exactly what happened in the L-1011 that crashed into the Florida Everglades while the three-member crew were all engaged in the repair of a gear light. Situational awareness is maintained through careful flight planning, disciplined headwork, and vigilant monitoring of the flight progress at all times.

Takeoff with less than minimum fuel. The practice of taking off with less fuel than the regulations require is a case of an anti-authority attitude. It may be caused by a hurried pilot not wanting to take the time to refuel or one who has overloaded the aircraft and cannot fuel to the level required plus reserve, and still get off the ground. It may be a pilot who plans for a flight that is beyond the range of his aircraft with proper reserves but he wants to make it non-stop. One can also run low on fuel when the winds turn out to be different than forecast. Finally, some pilots may elect not to take on "holding fuel" because they can save money for the company. This invulnerability attitude then gets them into trouble when they are asked to hold for weather or traffic at their destination. One must realize that the regulations are written for achievable circumstances. Minimum fuel requirements allow but a small margin for error - perhaps in headwind calculation or traffic problems. This practice indicates an invulnerability and an anti-authority attitude problem and is correctable through proper understanding and respect for the regulations as minimum criteria to maintain safety.

Flight outside the certified flight envelope. Except for overloading the aircraft, this is a fairly rare occurrence in commercial operations. Some believe that one particular model business jet was falling out of the sky because pilots were flying it outside of its acceptable flight envelope. Again this is a case of an anti-authority attitude. Design standards, operating limitations, and flying regulations are not aimed at curbing use, but rather at enhancing safety.

Flying IFR below MEA. For unknown reasons, some pilots, when encountering clouds enroute, do not climb to MEA and request an IFR clearance. Instead, they continue toward their destination in the clouds, below MEA, thinking that ATC will not have any other aircraft in the airspace and there will be no other VFR pilots out there doing the same thing. Like many of the other examples mentioned above, descent below MEA is a case of the pilot believing that the margin provided by the regulations is sufficient to permit some bending. The pilot must realize

again that the regulation limit is set for the best of circumstances and assumes good pilot judgment. Pilots must who violate those limits face very great risks. This is a combination of invulnerability and anti-authority attitudes that should be addressed in judgment attitude training.

Casual neglect of flight planning. Experienced pilots often fall into the trap of complacency concerning flight planning, preflight procedures, and especially the use of checklists. Some may even think it is macho (and therefore "professional" appearing) to just hop in the airplane and go. However, this practice, which indicates an invulnerability attitude is conducted at great risk. There are many factors that can change in short periods of time. Assumptions about fuel state, aircraft state, chart availability, and weather conditions may be incorrect. This is best countered by judgment attitude training in the area of invulnerability.

Chapter 14

ENVIRONMENTAL FACTORS

Flight Planning

Flight planning in the commercial and air-taxi business, as in all aeronautical trips, involves much more than just planning the route and phoning (or taking) the flight plan to the Flight Service Station specialist. The successful result of each leg of each trip embarked upon depends on a multitude of factors. A cursory look at the accident statistics for Part 135 and other commercial operations, leads one to the realization that a large proportion of accidents and incidents are, in part, the result of "inadequate pre-flight planning."

The biggest culprit in the area of flight planning comes with increased experience. Unfortunately, as the pilot becomes more familiar with his aircraft and the operation, he often becomes more complacent. Thorough weight and balance calculations, exact performance numbers and complete weather briefings seem increasingly tedious and unnecessary as ones' skills and familiarity with the system increases. Adequate time is usually programmed into duty times for all of the above chores to be completed in a professional manner. Unfortunately, some pilots believe that the extra time is for coffee, cigarettes and other priority habits.

There are indeed some different circumstances that affect the pre-flight preparation in the commercial aviation environment. When flying for personal business, for pleasure or even when flight instructing, the decisions as to whether to go, where to go, and when to return are at the option of the pilot. In the commercial aviation business, you are providing a transportation service, either for individuals or cargo, from point A to point B. The wishes of the customer play a major role in your decision making process.

These same customers are also in the position to make last minute changes to your careful flight planning. It is not uncommon for example, for the passengers to show up and weigh significantly more (rarely less) than had been communicated when making the charter booking. When carrying cargo, you will seldom know the exact weight of the load until it arrives for loading. A series of tables and calculations for your mission worked out ahead of time will help in these variable situations. If the total weight of passengers and/or cargo does not allow flight within the limits of the aircraft, it is your responsibility to handle the situation. It is not an easy one, but the decision must be made and adhered to. Another related situation is when your passengers show up for the flight intoxicated. The FAR's are explicit regarding this, and once again, you are the decision maker in this difficult situation.

Another favorite practice of the charter or corporate customer is the change of destination -- often mid-flight. You had carefully mapped out the entire flight, only to have the customer (whom you are serving) change his/her mind. If in your estimation the change can be handled safely and efficiently, then you can comply. If not, other options need to be investigated.

The practice of using standard routings in air-taxi operations affords many pilots the luxury of having "canned" flight plans filed with the controlling facility which eliminates having to replan and file for each flight when the same routes are routinely flown. A few precautions about "canned" flight plans are in order. Occasionally, the routes are changed by the controlling authority. If this become necessary, your company will be notified. Make sure the communication patterns in your operation are such that you, the pilot, will also be informed. Also, "canned" plans may not list "alternates", because you would only choose an alternate after having been given the destination weather and that of the potential alternates. It is your responsibility to add alternates to the plan when they are required.

Pre-flight planning and pre-flighting the aircraft are items which, if performed properly can alleviate many problems before they occur. Maintenance of the equipment is a major part of flight planning. A minimum equipment list should not be by-passed for any reason. The idea that, "it wouldn't happen to me" is a hazardous attitude.

In-flight Decision Making

Six nights a week, the Air-taxi pilot flew the same route (Ft. Wayne - Chicago - Indianapolis - Pittsburgh - Ft. Wayne) carrying "hazardous materials" used in medical diagnosis. The aircraft and cargo were authorized to land only at designated airports. The point had been made many times that the pilot's career may end in paper work if he were to put down at an unauthorized airport. The pilot was "haz-mat" qualified and the aircraft was equipped to carry the radio-active materials.

A line of level V and VI thunderstorms lay on a north-south orientation from Chicago to Indianapolis. The materials that were picked up in Chicago were time critical, having a useful life of only three hours and a critical patient waiting for them. The single-pilot of the light multi-engine aircraft had already navigated around the weather to the north on his way from Ft. Wayne to Chicago. Now, the trick was to get back around it to the south. Due to the weight of the cargo, minimum fuel plus reserves was all the plane could carry.

As the pilot with his particularly "hot and heavy" load departed the Chicago area, it was obvious that he would have to deviate around the weather quite soon. He had decided to try to fly west around the storm and then south and approach Indianapolis from the west. Deviations were approved by Chicago Center, though it was mentioned by the controller that several of the commuter airline flights enroute from Chicago to Indianapolis were able to get around the heavier activity by going east rather than west and then approaching Indianapolis from the east. Since neither the aircraft's nor the controller's radar range covered far enough to the southwest to see the backside of the squall line, the pilot decided to take the already tested route hoping to out-run the weather.

After heading eastbound nearly 50 miles, it became obvious to the pilot, both from his radar, his storm-scope, and listening to the deviations of the other aircraft in the area, that there was more than one line of thunderstorms. A second line had developed out in front of the

one he was trying to get around. His choices seemed to be either to punch south between the lines or to continue further east around the newly developed line. To make matters worse, he was then informed that the Indianapolis airport, where he had to drop off some of his cargo and get refueled, was closed due to a severe thunderstorm over the field with wind gusts to 65 knots. The second line of storms (reported to be a solid line) was now approximately 30 miles west of Dayton.

The weather in the entire midwest was deteriorating rapidly, fuel was being burned, and the turbulence had increased from moderate to severe. Fortunately, the cargo could not shift because it was packed tightly in the cabin. The thought process this pilot was going through went something like this:

"If I don't get headed south pretty soon, I won't have enough fuel to make it at all. But, that storm scope looks like a laser light show and the radar shows thunderstorms everywhere. I wonder what really would happen to me if I had to put down at an unauthorized airport?"

At this time (he is approximately 60 miles to the north-west of Dayton), ATC inquires as to his intentions. The controller indicated that he would soon have to amend his clearance.

Well, maybe I could have the controller try to call company operations to see about landing at another airport, maybe Dayton. I better tell him something pretty quick, he's got enough to do without me sitting out here going nowhere!

Fuel, and time (the materials would need to be in Indianapolis within the next hour) have now become critical, and the thinking process increasingly complex.

I guess I'm just going to have to suffer the consequences and put down until this weather breaks. Now, where do I go? Maybe a small strip where no one would know. Yes, but there wouldn't be any fuel this time of night. I guess I'm stuck going to Dayton. This controller is going to think I'm a real jerk!

The pilot proceeded to land at Dayton. Five minutes after landing, the airport was closed due to severe thunderstorms and high winds. Indianapolis was still closed.

The above story is an example of "in-flight decision making." What is the situation? How do we go about deciding if something needs to be done? How do we select from among the alternatives actions? How do we decide when to act? There have been numerous studies involving decision making during actual flight. Most often the notion of a "critical in-flight event" (CIFE) and the pilots' response to it is studied. The results of these studies show pilots' reactions and decisions regarding these CIFE's varies tremendously with training, experience and attitudes towards aviation.

The key for the commercial pilot in making good decisions during flight is based on good decisions on the ground. Refer back to the section on flight planning, where many of the "problems" and answers to them could be made prior to ever leaving the ground. Another "lifesaving" technique used often in training is the game of "what if?" It is possible to practice making certain decisions while still on the ground. This gives the decision maker time (the aircraft is not moving), information (an instructor pilot, or the reference material, or the bosses' answers) and the opportunity to make a poor decision and learn from it. In other words, it offers a "safe" environment in which all of the options can be explored.

"What if?" is not just an exercise in story telling, but rather the serious practice in decision making. Even though you may not get all of the answers on the ground, you will become better at knowing how to ask yourself the questions.

Looking back at the above pilots' situation, it is interesting to note how many of his questions could have been answered by "what if?" prior to making this flight. Many of the hazardous attitudes exhibited in his thinking process could have been eliminated by prior thought and planning.

Terrain Factors

When discussing the components affecting the decision making process of the pilot, terrain, weather and other environmental factors are items over which he has no control. Weather will be considered in detail in the next section. The options you have are to observe, and react to what you perceive.

There have been numerous studies and investigations of controlled flight into terrain. Attempts are often made to blame such errors on the Air Traffic Controller. But as you will see again in the next section, it is your responsibility as the pilot in command, to know where you are and where the obstacles are. If you often fly off-airway routes, you should be curious about the surrounding terrain; information which is clearly available on VFR sectional and WAC charts.

Weather Predicting and Analysis

Decision making in the weather arena begins with the development of a sound knowledge base concerning meteorological phenomena affecting aviation and receiving a proper weather briefing. On particularly bad days/nights for weather, it is well worth dropping by the Flight Service Station (if at all possible in your locale). The added information gained will help you in your decisions regarding go, no-go, routing, fuel load and perhaps even determine the type of equipment you will fly if you have a choice.

An example of a decision process regarding weather is told by a pilot flying from Chicago's Midway to Cleveland's Burke Lakefront. As he tells the story...

Dispatch did not advise me that the weather observer (at BKL) was on vacation. Due to other jobs the weather observer does at BKL, I can never find him to get current weather before take-off as prescribed by FAR Part 135. So we have an agreement that he will call me with the weather whenever it is IFR. On this night, there had been no IFR call and CLE, eight miles away was VFR. So I headed for Burke Lakefront VFR. Twenty minutes out from the destination, I called on Unicom for weather and was told the weather man was on vacation and the weather was poor -- about 900 overcast and 1 1/2 miles visibility. There were nine airplanes on the ground all waiting for me (they had landed despite the weather and without the required observation). So, I felt pressured into quickly turning onto the approach outside the FAF and giving it a try. I asked for and was granted a Contact approach to stay legal, but I probably wasn't very safe because I was barely clear-of-clouds and 1 mile visibility. I hope I won't let someone else's actions influence me again.

Is this starting to sound familiar? If you are not familiar with the area around this particular airport, the obstruction environment is worth a look on an approach chart.

The environment requires constant and concentrated watch, that is weather in general, but especially, the anomalies associated with thunderstorms, icing, fog, and high winds. The more experience you have in making decisions regarding these factors, the better you will be in making future decisions. One pitfall however, of the experienced aviator is in thinking of "I made it through one like this last time...." Recognizing those times which you would not and should not repeat is a key to making better decisions given the same situation in the future.

Your understanding of the limitations in the predictive capabilities in any weather reporting will greatly aid in assessing the risks involved in a given flight. Predicting the weather is not an exact science, although it has become much better over the years. Still, some pilots think that the weather information received is never right and this can lead to error in judgment as well. The following statistics regarding the probability of a correct forecast will help to clarify what really should be expected.

General limitations of forecast science. Forecast accuracy stems from what is known and what can be measured. These two limitations determine the reliability factor of various weather situations, how much detail is available, and changes over time. An important point to remember is that forecast accuracy decreases with the passage of time since forecast issuance. Since the forecaster must consider a complex combination of many factors, information on many of these factors may be partially or completely lacking.

Recent studies of aviation forecasts indicate the following:

1. Up to 12 hours and even beyond, a forecast of good weather (ceiling 3,000 feet or more and visibility 3 miles or greater) is

much more likely to be correct than a forecast of conditions below 1,000 feet or below 1 mile.

2. However, for 3 to 4 hours in advance, the probability that below VFR conditions will occur is more than 80 percent correct if below VFR is forecast.
3. Forecasts of single reportable values of ceiling or visibility instead of a range of values imply an accuracy that the present forecasting system does not possess beyond the first 2 or 3 hours of the forecast period.
4. Forecasts of poor flying conditions during the first few hours of the forecast period are most reliable when there is a distinct weather system such as a front, a trough, precipitation, etc., which can be tracked and forecast, although there is a general tendency to forecast too little bad weather in such circumstances.
5. The weather associated with fast-moving cold fronts and squall lines is the most difficult to forecast accurately.
6. Errors in forecasting the time of occurrence of bad weather are more prevalent than errors in forecasting whether it will occur or will not occur within a span of time.
7. Surface visibility is more difficult to forecast than ceiling height. Visibility in snow is the most difficult of all visibility forecasts. Skill in these forecasts leaves much to be desired.

Forecasters CAN predict the following at least 75 percent of the time:

1. The passage of fast-moving cold fronts or squall lines within plus or minus 2 hours as much as 10 hours in advance.
2. The passage of warm fronts or slow-moving cold fronts within plus or minus 5 hours up to 12 hours in advance.
3. The rapid lowering of ceilings below 1,000 feet in pre-warm front conditions within plus or minus 200 feet and within plus or minus 4 hours.
4. The onset of a thunderstorm 1 to 2 hours in advance if radar is available.
5. The time rain or snow will begin within plus or minus 5 hours.

Forecasters CANNOT predict the following with an accuracy which satisfies present aviation operational requirements:

1. The time freezing rain will begin.
2. The location and occurrence of severe or extreme turbulence.

3. The location and occurrence of heavy icing.
4. The location of the occurrence of a tornado.
5. Ceilings of 100 feet or zero before they exist.
6. The onset of thunderstorm which has not yet formed.
7. The position of a hurricane center to nearer than 80 miles for more than 24 hours in advance.
8. The occurrence of ice fog.

Occurrences of both icing and turbulence are local in extent and transient in character. Once a pilot receives a forecast of these hazards, he usually plans his flight to avoid them. Because actual passage of aircraft through the weather system is the only way to verify these phenomena, they usually go unverified. With the present state of the science, forecasts of icing and turbulence specify volumes of airspace which are quite small when compared to the total volume used by aviation, but relatively large compared to the localized extent of the hazards. Existence of the hazards in these relatively large forecast volumes is thought to be fairly accurate - occurring perhaps 50 to 75 percent of the time, but intensity forecasts typically are less reliable.

One other important weather factor to deal with is windshear and the even more well-known "microburst". Some aircraft manufacturers are experimenting with a specially developed windshear indication device. The display would be in conjunction with the airspeed indicator. The information presented is computed from accelerometers constantly and instantaneously measuring vertical and horizontal speed changes. This may become a very worthwhile safety device in the future, but in the meantime awareness of the potential dangers of windshear is essential if one is to remain clear of extremely hazardous conditions.

Air Traffic Control

There is a glossary compiled by the U.S. Department of Transportation, Federal Aviation Administration available to all pilots, aimed at promoting a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. This glossary is cross-referenced to the "Lexicon," published by the International Civil Aviation Organization. Commercial and Air-Taxi operators and pilots need to have a working knowledge of these terms for both domestic and international flight.

The fine line between unnecessarily tying up the frequency and failing to convey all of the necessary information is a critical pilot judgment responsibility while sharing the air traffic control party-line. Communication techniques vary from pilot-to-pilot and from company to company, but the recommended procedures should be adhered to by all. The recommended procedures and common phraseology are not an option, especially during abnormal or emergency situations. Communicating to the

controller the nature of the situation could very well determine whether you have a successful or unsuccessful outcome to your flight.

Among the notorious examples of miscommunication with the air traffic controllers is the fatal crash of a Learjet out of Palm Springs, California after a mix-up with the controllers which allowed them to fly directly into the side of a mountain. In this situation, the crew realized they were headed for trouble, but assumed ATC was in control of the situation. If there is ever any doubt, clarify the instructions or request a clearance change. There is never any doubt as to who is in control of the aircraft and who is ultimately responsible for it.

Another notorious accident involved an airliner that crashed in Georgia following a double flameout in a severe thunderstorm. In this situation, ATC continued to work other traffic on the frequency. Though the controllers were not to blame, better communication may have led the aircraft safely to an airport directly beneath them, instead of trying to glide to an airport 20 miles away. The overriding point remains that the pilot in command is ultimately responsible. This fact remains true with respect to ATC communications. If the message is not perfectly clear, there is no shame in "say again".

Communication in the Cockpit

"Cockpit resource management" (CRM) is a term that has come into play as the equipment we fly becomes more sophisticated, and the flight crew becomes more of a management team. As in any "business," communication between and within the departments is essential in producing the desired outcome for the company. Once again, communication training and the elimination or minimization of problems in this area needs to be taken care of prior to leaving the ground.

Company procedures manuals and operations specifications give detailed descriptions of the lines of authority above, between and within flight crews. Discussion of this information and clarification of the communication patterns between all pilots flying together is mandatory. Otherwise the following example could become a fatal battle resulting from a "power struggle" in the cockpit at a most inopportune time. The incident was observed by a company pilot riding jump-seat back to his home town.

The weather was 400 and 1/2 at CVG when the aircraft carrying cargo in plastic bags departed at 4 AM. Checklists were not being used during the flight, so it was not surprising that the bleed air switch was still in the "emergency" position as it had been used for de-fog on the way into CVG. The transient pilot (also rated as a check-airman in the aircraft) was certain that the inordinately loud rush of air would bring the situation to the attention of the crew. Not so. Shortly after becoming airborne, the cabin temperature climbed high enough to begin melting the plastic liner of the cabin as well as the plastic bags around the cargo.

Fumes began filling the cabin and the crew had still not recognized a problem. As the jet entered the clouds, the first officer suddenly became aware of the difficulty. Without saying anything to the captain, the first officer immediately declared an emergency. The departure controller responded requesting the nature of the emergency and their intentions. The first officer responded that they wanted to return to land at CVG. The controller instructed them to climb to 2,700 feet and gave them a vector.

During all of this, the pilots donned their oxygen masks as the fumes were unbearable. The passenger did not have access to oxygen. The captain had continued to fly the aircraft, though not following ATC's instructions. Instead, he descended out of the clouds and got on the radio and stated that he was the captain and that they were not declaring an emergency. He reported the airport in sight and requested to circle and land.

After terminating with ATC, the captain proceeded to berate the first officer regarding declaring an emergency and not doing as he was told. During the entire episode, no attempt to resolve the situation was initiated and of course the emergency procedure checklist remained stowed in its unavailable position.

This may seem an extreme example of poor communication techniques in the cockpit. Yet situations similar to this are quite common. The availability of communications training using role-playing and small-group discussions may seem to be unnecessary extra time spent for the pilots. The benefits, however, have been documented in formal research resulting in the adoption of some type of CRM training in most major airline companies. The commercial and air-taxi multi-crew operators will no doubt soon be starting or contracting similar programs for their pilots.

Human Engineering Factors

Many (actually most) commercial and air-taxi pilots have gone through the phase of flying a variety of different makes, models and individual aircraft. Contrary to some lines of thinking, all Cheyennes are not the same. It has been found that lack of familiarity with a specific airplane was often a contributor to a variety of aircraft accidents. Faced with learning how to be flexible, there are some practices that pilots, finding themselves in this situation, can use to help familiarize themselves with the equipment they are about to fly.

A Learjet 25D is a Learjet 25D is a Learjet 25D is not necessarily true. Nor is a Baron is a Baron is a Baron. Each individual aircraft will have some differences. This is true for all makes and models of aircraft you fly. When you are qualified and flying several makes and models, things could even get more confusing. Let's even put you in the situation of flying a different type of aircraft on different legs of the same trip. This is where basic human engineering (or lack thereof) needs to be overcome by pilot awareness.

As stated previously, cockpit equipment is becoming more and more sophisticated, to the point of the limiting factor in the safety of operation being the pilot. Throw into that a change of planes every now and then and the pilot has to contend with variety as well as sophistication. DC-3 accident studies identified the culprit, "non-standard" cockpit design, as a major contributor to "pilot error" fatalities. This research helped in enforcing some standardization restrictions on the part of manufacturers. But, a Baron is still not a Baron is still not a Baron.

So, given this situation, what options are available to the pilot to help in making a good transition back and forth between different aircraft? The best advantage to give yourself while piloting several makes and models of aircraft (not simultaneously of course) is to limit the total types if possible, establish proficiency requirements and maintain them in each type, and use the checklists. If you are not comfortable at any point in time, raise your own minimums or take a co-pilot even if not required. The time to evaluate your current proficiency, though, is before taxiing out for take-off. It may just be a matter of sitting in the aircraft, reviewing the manual and checklists and "thought flying" a mini-flight while on the ground. In any case, make sure you are comfortable and confident about the equipment now, even if you felt right at home when you flew it 6 months ago.

Numerous other human engineering factors affect your ability to operate the aircraft and make decisions concerning the flight. Given the aircraft you are to fly, investigate personal equipment that can help reduce your workload. This is especially important when flying single pilot in IMC. Such items would include a headset with a boom microphone which would free up your "mic" hand and enable responses to ATC more promptly. As a side benefit, certain headsets are noise attenuating which protects your hearing capabilities and aids in lessening "noise" fatigue. Also consider timers, calculators, navigation computers, clipboards, pen holders, sunglasses, and seat cushions to aid to reduce your workload and/or make your work environment more comfortable.

The pilot is walking out on the ramp to board her 1.5 million dollar aircraft -- carrying a pillow!!!! She is 64 inches tall, but the seat and rudder pedals in this particular aircraft (and several others that she has flown) do not adjust far enough to allow her full range of control of the aircraft. This is not a unique situation for the shorter pilot. Similar discomforts also face tall cockpit crewmembers. Human comfort in the form of a "Lazy-Boy" recliner chair is not required, but the ability to perform all flight duties adequately as well as maintain physical comfort is primary in the design of aircraft seats. Of course, the manufacturers may not be able to have a flexible enough design to accommodate all size pilots. This is where creature comfort comes in, and if that requires additional seating, it should be used.

The "Option" Factor

As pilot in command, the option is always yours. Whether it is to go-around on landing, miss the approach, or divert to an alternate, the option is yours. Most important to recognize, is the option to say "no".

Sometimes in our quest for "heavier iron" we lose sight of that option. When your situation calls for a "go" or "no-go" decision, remember, it is not the Company's limits, the aircraft limits, or ATC's limits, but your own limits that must govern your answer. Don't let a bad decision be your last one!

Chapter 15

REVIEW EXERCISES IN AERONAUTICAL DECISION MAKING

The following scenarios and exercises will give you the opportunity to review your newly acquired aeronautical decision making abilities. Refer back to the appropriate chapters (in this volume as well as in the Instrument Volume) for necessary memory joggers if necessary prior to completing the following section. Before beginning the scenario review, check your recollection of the decision making material by filling in the blanks below with the correct answers.

1. The four judgment factors are:

- a. _____
- b. _____
- c. _____
- d. _____

2. The five risk elements are:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

3. The five hazardous attitudes and an identifying comment are:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

4. The antidotes to the hazardous attitudes are (in order from 4 above):

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

To check your answers, refer to the appropriate section of this manual and the Instrument manual. If you could not repeat exactly the antidotes, review them until you can. When you have finished the above exercises, continue to the next section.

The following scenarios are developed from actual incidents. These encounters will be expressed as the pilots related them. You will be asked to identify the risks involved, the hazardous attitudes and the appropriate antidotes to those attitudes. You will also be asked to contribute additional comments as to the overall pilot, environment and aircraft condition as they apply to the outcome of the flight.

Let's take a close-up listen to a pilot in a very common situation. While moving "up-the-ladder" in the aviation world, pilots pass through some sort of graduated advancement to bigger and more sophisticated aircraft. There are several different pathways to the "big iron" that so many pilots work toward, but a very common one is exemplified in the scenarios to follow.

From Flight Instructor to Commercial Pilot - The Move Up

The transition from flight instructor to passenger or cargo hauling duties is one of the most difficult transition periods requiring the highest piloting and decision making skills. Most flight instructors log many hours in small, single-engine aircraft. Some instructors, of course do obtain multi-engine ratings, but it is quite difficult to maintain proficiency without actually instructing multi-engine students. Even as a multi-engine flight instructor, the demands and decisions of the commercial pilot are quite different and usually much more involved than those of instruction. New equipment, new working hours, competition for routes and upgrading and the demanding nature of servicing the customer are pressures inherent to the new flight-instructor-turned-freight-pilot. All of these factors combined with routine considerations of flying can create a temporarily unstable environment.

In the following example, carefully read the scenario first and then answer the questions that follow. Your answers to these questions will be discussed with you by your instructor.

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- c. _____
- d. _____

2. The five risk elements are:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

3. The five hazardous attitudes and an identifying comment are:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

"From Flight Instructor to Freight Pilot"

Great! The waiver just came in today from the insurance company and I can finally fly the run tonight by myself. Good thing the company is in a bad way for pilots. They had to ask for a waiver to get me insured with less than the required hours stated on the policy.

About time, I really need to start making some bucks. Life as a starving flight instructor is over. I really don't know where the insurance companies got the right to require so many hundreds and thousands of hours just to be able to fly these little airplanes. I've had plenty of experience flight instructing and that should sure count for something. How else would I be able to get the experience? There's really nothing I can do about the system. I sure am glad they didn't ask to actually look at my logbook entries.

Now I can get out there and show them I am as good, no, that I'm better than the rest. I should move up quickly, after I get the chance to show them my stuff for awhile. I really can't wait to get my hands on the bigger equipment. Then I'll have a real good chance at the airlines.

The weather's pretty bad tonight. Most of the guys have been picking up moderate and sometimes severe ice. I can't believe all the ice still hanging on the plane that just came in. Oh well, lookout airways!

Discussion

1. In reading this pilots' thoughts on his new job, did you perceive any risks that he did not consider?

2. Which hazardous attitudes dominate this pilots' thinking?

3. Indicate at least three specific examples of hazardous thoughts.

a. _____

b. _____

c. _____

4. What are the antidotes for the hazardous thoughts above?
- a. _____
 - b. _____
 - c. _____
5. Do you have a suggestion or solution to the problem of how to obtain experience and continue to make good decisions?
- _____
- _____
- _____

The next scenario addresses that subject we all know so well after having been on the road. What can we learn from this one?

"Getting Home"

It was the end of the week, and the pilot had already put in a full day's flying. He was hitching a ride in a company plane to his home town to visit his girlfriend this weekend. It was his college homecoming football weekend and they had fifty yard line tickets with old friends.

When he got to the aircraft he was to ride home in, he discovered that there were no extra seats installed. The plane was configured for hauling cargo only. He inquired about an extra seat and was told by operations that none was available. The person in charge for the evening shift indicated that a seat-belt was behind the co-pilots seat and could be attached to the floor of the aircraft. He was sarcastically told to make himself comfortable.

He had not been with this company very long and had never run into this situation before. Unfortunately, the pilots he was to ride with had a reputation for flying an aerobatic freighter. He did his best to try to recall the regs regarding whether he needed an actual seat or not, but, being unsure, decided it must be okay or the company wouldn't let him do it. Besides, he really wanted to get home, and he sure couldn't afford an airline ticket.

When it came time to depart, the crew took their places and he rigged up a seat-belt arrangement that might have kept him in the vicinity of the aircraft if anything were to happen. There was no means for tightening the straps.

Though he was not typed in the aircraft in which he was riding, he did note some apparent peculiarities in this crews' procedures. Being a "lower" pilot, he did not dare say anything

or ask any questions. He wouldn't want them to think he didn't know why they were doing (or not doing) certain things. They did mention that maybe they should keep the shiny side up tonight since there was an "outsider" on board.

They finally arrived at their destination and, of course, the flying pilot had to give him a show with his 250 knot approach and short field landing technique. The uncomfortable no seat pilot thought, "Maybe he thought he impressed me, but just wait, I'll show him!"

Discussion

1. In assessing risk, give one example in each of the following areas:

- a. Knowledge: _____
- b. Physical: _____
- c. Financial: _____
- d. Legal: _____
- e. Egocentric: _____
- f. Sociologic: _____
- g. Benefits vs Risks: _____

2. What is the major decision this pilot had to make?

3. What are the predominant hazardous attitudes showing in his decision making patterns?

4. Identify three explicit examples of hazardous thinking in this example:

- a. _____
- b. _____
- c. _____

5. What are the antidotes for the above hazardous thoughts?

a. _____

b. _____

c. _____

The next two scenarios take a look at pilots who used the antidotes to counter hazardous attitudes as they crept into their thinking. By definition, these flights were considered successful by the pilots, i.e., no damage to persons or property. On the other hand, management may have considered them to be unsuccessful because the mission at hand was not accomplished in a timely manner. As a final review, read the following scenarios and answer the questions. Good luck in all of your aeronautical endeavors and decision making.

"Success - The Virtues of the Checklist"

My co-pilot and I had traveled 1,500 miles last week to pick up one of our jets that had been in for maintenance only to find out when we arrived that it wouldn't be ready for another week. Today, we have been up since five this morning airlining from our home base back to the maintenance site. The paper work is done and I started the pre-flight while my partner checked the weather.

I was mumbling to myself about how difficult it was to get good service any more. We had to practically beg to get them to finish our plane up so we could put it back in service. I climbed into the cockpit to continue the pre-flight and picked up the check-list to avoid sitting on it. It was open to the "pre-flight" page and I happened to glance down. I had not actually been following the written list on the exterior inspection.

What caught my eye was "Tow-bar.....Stowed". The thought went through my mind, that "no, it wouldn't happen to me." It was at that point I thought "well, yes it could." So, I climbed back out of the airplane and looked at the nose wheel. Removing the tow-bar I thought how fortunate I was to have remembered what I had learned in a course on pilot judgment.

Maybe someone else would have noticed, but I had taken responsibility for the pre-flight check. Had that bar remained intact while I attempted to taxi, it certainly would have damaged the aircraft and/or resulted in a taxi accident. No doubt there would also have been some damage to me from my boss!

Discussion

1. What potentially hazardous attitude is exhibited by this pilot?
2. What is the antidote for this hazardous attitude?

"Thanks to a Course on Decision Making"

I'd been driving Aztec's and Cessna 310's most of the time on my short hop from CMH to LUK. This particular night, though, I was in my old "boat," a different twin. It had already been a hard month and once again I was backed up against duty and flight time limits. I was scheduled to depart (as usual) at 9 PM local

The weather was as bad, if not worse than it had been when I came in from Ft. Wayne on my earlier leg. The weather was at minimums everywhere, moderate to severe ice (that's for sure) and my alternate would have to be St. Louis both going down and coming back.

Even though I had only been at the night-freight scene for about nine months, I felt just as crusty as the rest of the guys. It seemed to be a particularly hard winter, both on us and on the equipment. I was glad to have an airplane with an operable heater tonight. (I did my best not to complain, even though I'd spent two weeks of nights flying an aircraft with a heater that worked more or less -- mostly less.)

Well, business as usual. I would pick up my cargo across the field and be on my way in to the cold, slimy, muck. It was just a short hop, about two hours total time until I should be back and on my way home. That is of course, if there are no "emergency" flights that need to be dispatched when I get back. As much as I needed the extra money, I even silently hoped that tonight I would not be needed after I got back.

The current weather was still extremely dismal. I gathered my non-speaking cargo and was on the run. I noticed the batteries charging on run-up and couldn't help but remember a few other Senecas I had flown with low batteries behaving in the same manner. I briefly (very briefly) considered not departing, but I knew we did not have another aircraft available as a replacement. So, I checked the gauges, determined that everything looked all right as long as the RPM's were up, and I taxied out.

As in all of aviation, there is a pecking order, and that holds true for dispatching of the aircraft involved in freight operations. I (being the slightly competitive type) smiled as I received my clearance before my little Learjet friends who are going to beat me no matter, but every little bit helps. I prided myself on my times, fuel-burn and ability to find ways to get there, even when the odds seemed against me. I guess this comes with the territory.

I realized quickly on climb-out there would be no hours of boredom tonight. The wings nearly doubled in width as the freezing rain/slush (unforecast and not reported) found their home on my bird. "Oh, boy" which was my usual comment when I'm not real thrilled with what I see. I passed through the freezing precipitation on to the just plain old, moderate, mixed, icing in clouds (which were everywhere). The autopilot on this aircraft

was tired, but I predominately fly myself anyway. I was taking advantage of the flight director which seemed to be somewhat sluggish.

So much for the usual 40-minute trip. Along with everything else, the winds aloft forecast was accurate (thanks anyway) and I had 35 knots on the nose. Oh well, at least I'd get back home quick.

What I wasn't counting on was the next event. After flying the same routes for many months, I had come to expect certain things. I was handed-off from CMH departure, to DAY approach, just as expected. Although it is busy as usual at that time of night, the controllers recognize my voice; one they hear routinely and, I've been told, distinctive over the radio. I gave my friend on DAY approach one of my usual greetings and continued trying to figure out why the flight director and VOR receivers seemed to be a little flaky.

I received no response, so I tried DAY again. I glanced at the DME to see if maybe I was still out a ways and noticed it was not indicating. I also noticed the cockpit lights seemed to have dimmed. With no reply from DAY, I returned to CMH approach and relayed that I could not contact DAY. I could hear another transmission, but it was not for me. At this time, I was approximately half-way to my destination, LUK. The icing was increasing from moderate to severe and I was acutely aware of the chunks slinging off of the props and beating on the poor nose of the airplane.

I was monitoring both DAY and CMH and heard DAY call me and ask me to ident if I was receiving. I idented, and also attempted transmitting, but soon realized that I was not being heard. I scanned all of the gauges, especially the electrical. The draw was quite high with all of the equipment on, but the indications were normal. So much for gauges. While I had already set 7600 in the transponder, and watched as both VOR receivers came up with flags. I had already turned off the flaky flight director and continued to turn off everything electrical that I didn't need. I had a clue as to what was going on and it was another "Oh boy."

The emergency checklist on my lap was evaluated and checked. I had not had a complete electrical failure, but I was sure planning on it. Now, where to go. It was as if the controller had read my mind. He came up and gave me the option to continue to LUK or to ident if I wanted to return to CMH. I almost pushed my finger through the transponder. I knew how bad it was at CMH but it could be and had been reported worse at LUK. Besides, at least I'd have a tail wind going home.

A few thoughts passed through my mind as I negotiated that 180 degree turn back. First, my cargo was going to be late. Secondly, I'm really going to hear it from the guys. They probably would have at least gone on. Thirdly, I felt I knew the

airplanes' systems fairly well and predicted I had limited electrical power remaining. This thought immediately put the other two out of my mind for the time being. The only other thought I had at this time was how I used to put so much emphasis on what the others would say or think. I used to worry about losing my job by making "dumb" mistakes. CMH was at minimums when I left and I needed to focus my attention on the tasks at hand. I had been taught how to curb hazardous thought patterns such as "I'll show them".

I had the electrical load down to minimum. I won't go into trade secrets, but I really mean down to minimum. I did my best to control the use of the prop heat as well, but the vibrations of the props loaded with ice brought on more "Oh boy's" than did the prospect of the approach I was about to make. I had about 15 minutes before finding out just what I would have to work with. Up until now, I needle, ball and airspeeded it with radar vectors from the controller. He had played the game of 20 questions to determine the condition of the aircraft. (You know, they never asked questions on the condition of the pilot). He knew that I wasn't thrilled with the condition of the navigation and electrical system.

At this particular time of night, Port Columbus is a very busy airport. Dozens of aircraft converge there to swap cargo (and a few stories) and then they are on their way. I would be arriving right in the middle of all of this. As I was coming back in, I heard one of my buddies who flies an MU-2 ask the controller if he could be of assistance, and if so, he would be standing by. I made a mental note to thank him later, but I couldn't think of much he could do. Hold one of my flashlights, maybe?

I went back over the emergency checklist, which was thorough, but not helpful. I ran through my mind all of the "what-ifs" I could think of and the decisions and actions I could take. By the time I was given a descent, I felt I was ready for whatever was next. I fully expected to lose whatever battery power was still there. With my trusty little flashlight slung around my neck ready to be placed firmly between my teeth, I muttered just a few more "Oh boy's."

When it came time to fly the approach, I turned on one nav receiver and just hoped there was enough juice for it to operate for another five minutes. I felt fortunate that I was coming into an airport that I knew so well and was familiar with the approaches. At this point, any other additional factors to deal with may have overloaded my "Oh boy" capacity. Somewhere in the bowels of those battery cells, enough juice poured out to afford me the luxury of flying the ILS localizer with some help from an intermittent glideslope. Since the gear was electric, I used the emergency, free-fall gear extension.

I continued the approach with a full complement of ice, and a 17 knot crosswind component, down to what the tower was calling

200 feet and RVR of 1800. I wasn't going to admit it was less. Just as the wheels touched the snow and ice covered surface of RWY 10R, the aircraft went dark. I kept my eyes on those friendly white lights and looked to the tower for light gun signals. It was futile. From where I was, I could not see the tower, nor, I surmised, could they see me.

I taxied slowly to the ramp knowing I could not be seen. I parked in a remote corner and as I climbed out into the freezing drizzle, one of the Learjet pilots came over saying the tower wondered if I was on the ground. I asked to use his radio and called Ground Control. Besides my thanks for all of their assistance, all I could say was "Oh boy!"

Upon reviewing the whole flight, I silently thanked the individuals who had spent some time with me discussing how pilots make decisions and how we assess the risks involved in our occupation. Maybe my management did not consider that particular flight a success, but I did. I brought the aircraft back with no damage to person or property and hopefully without incurring additional risk to anyone involved. The fact that no maintenance was available at LUK played a small part in my justification to return to CMH. The more I learned about the mistakes that pilots make without mechanical difficulty involved, the more determined I was to manage the aircraft systems to the best of my decision making ability.

Discussion

1. What hazardous attitudes does the pilot show in this scenario?

2. What is one aspect of exploring alternatives using the "what-if" method that is different when in the situation than when simulating it on the ground?

3. How do you feel an awareness of the hazardous attitudes affects a pilots actual decision making practice?

4. List three specific examples of hazardous attitudes in this scenario:

a. _____

b. _____

c. _____

5. List the antidotes to the above hazardous thoughts:

a. _____

b. _____

c. _____