FAA Aviation news

NOVEMBER/DECEMBER 2001

AVIATION SAFETY FROM COVER TO COVER

U.S. Department of Transportation

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FAA Aviation News

NOVEMBER/DECEMBER 2001

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FEATURES

DEPARTMENTS

FRONT COVER: Looking under your tree for this Pitts Special? (Thomas C. Shapiro photo)

BACK COVER: If Santa can't bring the Pitts, take this one--minus the ice, of course. (H. Dean Chamberlain photo)

A Thought

by H. Dean Chamberlain

By the time this issue of *FAA Aviation News* is published, it will be weeks since the September 11 attacks on the World Trade Center and the Pentagon. Hopefully, no more attacks have occurred between the time this is being written and your receipt of this issue.

All that can be said has been said of the attacks and the aftereffects of those attacks. As the FAA's aviation safety publication, the magazine's concern now is the safety impact of the recent events.

We have all heard of the financial problems the aviation industry is experiencing. FAA is well aware of those problems, so is the magazine staff since it is part of Flight Standards Service's General Aviation and Commercial Division. In the days and weeks following the September 11 grounding of the civil aviation fleet and the measured reinstatement of various segments of the fleet, a sampling of the telephone calls to FAA and some of the comments on the Internet has shown both confusion (aided by some confusion within both the highest levels of government and FAA) and frustration resulting from both the uncertainty of the events and the grounding of the civil fleet.

As many knowledgeable media, government, and industry leaders have said recently, it will take time for the public's confidence in aviation to be rebuilt. A good illustration of that is a statement one person recently made

FAA Headquarters
Washington, DC

to me about only two or three passengers flying on one 50 passenger commercial jet.

General aviation (GA) has its own unique challenges. First, all GA flights were grounded. Then, as the national security situation stabilized somewhat, certain segments of the GA community were allowed to fly. A Notice to Airman (NOTAM) authorized limited operations by permitting GA flights on instrument flight plans. Several days later, another NOTAM expanded the types of GA operations, which could fly as well as defining areas that GA flights could not enter.

Throughout this period, GA pilots, operators, and various industry groups kept in constant contact with FAA and other government organizations and elected officials.

As the primary organization within FAA dedicated to the GA community, the General Aviation and Commercial Division was well aware of the challenges and concerns facing the GA community. From corporate operators to glider operators to ultralight vehicle operators to flight training programs to helicopter operators to ag operators, the Division was told of the problems each segment is experiencing.

However, throughout this period, national security issues took precedence as the nation prepares for war. The risks are real, as the September 11 air attacks have shown. As the investigative services (FBI and others) have documented, the people who committed the attacks on the 11th were trained pilots, many with a GA background in the United States. The current question now is how many others were trained, and do they plan any other attacks using aircraft.

With this concern in mind, the National Security Council decided to restrict the use of aircraft. Unfortunately, GA was caught in the middle. At issue was the military's desire to know were each flight was headed so it would then know when there was a deviation in the aircraft's route of flight. Military aircraft would investigate any deviation. If the aircraft failed to respond to the investigating aircraft, the aircraft would have been shot down. Military pilots showed remarkable restraint on the first day limited GA flights were allowed. They "forced down" a number of VFR aircraft that had taken to the air by mistake, and everyone landed safely.

The latest NOTAM available as this article is being written allows certain types of GA VFR operations. Flight training is one of six operations not currently permitted. For many operators, including major universities, this restriction poses severe financial problems. All of which leads into the reason for this article.

As FAA, its various safety programs, and this magazine have been saying for years, aviation safety begins with the pilot or flight crew flying that aircraft and the mechanic who works on that aircraft and the person who makes that aircraft or aviation product. Everyone needs to remember in times of stress, and this is a time of major stress for many, flight safety may be compromised.

From operators in financial problems to aircraft owners laid off from work to pilots and others angry at the government and especially the FAA for the grounding of the GA fleet to the fear of the travelling public to fly, there is a real risk that the emotions of the day, the fear of war, the uncertainty that terrorism poses, and the need to save or conserve money can all impact safety. Whether a mechanic fails to properly complete a repair or a pilot fails to follow correct procedures, the result could be an accident. We also need to remember the stress air traffic controllers are experiencing as they balance the needs of flight operations with that of national security requirements each day.

Now is the time for everyone to take a deep breath and think about safety. The risks are real. Stress, fear, and anger are all natural reactions to the recent past. The key is recognizing such reactions and working through them to try to keep them out of the cockpit and off the hangar or shop floor.

The first step is recognizing that safety may be compromised. Then the next step is trying to find a solution. One may be to discuss the situation with someone, seek financial or emotional counseling, double check your work or flight plan, or just take an extra amount of time to do something.

If you own an aircraft, and you have not had time to fly it, you need to review your operating manual or aircraft manual on proper procedures for keeping it airworthy. If money is an issue, any deferred maintenance should be discussed with your mechanic to ensure if does not pose a flight risk. A review of the appropriate regulations should be done to ensure compliance with them while flying with inoperative instruments or equipment. Required placards and required record entries need to be done as outlined in the regulations.

I hope this article is a reminder of the special risks everyone in aviation faces during this period of national uncertainty. I hope we don't add to the current problems by having an accident or incident. Let us all work extra hard to remain safe during this period. Remember that safety begins with each and everyone one of us. Now if I can only truck my aircraft outside the current 25 mile restriction around Washington DC. Let's all be safe.

Investigators Are on the Scene

by Bill O'Brien

MarioToscano photo

The FAA Accident Investigation team. Left to right: T.R. Proven, Lyle Streeter, Victoria Anderson, Tony James, and Bud Donner. Away on assignment, and not in the photo, Eric West and Duncan Monaco.

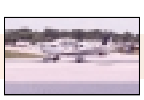
Ironically, this article was given to the magazine on September 10, 2001—the day before the world turned upside down. Within minutes of the reported attacks, these same people Bill wrote about were on their way to New York, Pennsylvania, and Virginia—the Pentagon is less than three miles from FAA HQ. Because they are ongoing criminal investigations, no information is provided on these attacks.—Editor

Many eyewitnesses of a transport category aircraft crash report that the actual impact and break up of the aircraft seems to happen in slow motion. At the first nanosecond of initial contact just small bits and pieces of aluminum are torn off. Then larger pieces of skin are ripped off in ever increasing numbers as the aircraft exchanges momentum for self-destruction.

As the aircraft burrows through the earth, it hits rocks, smashes trees, and kicks up huge clouds of dirt as a once proud aircraft enters its death throes. As it plows onward, the twisting sheet metal and bulkheads scream in agony as G forces increase exponentially. When the aircraft's design limits are finally exceeded, its wings separate from the fuselage, electrical systems die in a shower of sparks, engines are ripped off, fire shoots from torn fuel tanks, and some or all of the people on board die.

The aircraft marks its own gravesite with huge chucks of airframe, wing, and tail interspersed with smoky localized fires. Spreading outward from its final resting-place is a cluttered, blacken, arrowhead shaped debris trail that dutifully records in the earth the aircraft's last 20 seconds or so of flight. Depending on the aircraft's size, speed, and angle of impact the debris trail can be a 1/2 mile or longer in length and a couple of football fields wide.

Later the accident site is backlit with the red and amber flashing lights



of the fire and rescue equipment. With this image of the disaster in the background, the grim faced local newscaster usually ends the 30 second news spot from the disaster scene with the words: "NTSB and FAA Investigators are on the scene."

For those of us who make a living in aviation, those words, "NTSB and FAA investigators are on the scene," are somehow a comfort. Even the raw edge of the flying public's fears is softened because the public, like us, have come to understand that these investigators will find the cause of the accident and the FAA and the aviation industry will take measures to prevent a similar accident from happening.

But have you ever wondered why there are two Federal investigation teams, why not just one? The reason is both the NTSB and the FAA have difference areas of responsibilities at the accident site. The NTSB has only two areas of responsibilities. They have to determine probable cause and make safety recommendations. While the FAA assists the NTSB investigator to find the probable cause, the FAA investigator is also there to see if the FAA was at fault or deficient in the performance of its assigned responsibilities.

The nine areas of responsibility the FAA investigator must examine are:

1. Performance of FAA's facilities or functions
2. Performance on non-FAA owned and operated ATC facilities and Navaids
3. Airworthiness of FAA-certificated aircraft
4. Competency of FAA-certified airmen, air agencies, or air carriers
5. Adequacy of the Federal aviation regulations
6. Adequacy of the FAA's airport certification safety standards or operations
7. Adequacy of FAA's air carrier and airport security
8. Medical qualification of airmen
9. Violation of the Federal aviation regulations

To do the job, the FAA accident investigator must be an actor and play many roles. One minute the investigator plays the detective on the scene. The next minute, he or she plays the diplomat, the resource manager, and media target. They play all these roles while dressed in an environment (or moon) suit breathing through a face mask, smeared with Noxzema to fool their sense of smell from the impossible to describe, but never forgotten, smell of dried blood mixed with burnt aluminum. When they finish their job, they go back to their desk in Washington, fill out their reports, and wait for the next phone call. A phone call, that in my mind, is a personal invitation to take another walk through hell.

What kind of a background does a person need to do this kind of job in which you must make sense out of chaos? Most of us figured the accident investigators profession demands rock solid steady individuals, with superior IQs, keen insight, and blessed with iron nerves, strong character, and even stronger stomachs. But is this perception true? Curiosity aroused, I took the opportunity to take a short walk down the hall to the Office of Accident Investigation, whose director is Steven B. Wallace.

Manager Bud Donner:

The FAA Accident Investigation Division is run by Bud Donner, a man about my age (50-something). His other lives, before hiring on to the FAA in 1988, were spent as an Air force pilot, Continental Airlines pilot, an NTSB investigator, and an FAA investigator. I invited myself into his office unannounced, offered a brief introduction, and told him I wanted to do an article on his division. His eyes narrowed even further. I told him I wanted to ask him and his investigators a few questions about their jobs.

Since I do not have the face of an angel, I had to promise that they would see the article first and buy off on it. His argument for this little concession of mine was that he read some of my previous articles, which included references to elephants, gorillas, and dead cats, and he was taking no chances. After my blood dried on the promissory note, I asked my questions and he answered them. First off, I asked the typical bureaucratic questions, and I found out that the Accident Investigation Division had two goals. The first is to provide 100% participation in all domestic accidents investigated by the NTSB. The second goal is to participate in 80% of foreign major accidents. He has to meet these goals with seven investigators. Right now two of the investigator positions are open. Anyone interested on being an investigator can check out the job bid at <http://jobs.faa.gov> on the Internet.

I then segued into my next series of questions by asking Bud what attributes would the perfect investigator have. He surprised me by saying he would look for broad aviation experi-

Mario Toscano photo

Bud Donner

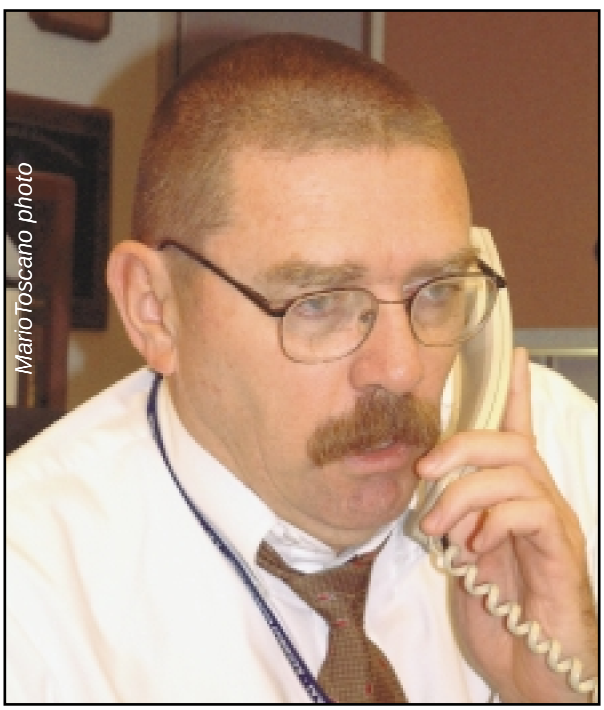
ence in an applicant and the ability to manage FAA resources like air traffic control. The applicant should have the inherent ability to get along with people in high stress situations. This was not my perception of what an investigator should have, and, seeing my bewildered look, he laughed, and said the ideal candidate would be all of the above plus be 30 years of age, have aeronautical engineering degree, an ATP, and A&P with an IA. He added that some time spent as a newscaster and an air traffic controller background would be nice, but, he added, these people are hard to come by.

I next asked Bud what training would he put the new investigator through before he or she went out on his or her own. He rattled off the following: Two accident investigation courses, one airplane, the other rotorcraft; human factors training; cabin safety training; and courses on specific make and model aircraft like Boeing and Airbus. On the job training (OJT) is also important. During breaks in the training the new investigator goes on accidents and shadows a more experienced investigator and learns things about the job that is not written in text books. On the average, new investigators are on their own in about 10 months. This moment of truth happens when their names are put on two rotating accident call-up lists. The first list is for domestic accidents; the other is for the foreign. I then asked Bud what lessons he has learned in this job. Bud came forward in his chair and shared the following lessons that he learned as a manager:

1. No matter how much pressure there is, do not release false or unsubstantiated information.
2. Be careful how you use the English language.
3. Hire the best and train them well because they will represent the FAA and the United States of America.
4. Don't interfere or second-guess the investigator's work.

I then closed by asking him what are the best thing and the worst thing about his job. Bud smiled and said. "The best thing is the people I work with. There is no worst thing. I love my job, but don't tell the higher ups."

Branch Manager Lyle Streeter:



Lyle Streeter

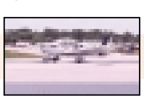
Lyle started his aviation career as a line boy, then spent six years in the Navy. He was an FBO operator with A&P, commercial pilot, multi-engine, instrument, flight instructor ratings. He joined the FAA in 1977 as an air traffic controller and has been an accident investigator since 1989. In response to my question, what was the worst accident? He said any accident in South America that is drug related is bad news. He has been on several. Besides the jungle, which is bad enough, there is the constant threat that the drug dealers want their cargo back. What was your most memorable? Lyle said it had to be the Laudia Air 767 that had a thrust reverser deployment in flight on May 26, 1991. As a result of that investigation a lot of Airworthiness Directives (AD) were issued and engineering changes were made. Lessons learned? I asked. "This is what I learned," he said, "Both the weakest and strongest link in the aviation safety chain is the human being. That is both the cause of accidents and answer to preventing them."

Investigator Bob Henley

Bob has been an investigator for the past seven years. Bob's a tough guy who smiles less than I do—and I don't smile at all—and he is professional down to his toes. I know these things because I worked with him for three years when he was in the Aircraft Maintenance Division. Since I knew him, I decided to get a little personal and ask him what made him apply for the job as an accident investigator. He told me that he did not plan it. During his 39 years in aviation, Bob was in the Air Force as a crew chief, got his A&P mechanic certificate, worked in industry as a government inspector, became an FAA manufacturing inspector, then an FAA airworthiness inspector, and then became an accident investigator. He said there was no plan to be in accident investigation; it was kind of preordained for him decades ago.

In my response to what was the best accident he was on he looked at me kind of funny. Then I clarified it by saying what was the accident that you got the most satisfaction or good that came out of it.

Bob said without a doubt it was the Swiss Air MD-11 accident in September of 1998. The Canadians have not issued the probable cause yet, but over 100 Airworthiness Directives on wiring came out because of that accident. The AD's should save some lives. Since Bob is retiring, I asked him what would he share with mechanics in lessons learned as an accident investigator. Bob simply said, "Make sure that you always know what you are doing, and do it in a precise and professional way."



MarioToscano photo

Victoria Anderson

Investigator Victoria Anderson:

Vicky is a cabin safety specialist whose aviation career began working as a flight attendant at Braniff International Airlines. She later taught in Braniff's training department. She joined the FAA at the Dulles FSDO as a cabin safety inspector in 1990. For the past eight years she has been an accident investigator.

I asked her what was the worst accident she worked. Her eyes looked away and then back to mine and said without the doubt it was USAir 427 outside of Pittsburgh. It killed 131 people, and there were over 700 body bags. In response to my question what was her most notable accident, she responded that it was the Air Force 737 that Secretary of Commerce Ronald H. Brown was killed on. Victoria said as a new investigator she got valuable experience sitting on the investigation board and seeing how the military, aircraft, and engine manufacturers did business. She smiled when she told me that she got a little respect from the old timers when she pulled some strings and got a hold of the only FAA expert who was familiar with coastal bending of non-directional beacons and got him to participate in the accident investigation. I asked her what are some of the lessons learned. She said, "Never stop learning. You might need it; anything can happen."

Investigator T.R. Proven:

T.R is an ex-Navy A-4 driver, with 12 type ratings including DC-8 and B 737. T.R. joined the FAA in 1975 and has been a full-time accident investigator for the past three years. I asked what was his worst accident he worked. He said all accidents are the same, but despite being in aviation 40 years they always teach him something new. In reply to my question what was the most notable, he said, "From the notoriety and attention from the press, it was the last one I worked, the Cessna 402B in which the rock singer Aaliyah died." Any words on lessons learned? He looked at me straight on and said, "Every time you are faced with a safety issue and there is no one there but you, take extra time to make the right decision."

Investigator Tony James:

Tony is both a GA and air carrier rated pilot with over 40 years of experience. He is a quiet man, who takes comfort in his own thoughts. He seemed generally surprised that I

T.R. Proven

MarioToscano photos

Tony James

wanted to interview him. My first question to Tony was why did he become an accident investigator? He smiled and simply said, "I like to figure out problems, you know like the TV detective Colombo." Ok, Colombo, what was the worst accident you ever worked? Tony thought for a moment and said from the terms of pressure, the worst accident was the one that killed John F. Kennedy Jr., off Martha's Vineyard.

Everything was made more difficult by the intense media attention. But Tony smiled again and said, but you know we got every piece of that airplane, every piece. We know exactly what caused the accident. I then asked him what was his most unusual accident that he worked. He smiled and said getting myself rescued by helicopter off a glacier near Juneau, Alaska, when the weather closed in. Any lessons learned? I asked. Yes the quiet man replied. "Most of the accidents that I investigated were caused by errors in judgement." Looking at no one in particular, Tony said, "They should have known better."

Investigator Eric West:

Six foot four, A&P mechanic with IA, Private Pilot with instrument rating, crew member on SH2D helicopters in the Navy, and former aviation insurance investigator, Eric has been an Accident Investigator for two years. He told me his worst accident was the A-STAR helicopter accident in the Grand Canyon in August of this year. Besides the location of the accident, he said, "The aircraft burned. It was bad." In response to my question what was his most unusual accident, he said it was the Egypt Air 767. Eric was on the cockpit voice recorder committee. He said it was unusual due to the deep political implications—FBI and State Department participation complete with Arabic translators. The CVR committee work lasted 10 days when the norm is two. "Unbelievable experience," he said shaking his head. Words of wisdom, I asked. Eric smiled and said, "CYA-R!" Before I could translate he said, "Cover Your Areas of Responsibility with research and training."

H. Dean CHamberlain photo

Eric West

Investigator Duncan Monaco:

H. Dean CHamberlain photo

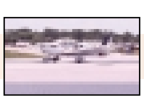
Duncan Monaco

Duncan is the new guy on the block. He has been an investigator for a year and has been out on five accidents, the last three on his own. He has an ATP and is a flight instructor, single and multi-engine with 5,000 hours in his logbook. Duncan joined the FAA in 1990 with our Office of Information Analysis, and then transferred to Accident Investigation in 2000. In response to my questions of what was his worst accident, he said the crash in Denver last year of the *King Air* with members of the University of Oklahoma basketball team on board. The accident was made more personal because he has a son the same age as several of those on board. His best accident, in terms of working with different cultures and nationalities, was the Thai Air B737 accident in March of this year. Duncan said the CAA of Thailand could not have been more helpful. "It was a great experience working across national boundaries trying to make aviation safer." Words of Wisdom, I asked? Do not be influenced by the opinions of others. Until you make up your own mind, learn to listen.

Well, I hope you got a little insight into the people who do the accident investigation for the FAA. Take my word for it, the investigators are not gifted or special. They are just good people doing a tough job.

Now that you know them a little better, I have a favor to ask of you. The next time see a sad-faced newscaster report that NTSB and FAA Investigators are on the accident scene, give a thought to their safety and success in finding the cause of the accident. But more importantly, hope that they won't take home to their families the memories of their walk through hell and that they be granted a good night's sleep.

Bill O'Brien is an Airworthiness Aviation Safety Inspector in FAA's Flight Standards Service. This article also appeared in the Aircraft Maintenance Technology Magazine.



The Human Side of Decision-Making

by Bill Belanger

Mechanical failures account for only a small percentage of aviation accidents. The great majority of accidents can be traced to the pilot as the cause. Some of these are classified as "loss of control," others as "continued VFR flight into IMC," and still others as "buzzing the neighbor's barn." But if you look carefully, virtually every pilot-caused accident can be traced back to a bad decision at some point. For example, a pilot who loses control landing in a crosswind made a decision to attempt that landing. A pilot who flies into IMC made a decision to fly that day, and another decision not to turn back (or failed to make a decision to turn back) when the weather started to go bad. Even the pilot who can't handle a situation for lack of basic flying skills made a decision not to get additional training at some point.

Much of our flying safety is dependent on the quality of the decisions we make. In this article, we'll examine decisions from a very broad perspective. We'll look at the human side of decision making. In particular, we'll examine the human characteristics that lead to bad decisions that are built into all of us. In the process, we'll also examine the officially documented human causes of two major non-aviation accidents, and see how the lessons learned from them can be applied to aviation safety.

There are many human traits that interfere with decision-making. Any pilot who has done any reading on the subject is familiar with "Macho," "Anti-authority," "Invulnerable," "Resigned," "Impulsive," etc. If you look carefully, you'll see that some of these traits, "resigned" and "impulsive," for example, are really opposite extremes of the same mental attitude. Carrying this a little farther, if we look at all the extremes, we get the chart below. This is really just a reorganization of the "Impediments to Decision Making" with a couple more extremes thrown in.

Note that the extremes of each trait are shown in red with green in the middle. As usual, red is used to symbolize danger. Here's an example of how this chart works. It's fairly obvious how an anti-authority attitude can get you into trouble. But what about unquestioning? Well, we've all heard about the problems that arise when the captain makes a mistake and the second in command is too timid to speak up. The resigned pilot may not act to handle an emergency, but the impulsive pilot may cause one. The pilot with an invulnerable attitude may get into trouble by defying common sense, but the fearful pilot may be too timid to do what's necessary to stay out of trouble. The macho pilot may see flying dangerously as a test of his (her?) masculinity, but the delicate pilot may not apply sufficient control input to compensate for an upset. The point is that it is the extremes that are bad and the middle is good.

Random Risks

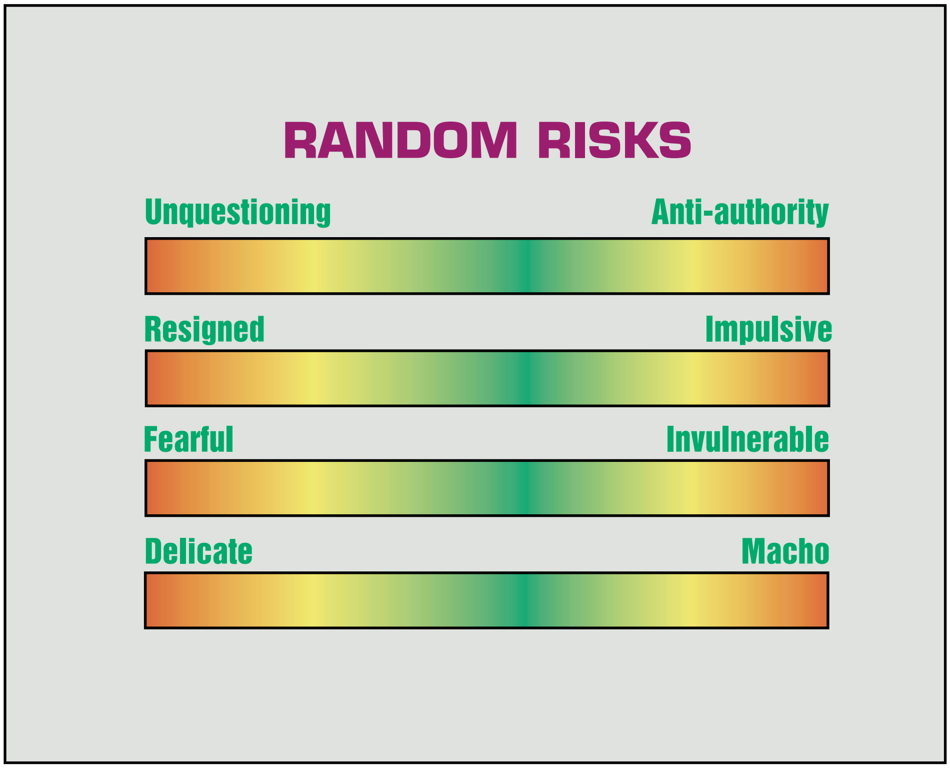
The more often we do something dangerous and get away with it, the less we perceive the danger. Eventually, our mind fools us into thinking there's no danger. A risky activity done many times begins to feel safe. This is a human trait that is in all of us.

Now this perception of safety may be real if there is a real increase in skill with repetition. A novice skier would be a fool to take on the expert slope (like I did once—only once). But as skill is gained, the expert slope can be safely mastered (more or less). In the case where there is a real increase in skill, the perception of increased safety is real.

Now let's look at a situation where the risk is purely random and skill improvement through practice is not a factor. If you'll forgive a bit of math, we can look at the probabilities that determine the likely outcome of this kind of situation. Consider the roll of a standard (not loaded) six-sided die. There is an equal probability of the die landing with any of its six sides up. For this exercise, we'll invent a little game. The object will be not to roll a "six." If you roll a six, you lose. If you don't roll a six by the end of the game, you win. After any roll, if you don't roll a six, you get to roll again, or you can quit the game. For each roll you have a one in six chance of losing. Thus you have a five in six chance of winning on any given roll. Pretty good odds?

But let's see what happens when we roll the die many times. Here, we lose if any roll comes up a "six," so we have to calculate the probability of not losing on many successive rolls. The probability of not losing is five sixths or a little over 83 percent on any given roll. Each time we roll the die, we must multiply the probability of not losing by five sixths. Thus for two rolls, the probability of not losing is about 69 percent (five sixths times five sixths).

For 10 rolls, the probability of not losing is only about sixteen percent (five sixths multiplied by itself ten times). For 20 rolls, the probability of not losing on any of the rolls is only about two and a half percent. In other words the probability of rolling a six on 20 rolls is almost 98 percent. Even though the probability of losing on any given roll of the die is not bad (one in five), when you put a lot of rolls of the die together, it's almost certain you will lose! This is how the casinos stay in business.

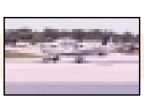


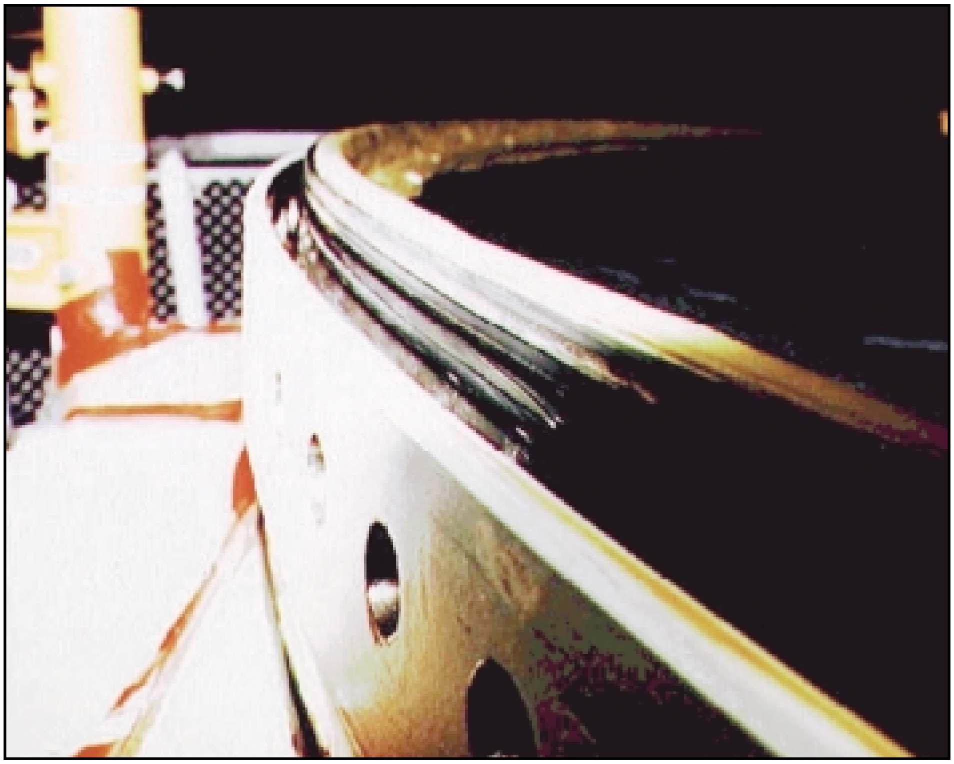
Let's translate this to a flying situation. Suppose a pilot decides it's not really necessary to pre-flight the airplane, check the weather, or some other omission where random chance might come into play. Every time he or she makes a successful flight, it seems to be safer and safer. This is the natural human reaction to this kind of situation. Our mental programming tells us that something we do over and over without incident must be a safe thing to do. We even have a common phrase for the situation. The pilot is being "lulled into a false sense of security."

Icicles on the launch pad show the temperature the morning of the Challenger's launch.

And while each "success" adds to the subjective feeling of security, each repetition actually adds to the probability of, shall we call it, a "non-success?" Our perception of the safety of the situation is exactly opposite what the true risk is doing. In a situation where the risk is random, our natural instincts work against us. When we do something risky over and over, we feel safer with each repetition. We feel safer and safer when there is actually a decreasing chance of success. This is a mental trap that is built into each of us. How many times have you heard someone say, "I've done that (pick a risky activity) over and over and it hasn't hurt me yet." The only way to avoid this trap is to understand it. It takes some clear thinking not to let random chance bait us into that false sense of security.

For a really good example of how





The "O" rings that seal the parts of the solid rocket boosters.

this trap can affect even the best of us, read the report on the Space Shuttle Challenger disaster. Pay particular attention to the rubber "O" rings. They were supposed to be a gas tight seal with no leakage, but after a number of shuttle launches it became obvious that there was some occasional leakage of hot gases between the sections of the solid rocket booster. But the launches went off without a problem.

Soon it became a matter of routine that there would be some leakage. There was greater and greater confidence that the leakage was not a problem as the number of successful launches increased. But this was just a subjective impression based on previous successes. In addition, the "O" rings were not designed to fly in subfreezing temperatures. On that tragic day, the launch temperature was below freezing, but the classic "get-there-itis" came into play. This further eroded the safety margin.

This demonstrates that even the best professional managers can fall prey to the same impediments to decision making that plague every pilot. No one is immune, so every pilot needs to be on guard with every decision to be sure not to fall into one of these traps.

Too Little or Too Much Information

Sometimes decisions become impaired because there is too little information. Sometimes it is because information is not presented in a way that can be understood. And sometimes it is because there is too much information. Let's look at these three situations as they apply to a single accident. A good example of all three of these problems is combined in the accident at Three Mile Island in Pennsylvania. Again, for details the reader is referred to one of the many reports, which has been written on the accident, but stick with the official reports. There's a huge amount of "junk science" out there on this event. I will give only a brief summary here.

The initiating event was a pressure relief valve that was stuck in the "open" position. This caused steam to escape from the reactor system. In the wee hours of the morning, the operators saw that the water level was dropping when the emergency feed water pumps came on automatically. No one knew why the water level had dropped. Looking at the situation and the available readouts on the console, the operators did not have enough information on why the pumps came on. It could have been because of leakage in the reactor system, or the pumps might have been activated by the computer in error. There was not enough information to make a decision.

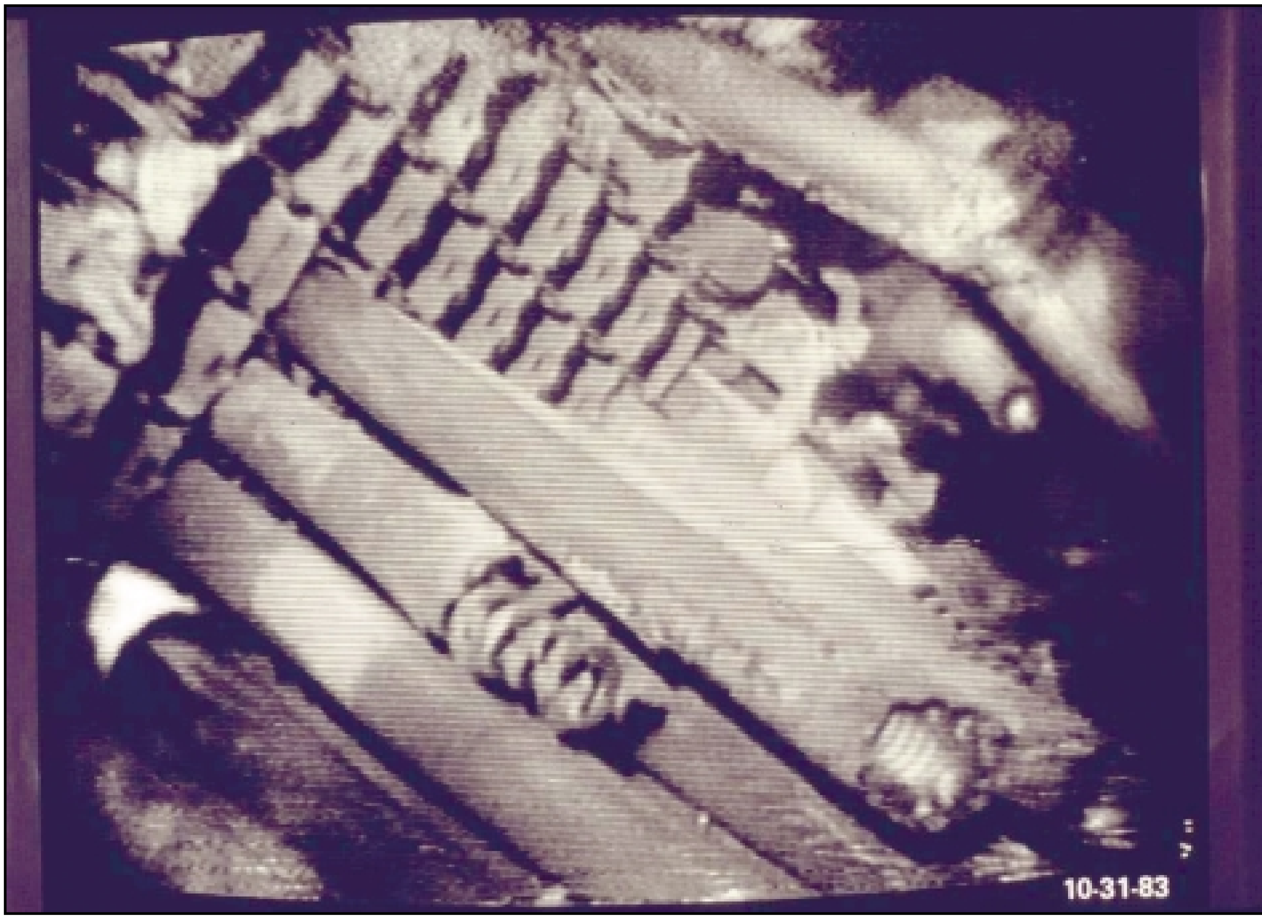
The operators looked at the available information from the console and decided that the pumps had come on in error. They thought that the pressurizer (just a big expansion tank) was filled with water instead of steam as it should be. If the pumps were allowed to remain in operation they might over pressure the reactor vessel, or so the operators thought. It turns out that the pressurizer was actually full of steam, which was leaking out the top through the relief valve. But the information was not presented to the operators in a way that could be readily understood. So the operators shut off the pumps.

Very shortly afterward, the console was alight with warnings. There were so many warning messages that the computer that ran the plant was saturated, not to mention the operators. There was so much information being thrown at them that it was not humanly possible to sift through all of it to see what was really happening. It took many hours to sort things out, and by that time the damage was irreversible.

So the Three Mile Island accident had all three components: too much information, too little information, and information not presented in an understandable manner. The findings of this accident are the basis of much of the improved human factors workspace design in many venues, not just nuclear power plants.

This is another classic in decision making errors that happen because we are human. There is no question the operators were trying to keep the plant under control the best they could. It's just that the information they

This is one of the first video photos of the Three Mile Island's damaged reactor core taken in 1983. The photo was taken with a tiny television camera inserted through one of the control rod drives. You can clearly see the damage where the core melted, though the raster image leaves something to be desired in the quality.



had available was not designed well for people. We need good solid information if we are to make a good decision. It can't be too little or too much, and it has to be presented in a form human beings can understand.

The examples I chose were major events which were not related to routine aviation operations. But they are classics in the sense that they carry lessons on decision making that can be carried over to aviation.

Relating this to aviation, there are many cases where the available information may be too much or too little or just not understandable. Take something as simple as a change in the weather. There may be a forecast of good visibility and a high ceiling for the entire route. Certainly easy enough to understand. Now suppose the ceiling begins to lower and the visibility get sworse than forecast, but still okay for VFR flight.

If this is all the available information, it may not be enough to make a decision. You don't know whether it's a temporary or local change or whether it's a widespread change that will impact the flight. There's not enough information available in the cockpit to know. So what to do?

The first thing is to recognize that something has changed from the original plan. The second is to recognize that there's not enough information available. Once you know there's a decision to be made and not enough information to make it, the course of action becomes clear—get more information or take action to account for what you don't know. For the example, either call Flight Service Station (FSS) or begin to develop options for a precautionary landing, if things get worse. But the important thing is to recognize that a decision needs to be made and that you need more or better information.

Now let's look at the other extreme. You're arriving IFR at a reliever near a very busy airport with a Class B airspace. There's a lot of VFR traffic in the area and also at several other reliever airports. The approach controller is firing off instructions like a well-oiled machine gun. You got the ATIS with number two com about 10 minutes out, and you now have number two com on the CTAF. Local VFR traffic is chattering away on that frequency. Meantime, the approach involves a complicated series of fixes and intersections. You're just about saturated keeping up with the situation.

Suddenly the controller re-routes you for traffic separation. The re-routing is no more complex than your expected approach, but it means writing down a new clearance and thumbing through the approach plates for a different approach. Now what would happen if there was a mechanical problem right at this time? Let's make it a minor problem like a popped breaker on the flaps. Ordinarily it would not cause much of a problem.

Again, the first thing to recognize is

that a decision has to be made—in this case what to do about the flaps. Second is to recognize that you're now overloaded with information. It's time to clear the board. This might mean any one of a number of things depending on the situation. It means at least informing ATC of the problem and tell them what you need to do to handle it. Or if you feel it's a really unmanageable situation, perhaps declaring an emergency (that clears the board really fast). The last thing you'd want to do is to let the extra workload prevent you from handling the decision that has to be made. Remember, fly the airplane first, but making a good decision comes in at a close second.

The Setting

Let's look where this falls into pilot decision making. First, let's get rid of the people with obvious incurable impediments (macho, anti-authority, etc.) We know there's a whole lot of bad decisions in that group. Thank goodness it's all the OTHER people. Now what do we have left? We have a population of pilots who are fully capable of making good decisions, but who sometimes don't. Present any of them with a decision-making problem in a classroom setting (maybe a Safety Seminar) and they will make the right decision every time. But put them in the air and the outcome is occasionally different. So why the difference between the classroom and the airplane?

In a classroom, we tend to think analytically. We are presented with a decision to make. The instructor says "make this decision." So the student applies his or her knowledge and reasoning power and out comes a really good decision.

In the airplane, the setting is different. Instead of a bland classroom, we are surrounded with the sights, sounds, and physical sensations of flight. There is also a strong emotional component. We find flying intensely enjoyable. That's why we put all that time and money into getting the certificate in the first place. Flying tends to load up your senses. The cockpit is not a place to sit back and consider a decision as you would in the classroom. It's almost a left-brain right-brain thing. Analytical thinking is hard to do in the cockpit.

In a conversation with a CFI friend a year or so back, he suggested that perhaps one problem was that "Some of them don't realize they're making a decision!" In other words, the pilot is reacting to a situation, not making a conscious decision on a course of action. The pilot is fully capable of making the decision correctly, but abdicates because he/she doesn't see that this is a situation that requires a decision. If this happens, the decision just doesn't get made!

It's only after you settle down into a decision-making mind-set that you can clearly think through the decision in a logical manner as you would in a classroom setting. Only then can you ask yourself, "Am I acting as if I'm invulnerable? Have I got get-home-itis?" Classroom exercises show that most everyone makes a sound decision when they stop to think about it carefully. Accident statistics show they don't always do as well in the air.

The Decision Points

One solution might be to establish "decision points" during each flight. During each flight the pilot should establish specific decision points, act on them, and recognize situations where another decision point needs to be inserted. There would be seven formally established decision points during every flight. Pilots would stop and think to themselves at each of these points, "I'm going to make a decision now, and my life might depend on getting it right." This would establish the frame of mind you need to counteract those human tendencies that keep us from making the right decision. Here are my suggested decision points:

1. The preflight decision before even going to the airport (weather okay, personal minimums, IM SAFE, etc.)

2. Preflight inspection (Is the airplane okay? Is there any reason not to launch?)

3. Before leaving the airport vicinity (One last check: Weather as forecast? Everything as planned? Everything I might need aboard and accessible?)

4. En route whenever anything is not as expected (time not right at a check point, weather changed, river not where the map says it's supposed to be, engine rough, etc.)

5. Prior to pattern entry as part of the pre-landing checklist or ATIS check (Which runway? Airport safe? Crosswind acceptable?)

6. Prior to landing as part of the GUMP check (Any reason not to put this thing on the ground? Landing is optional as long as you've got an engine and fuel.)

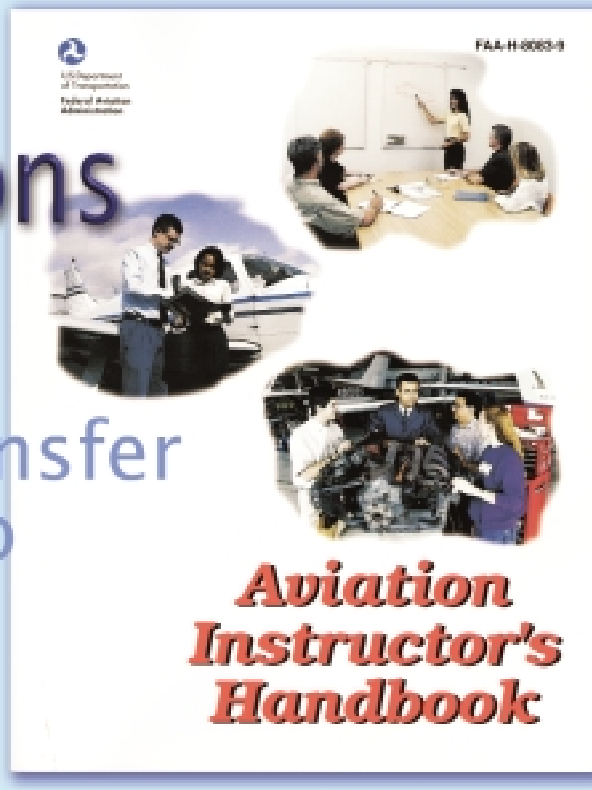
7. Insert a decision point any time anything is not as expected, or anytime there's a temptation to buzz the neighbor's barn.

We're all capable of making good decisions when we think about it. We just occasionally forget we're making a decision. By formally recognizing the points in a flight where a decision needs to be made, we give ourselves a chance to apply what we know about decision making. If we do this, we might be able to put a real dent in those accident statistics where decisions are involved.

What do you think? It's your decision whether or not to make use of this idea. Or perhaps you might decide to come up with a system of your own. Any personal system you devise would be better than failing to make a decision when one is needed.

Bill Belanger is a Health Physicist in the Environmental Protection Agency's Regional Radiation Program and an FAA Aviation Safety Counselor for the Philadelphia FSDO.

Making Connections



Understanding the Transfer of Knowledge is Key to Students' Success

by Gary D. Stevens

My ice-skating skills helped me learn to snow ski, but my walking skills did not necessarily help me learn to ice skate. Some skills transfer to new situations, and some do not. As flight instructors, we are challenged to find those existing skills hiding in our students and transform them into skills that they can use to fly an airplane and that contribute to good flying habits.

The FAA's *Aviation Instructor's Handbook* mentions that students may "be aided by things learned previously...and it is sometimes apparent that previous learning interferes with the current learning track."

Given that transference of knowledge can be "negative" or "positive." Negative transfer of knowledge may hinder the acquisition of new skills, as noted by my walking skills not necessarily helping me learn to ice skate. Likewise, dialing the telephone is not the same as punching numbers into the keypad on a calculator.

On the other hand, positive transfer of knowledge relates to things learned previously that help us to learn a new task, just as my ice skating skills helped me to learn snow skiing. Other skills that may translate directly in other learning include typing on a typewriter keyboard and a computer keyboard and using a steering wheel in a car and a steering wheel in a truck.

Many students come to us with skills that help and hinder their learning to fly an airplane. We can assume many skills, but some may not be in the students' repertoire. For example, when learning to ride a bicycle, we discovered that turning our heads to look behind us caused the bicycle to turn in the same direction. To maintain our track along the road, we learned to force ourselves to hold our hands steady on the handlebars when we looked behind us. We can transfer this skill to an airplane. When we turn our head to look behind us, we don't move the yoke. We can point that same skill out to the students with whom we fly to help them transfer the knowledge and skills to the airplane.

Because we don't know everything about the students with whom we fly, it is helpful to sit down and get to know them before the first flight. This doesn't have to be a long interview, but more of a conversation, so they can get to know us as well. We can discover valuable information from them regarding their desire to fly and what they want to do with their pilot certificate. Some folks know that they want to learn how to fly, but they haven't thought of what to do with their new skill once they have that magical piece of paper in their hands. We can find out where they live, what they do for a living, and what are their other hobbies. This information will benefit us as we teach them to fly, but it will also show students that we are interested in them. Just don't tell them you need this information to stave off problems you think will erupt during their flight training.

The FAA's *Aviation Instructor's Handbook* lists five suggestions for the transfer of knowledge:

1. Plan for transfer of knowledge as a primary objective.
2. Make certain the students understand what has been learned can be applied to other situations.
3. Assure thorough, high-order learning. Over learning may even be appropriate.
4. Provide meaningful learning experiences that build the students' confidence in their ability to transfer knowledge.
5. Use instructional material that helps form valid concepts and generalizations.

These suggestions really consist

of common-sense ideas. When planning for transference of knowledge, we listen to the students and watch their actions for skills and knowledge that will help them fly the airplane. By making this a priority, we show them that we care about their learning. We also are making our jobs easier.

When we assure high-order learning, we concentrate on helping them to really understand the intricacies of flying an airplane. Many students seem to understand stalls, yet they are afraid of them. If they truly understand stalls, fear should disappear. When we provide meaningful learning experiences for students, we will help build confidence in their flying ability. Practicing ground-reference maneuvers away from the airport allows them to concentrate on the maneuver. When we tell them that the rectangular course translates directly to the traffic pattern, we are making it meaningful.

Valid concepts come from using realistic means of instruction. Blowing over a strip of paper to show that the deceased pressure over the top of the paper causes it to rise demonstrates a theory right in front of students. Lift is now a valid concept—they can even try it. After the demonstration, we can show the students the camber of the wing to help them understand the theory. All of these suggestions lead to the formation of good habits, which produce safer pilots.

If we confuse that calculator keypad for the telephone keypad, we may be embarrassed, but if we confuse one thing in the cockpit with something else, we risk being more than embarrassed. I have had students who will reduce power when we start the takeoff roll. I ask them to increase power to start the plane rolling, and they pull the throttle toward themselves. I know farm tractor throttles work opposite to the throttle in an airplane. When the students are told to increase power, they respond in a manner that has been familiar to them for years, even if it is wrong in this situation. After they reduce the power, I ask them if they operate farm tractors, and they wonder how I know. I point out what happened and why, and after a few lessons they overcome the previously learned tendency.

This negative transference of knowledge may also be noted in folks who enjoy the hobby of sailing. When operating a sailboat with a tiller or a small motorboat with a handle on the motor, one moves the tiller or the motor opposite to the desired direction of turn. To turn right, one moves the tiller or motor to the left, and vice versa for a turn to the left.

A student of mine, who also was a sailor, would roll left aileron for a left turn and then apply right rudder. This can be quite uncomfortable to the passengers, and it really keeps the ball out of coordination, producing an unsafe situation in the aircraft that could cause a loss of control. Because of his sailing experience, the student did what he thought was correct. The negative transference of knowledge crept into the cockpit again.

There are plenty of positive transfers of knowledge that occur. Think about the *Ercoupe* and its lack of rudder pedals. Students can transition from an automobile to the Ercoupe and not worry about those pesky pedals. Positive transfer also comes from how a pilot manipulates the controls. One student had such a fine touch on the controls that I commented about it. We talked after the lesson, and I discovered he was a heavy equipment operator and routinely operates a 70-foot crane. He said that the airplane was simple compared to what happens if he ham-fists the crane. Many surgeons have the same technique. We need to highlight these positive transfers and mention them to the students as a means of positive reinforcement.

When we help students recognize the positive and negative transfer of knowledge, we are helping them to form good flying habits and become safer pilots. We may even learn something new from them. You never know when you'll have to drive a farm tractor.

Gary D. Stevens is a NAFI Master CFI and this article is reprinted with permission from the January 2001 issue of the NAFI Mentor.

'Tis

This article was written before September 11, 2001. Let us all strive to ensure that the events of that day do not destroy the air transportation that owes its humble beginning to two brothers fulfilling their dream on a cold December morning in 1903. Let's all work to keep their dream alive this holiday period as we remember the victims of September 11th. —Editor

In the field of aviation our past includes two extraordinary brothers who demonstrated that powered, controlled flight was possible. On December 17, 1903, at Kitty Hawk, North Carolina, Wilber and Orville Wright made history. Their first controlled, sustained flight lasted twelve seconds and covered approximately 120 feet in a heavier-than-air craft. That same day these famous brothers made three more flights. Each flight extending the time and distance flown. The last flight of the day carried Wilber 852 feet and lasted 59 seconds. As inventors, builders, and flyers they further developed the "aeroplane," taught men to fly, and opened the era of aviation.

By 1914, airplanes became one of the more valuable tools of World War I. When the war ended in 1918, the U.S. Government found an important peacetime role for aviation, delivering mail. The U.S. Army initiated an experimental mail service program in May 1918. Within months, airmail service became the domain of the U.S. Post Office Department. In 1925 the Air Mail Act

the Season

by Salvatore Scalone

was passed making the carriage of mail by air a private operation under a system of competitive bidding.

Several entrepreneurs started the commercial aviation business in the late 1920's and early 1930's. Daring businessmen like Pan Am's Juan Trippe, United's Walter Varney, and American's Cyrus Smith were able to use these great heavier than air flying machines to carry mail. Later, this business expanded to include cargo and passengers. As the fledgling air carriers grew, it became apparent that aircraft had great potential and could produce enormous revenues, but they also carried substantial risk. After all, these early aircraft were not developed with the technology we have today and were not built or operated with safety as a priority.

The commercial air transportation business has evolved over the years producing aircraft to satisfy customer and business needs. Larger, faster, more reliable, more efficient, economical, and comfortable aircraft continue to be produced by aircraft manufacturers. However, because of the inherent danger, especially in the early aircraft, concerns over safety became an important part of this transportation evolution. Early aircraft were simply not well-constructed and had numerous mechanical failures. Aircraft safety issues actually date back to 1908 when Orville Wright brought the Flyer to Fort Myers, Virginia, and won a military contract for the world's first military aircraft. Later that year his plane experienced a propeller failure and crashed, seriously injuring him and killing his passenger. It was these concerns in the early years of aviation that helped establish the priority of "safety first" as a standard for this industry. People were willing to accept this "new" form of transportation, but wanted assurances that it was safe to fly.

In the United States this on going evolution has created a unique safety-related partnership between the air carriers, manufacturers, and regulatory authorities. It is this partnership that has formed the basis for the rapid advances we have experienced in aircraft design, manufacture, inspection, maintenance, and aircraft operation. Additionally, these advances helped gain the confidence of the government and the general public. In a continuous working relationship these three great forces combined business needs with the latest technology in a framework of safety. This unique and successful partnership has become the envy of the world.

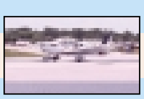
However, occasionally we are reminded that even with the success of building bigger, better, and safer aircraft, these great flying machines still carry risk. Until we are able to manufacture aircraft that are completely risk free, we must continue to rely on the standard we established for ourselves. This standard provides for the protection of life by making safety the single most important priority in our commercial air transportation system—a priority that must not and can not be affected by business cycles or issues of profit or loss.

The United States of America has the largest and safest commercial air transportation system in the world. Additionally, we build and operate some of the largest and safest aircraft for both passenger and cargo transportation. Air transportation has become one of the primary strengths of this country providing numerous services for passengers and cargo and steady employment for millions of Americans. It has also helped build and strengthen the economies of other countries around the world. We discovered this method of transportation, set the pace for its growth, and developed the standard necessary to make it safe and keep it safe. All this we shared with the world.

We have come a long way since that first successful flight at Kitty Hawk. In less than one hundred years what started as an experiment has progressed as an important part of our culture. Today the skies are filled with aircraft leaving and arriving at airports around the world, carrying millions of people and tons of cargo to almost every point on the globe.

During this Holiday season, let's take a moment to thank those individuals who contributed to the growth of our air transportation system. Those hard working men and women who helped build the foundation of the commercial aviation business have given us the tools we need to continue the progress and growth we have enjoyed. They have earned an important place in our history and deserve to be remembered.

Salvatore Scalone is the Supplemental Unapproved Parts (SUP) Coordinator for FAA's Eastern Region.



How Icing Regs Came to Be

by H. Dean Chamberlain

Icing is a rather "hot" topic this time of year. Some might call it a rather cold, boring subject, but regardless of your position, a person called FAA in May with a seemingly simple request. "Where can I find a copy of an old document that still has good information in it?" he asked. He said the title of the document was "Flight Control Hazards and Protection From Hazards."

The topic was icing. The document was dated Nov. 2, 1959.

Now, to some of us, that year doesn't seem that long ago, but finding the document turned into a minor or major project depending upon how one counts the hours involved. But being a curious FAA safety writer always looking for seasonal articles, I discovered a story that makes the effort not only worthwhile in trying to fulfill a request, but as the introductory sentence says, icing is a rather hot topic this time of year.

Although the following article outlines a brief history of the regulatory basis for many current FAA icing regulations, this article does not go into great detail on the current regulations or safe operating procedures in icing conditions. Pilots need to review and operate their aircraft in accordance with their aircraft's pilot operating handbook or flight manual taking into consideration the latest available icing documentation. Each pilot needs to know what was the certification basis for their aircraft as well as the operating rules for both their aircraft and proposed flight to ensure compliance with FAA regulations.

An important warning provided by the FAA's Small Aircraft Directorate's icing expert is that the current icing certification basis for flight into known icing conditions was written before the latest research was done on the dangers of "large droplet" conditions such as freezing rain or freezing drizzle. He said, "Such conditions can cause ice build-up beyond the capabilities of the ice protection system and/or to form ice aft of the ice protected surfaces. Performance and controllability can be seriously degraded. Pilots should learn to recognize such conditions and exit these conditions immediately."

He said FAA is addressing this issue in new aircraft flight manuals and that new aircraft certification rules may result in the future. Appendix 2 of Advisory Circular 23.1419-2A provides good information according to him.

Pilots also must remember not only the certification basis of their aircraft and whether or not the aircraft is certificated for flight into known icing conditions, but they must also remember the operating rule the flight is being operated under, such as 14 Code of Federal Regulations (14CFR) subsections 91.527, 135.227, or 121.341. For example, 14 CFR § 121.341, Equipment for operations in icing conditions, refers to both type of aircraft certification and the date of that certification when detailing the equipment requirements and operating limitations for various operating conditions.

The regulations are important because although FAA says pilots should not take off with frost on their aircraft, do you know when it is permissible to takeoff with frost on an aircraft? See 14 CFR § 135.227(a)(1) for the answer.

So, what does this all have to do with the regulatory basis for icing?

Read on.

Yes, we all know that aviation started with its many pioneers of the 1700's, 1800's, and early 1900's, with their hot air balloons, gliders, and powered aircraft experiments. And yes, we have all read or heard of the dangers of flying too near the sun if your wings consist of feathers and wax. I am not aware of any such mythical warning about flying with ice. I think it is safe to say that after the success of those two men from the great state of Ohio in 1903, the dangers of icing became much more critical to mankind.

In my search, the question became one of how did we get from the Wright Brother's famous December 1903 flight to the requested 1959 icing document? Then, how did we evolve from the 1959 document to today? You may wonder why should we care.

We should care because every time we get on an aircraft in below freezing conditions, we want to know that we will have a safe flight. We want to know that our aircraft is safe to fly in such conditions, or if not, why not, so we will know when to stay on the ground. If the aircraft is not safe to fly in such conditions, we need to know how to recognize those unsafe conditions. So, the issue is one of understanding just how do we certificate aircraft for flight in or near icing conditions. Why is one aircraft approved for flight in known icing conditions and another not approved for such flights? And are there different types of icing conditions and how do they apply to each type of aircraft?

There have been several major air carrier accidents caused by icing or icing related circumstances that have resulted in changes to the icing related regulations. According to the FAA's transport category icing expert, one case involved a USAir F28 aircraft taking off from LaGuardia Airport, NY on March 22, 1992, which crashed into Jamaica Bay while trying to take off in falling snow after having been deiced 30 minutes earlier. The other accident that comes to mind is the commuter accident at Roselawn, Indiana, that identified new safety issues about the use of autopilots in icing conditions, extended holding in icing conditions, the effectiveness of certain types of deicing boots, and the identification of supercooled large droplets associated with drizzle. These accidents and others have changed how aircraft are designed, certificated, flown, or handled on the ground. As a result, FAA and industry have put a lot of resources into new flight crew training and such programs as ground deicing procedures.

In researching this question, I found that regulations, like life, are always changing as technology and experience provide better understanding of the risks and how to reduce those risks. In some cases, it seems that only the post-accident investigation can identify some unique aspect of aircraft icing that the engineers and scientists did not know about or if they know about the situation, pilots did not know about it or how to operate in such conditions.

Looking back into history, it is not hard to imagine the pilots from the World War I era and the later barnstormers of the Roaring '20's flying across the country delivering the first airmail across the plains and the mountains with ice on their wings and their goggles frozen to their faces. In fact, many of the first airmail pilots were killed flying at night and in weather conditions you would not want to walk your dog in, as they blazed a trail across the sky building the nation's aviation future.

As aviation developed in the U.S., the Federal government finally became involved in the certification of pilots and aircraft. In 1928, the Commerce Department established the government's Civil Aviation Agency. The new agency then established rules for both airmen and aircraft. Some of the classic aircraft flying today were certificated under the then Civil Air Regulations, the CAR's, which predated the Federal Aviation Regulations (FAR), which are now called the Code of Federal Regulations or CFR's. (The most recent name change resulted from an internal government conflict between the title of the Federal Acquisition Regulations and the FAA's use of the term FAR.) Today the Federal Acquisition Regulations are still the FAR and the aviation regulations are now Title 14, Aeronautics and Space, of the Code of Federal Regulations (CFR). So much for recent regulatory history.

But, I digress. The CAR's established the first icing-related regulations for all aircraft. Two areas of interest to this article involve the old CAR parts 3 and 4.

The old CAR 3 detailed certification requirements for "general aviation" type airplanes. The modern CFR equivalent section is Part 23, Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes.

The old CAR 4 listed the airworthiness standards for transport category airplanes. Today those transport aircraft requirements are contained in CFR Part 25, Airworthiness Standards: Transport Category Airplanes.

Today, if you want to design a new aircraft you start with the appropriate CFR for the type of aircraft. But at times, in researching the question about the requested document, an interesting situation developed. Not only have the old CAR's been changed or amended over the years, but they were transformed from the CAR's to the FAR's when the Civil Aviation Agency became the Federal Aviation Agency which later became the Federal Aviation Administration. Then you add in some of the special regulations and their name changes and renumbering over the years, and you can begin to see the work involved in finding an old reference.

Add in the computerization of government data as FAA stores more and more data electronically, and the question becomes how to find the database and what is its file name. The good thing about computer files is that they are easier to search than the old microfilmed files. The bad thing is not all of the old records have been converted to a digital format.

If you are ever searching for an FAA historical reference, there are for-

tunately some things that might make your search easier. In many cases, once FAA writes a regulatory requirement, it will often publish an advisory circular (AC) that explains how one may meet the requirement. As noted in AC's, they are one means, but not the only means that may be used to meet the requirement. But more importantly than telling people how they can meet a regulatory requirement is the fact that the AC will normally list appropriate references and technical reports on the topic. Such was the case with AC 25.1419-1 dated 8/18/99, Certification of Transport Category Airplanes For Flight In Icing Conditions. With its usual disclaimer about not being regulatory and not the only means to show compliance with a regulation, the AC lists some great references and some of the latest research data on how to certificate a transport category aircraft for icing conditions. It includes such technical topics as the DOT/FAA/CT-88/8-1, *Aircraft Icing Handbook*, published March 1991 and updated September 1993, and the FAA Technical Report, ADS-4, "Engineering Summary of Airframe Icing Technical Data." The AC also states that some of the references may have become dated because of new research and technology, but the basic information is still valid in many cases.

But getting back to the purpose of this article, the AC also contains an interesting background note. "Prior to the 1953, airplanes were certificated under Part 04 of the CAR. Section 04.5814 required that if deicer boots were installed, then positive means must be provided for the deflation of all wing boots. There were no other references to an airplane ice protection system in Part 04."

Then Part 4b of the CAR was codified on December 31, 1953. The age of detailed airplane icing requirements was born on that date. Requirements for approved systems, new requirements for deicing boots, pilot compartment vision, propeller deicing, induction systems deicing and anti-icing, and heated pitots or equivalent means of preventing airspeed indicating system malfunction because of icing were all incorporated in the CAR after that date. Later amendments to the regulations defined what is considered an icing envelope for determining compliance. The amount of liquid water content, the diameter of droplets, the temperature, and the horizontal and vertical dimensions of the icing cloud were all defined.

As aircraft technology changed and scientific research and yes, accident investigations, provided more insight into what defines icing conditions and unforeseen conditions, the regulations were changed to reflect the latest requirements and research. The AC, however, addresses transport category aircraft.

What about general aviation airplanes? AC 23.1419-2, Certification of Part 23 Airplanes for Flight in Icing Conditions, notes that the old FAA practice of applying Part 25 requirements to Part 23 airplanes is no longer acceptable. It also notes that "prior to 1945, airplanes were certificated under Part 04 of the CAR. Section 04.5814 required that if deicer boots were installed, they would have a positive means of deflation. There were no other references to an ice protection system in Part 04." It also states that when separate regulations were written for normal category airplanes (CAR 03) this reference was carried over into CAR 03 without change as section 03.541. Then in 1949 this section was renumbered as 3.712.

The AC states icing was not addressed in CAR 3 until 1962 when the CAR was revised. Amendment 3-7 that changed the CAR included a requirement "...that information be provided the crew specifying the types of operation and the meteorological conditions to which the airplane is limited by the equipment installed. This section gave icing as a specific example of the meteorological conditions to be delineated. This change required a list of all installed equipment affecting the airplane operations function. This list of equipment later became known as the Kinds of Operation Equipment List (KOEL)."

In 1964, Part 03 of the CAR became Part 23 of the FAR. Later changes to the regulations continued the evolution and development of icing related regulations to the present day. Included in those requirements are definitions as to the types of icing conditions that must be considered in design testing as well as the type of systems required to meet the stated requirements. An important part of any icing certification plan for an aircraft is the type of testing required and the standards for those tests. All of which are outlined in the regulations, advisory circulars, and various FAA and industry accepted handbooks and reports on icing.

So the next time you review your general aviation aircraft manual or pilot operating handbook, and you see a section on icing, whether your aircraft is approved for flight into known icing conditions or not approved for such flight, you now have an idea how that certification and operating limitation were derived. A good example of such an operating requirement is the regulation (14 CFR §23.1323(d)) that applies to many aircraft whether they are approved for flight into known icing conditions or not. The regulation states for certification for instrument flight rules an aircraft must now have a heated pitot tube or equivalent means of preventing a malfunction because of icing.

As you can see, when the ice cometh, regulations have been made to reduce the impact of icing on aircraft, and as we gain more knowledge of icing and its many parameters, the regulations have been changed to reflect that knowledge. However, the ultimate responsibility for flight safety in cold weather and known or forecasted icing conditions is the safe operation by the pilot of the aircraft within the approved operating limitations of the aircraft. A safe flight begins with good planning and ends with the aircraft safely in its chocks and tied down. Like many phases of aviation, icing is a very dynamic subject. Consequently, pilots need to keep informed of the latest icing information. Their safety depends upon it.

Have a safe winter.

Unknown Giants

by Don Dodge

Master Mechanic Frank Bedard holding a photo of his uncle, Jack Berry.

It was a beautiful crisp February morning at the Charleston International Airport when the government van full of inspectors from the Flight Standards District Office pulled up to the old hangar. The parking lot was full, and people dressed in their best were filing through the hangar door. This was an awards banquet, the first for 2001, and the inspectors were there to present the Charles Taylor Award to Frank Bedard. Frank is a mechanic and local legend who worked at the Charleston airport for almost 50 years. As I climbed out of the van and entered the hangar, my thoughts went back to when I first began the process of qualifying Frank for the Charles Taylor Award.

When I first told Frank that he had been nominated for the award, Frank responded in a way that was typical of this quiet, unpretentious mechanic. Frank said, "I don't understand this. I don't deserve any thing—I just did my job." I asked, "How did you get your start in aviation?" Frank looked out the window with care worn eyes. I could see that his mind was crossing over decades of his life. He smiled, then told me the amazing story of his Uncle Jack.

Uncle Jack was a burly, ruddy-faced Irishman, who wore tweed suits with spats and drove up for Sunday dinner at his parent's house in a big Packard. To his family he was Uncle Jack, but to every one else he was Major Jack Berry. After dinner Uncle Jack would sit at the table smoking his briar pipe and telling the adventures of his friends Charles Lindbergh, Jimmy Doolittle, Wiley Post, and Amelia Earhart. Frank said that he grew up on those stories.

Frank casually mentioned that Uncle Jack supervised the laying out of the first airway from New York to San Francisco and built the Cleveland Airport. "Uncle Jack gave me my first job, polishing airplanes at the Cleveland Airport." I stared at Frank with a wide-eyed, open-mouthed expression that betrayed my astonishment. Frank said that if I was interested, he would go up in the attic and find some of his uncle's pictures and share them with me.

The pictures showed Major Berry with aviation giants like Lindbergh, Doolittle, and Amelia Earhart. There were also some newspaper clippings and other memorabilia. Frank said that his Uncle Jack's office walls were

The inscription on this photo reads: To Major Jack Berry, We're ready. We did it too! Best, Bob "Paleface" Hope. Now if we only knew what "it" was.

covered with pictures and awards like these. Frank said, "It broke my heart when I found out that all that aviation history was thrown out after Uncle Jack passed away."

Seeing the photographs and knowing Frank, I was inspired to research this further. Armed with copies of the photos and newspaper clippings that Frank lent me, I began to research local libraries, the Internet, and the FAA aviation library at the Mike Monroney Aeronautical Center. After much research, I was astonished to find only one small paragraph, just a footnote that mentioned Major Berry. The footnote in *Conquest of the Sky, a History of Commercial Aviation,* stated:

"Major Berry was the Cleveland Airport Manager in the early twenties. He was one of the firsts of his breed of airport managers and under his direction the Cleveland Airport was constructed as a two thousand-foot circular all-way airfield paved with cinders."

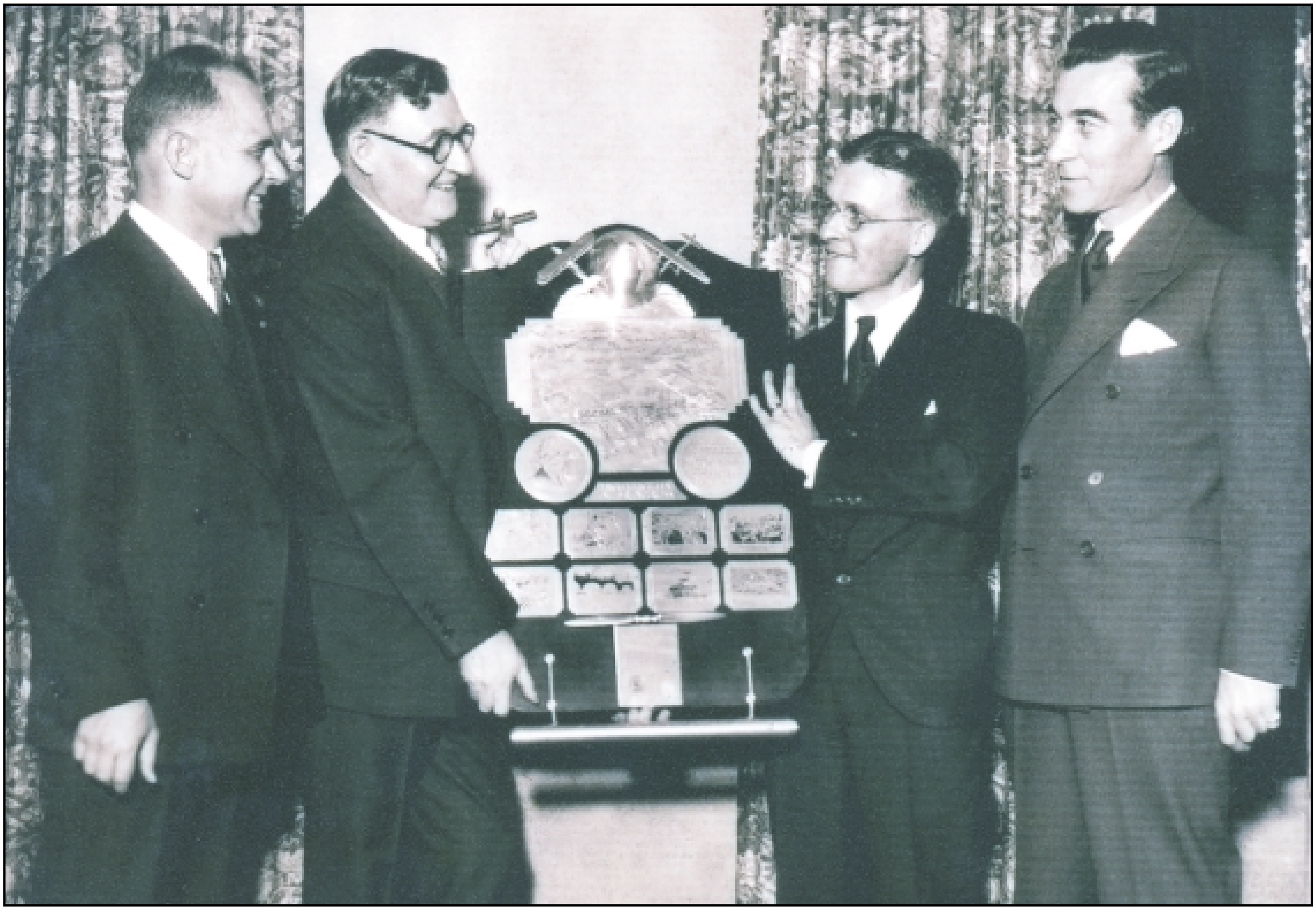
With the aid of the incredibly helpful FAA librarian at the Mike Monroney library, I continued the research. The librarian contacted the Cleveland Public Library and they produced ten newspaper articles from their archives. These newspaper articles spanned the years 1928 to 1955. This treasure trove of information also provided insight into Major Berry's personality. What follows is a brief history of an unknown giant.

Major John "Jack" Berry was a burley, red-haired Irishmen, quick with his fist or a smile. He entered the army at the outbreak of World War I as a private and rose to the rank of major. During WW I he served with the American Expeditionary Force in France as an engineer laying out airfields for the fledgling U.S. Army Air Forces. After the Great War, Major Berry served as the chief engineer of Airway Development for the fledgling U.S. Airmail Service. As chief engineer, Major Berry supervised the building of the first transcontinental air lane from New York to San Francisco. This transcontinental air lane was marked with light beacons, and emergency landing fields were established along its length.

In 1924 Cleveland was strategically located along the newly established air lane. However, Cleveland's airport was inadequate and plans were made to shift the important airmail route to Akron. Bill Hopkins, the City Manager of Cleveland, was faced with his city losing the airmail terminal business. At that time, Major Berry was the national authority on airport construction and Bill Hopkins persuaded the U.S. Postmaster to "loan" Major Berry to the city of Cleveland to supervise its airport construction.

Major Berry overcame all obstacles while constructing Cleveland's airport. Having practically no budget, he improvised; borrowing lights from the county court house and calling here and there to get this and that. The airport had no truck. No problem, Major Berry wore out his own car hauling rocks.

Trees on property adjacent to the airport posed a threat to arriving and



In honor of Major Berry's retirement in 1933 as manager of the Cleveland Airport, he received a plaque embellished with engravings depicting outstanding incidents of his career. From left to right are Major Jimmy Doolittle; Major Berry; Walter Swan, representing the Cleveland Airport Operator's Assoc.; and Colonel Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

departing aircraft. The owner of the property refused to allow them to be removed and even stood guard around them. But one dark night, 27 sticks of dynamite were tamped in around the roots of these trees. The next morning the trees were lying on their sides as though they were rooted out by a hurricane. Local police claimed that the "evil deed" was done by a man who learned about high explosives during the War. No one was arrested, the property owner was furious, but flying was safer.

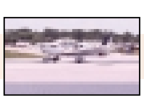
After the airport's completion, Major Berry became Cleveland's first airport manager. As airport manager, he helped promote and organize the Cleveland Air Races. Under his direction the Cleveland Airport became a magnet, drawing aviation giants from around the world.

Major Berry was lauded as an aviation safety pioneer. He applied ground breaking aviation technologies to improve safety. The Cleveland Airport was the first to have a control tower with radio control of air traffic. In 1931 the Cleveland Control Tower established the first en route air traffic control, tracking aircraft traveling between Cleveland and other cities.

In 1940, with war looming on the horizon, the Assistant Secretary to the Department of Commerce appointed Major Berry to the Committee of 20. These men were nationally known aviation leaders and together they planned the development of airports for national defense. Also in 1940, Major Berry is credited with the National Advisory Committee for Aeronautics' (NACA) Engine Test Laboratories being established at the Cleveland Airport. These same NACA laboratories developed the rocket engines that powered the Mercury and Apollo flights years later.

In Major Jack Berry we have a giant in aviation history. He personally knew and influenced the careers of every major pioneering aviator during the golden years of aviation. But amazingly, this great man's name is conspicuously absent from the aviation history books. After carefully study, I came to understand why.

Major Berry was leader, a businessman, who was congenial, but quiet and modest. He did not like the spotlight. He was a man of action and had no use for fanfare. Major Berry preferred to be the man behind the



In the left photo: Major Jack Berry is with Mr. and Mrs. George Putnam (she's better known as Amelia Earhart). On the right photograph Major Berry is with Charles Lindbergh.

curtain. His modesty and aversion to the spotlight was best demonstrated when he stunned the Cleveland city counsel and every one else at City Hall by refusing to allow the city to rename the Cleveland Airport, Berry Field. Nothing like that had ever happened in the memory of the oldsters around the City Hall. When questioned by reporters, Major Berry said, "After all, I just did my job."

The echo of Major Berry's words, "I just did my job," rang through the decades to that special day in February when they were repeated by Major Berry's nephew, Frank Bedard. Frank repeated these very same words when presented with the Charles Taylor Award for 50 years of dedicated service as a mechanic.

Men like Frank Bedard and his uncle, Major Berry, had no idea how great their contribution to aviation safety was. These men worked so hard, often 12 to 15 hours a day, and gave so much of themselves to aviation, that they never had the time to look back and see all the people they helped. They couldn't conceive the impact their presence had on the profession that they loved. They were just too busy doing their job to realize how gigantic their contribution to aviation safety was!

In Frank Bedard's family there is an unbroken legacy of aviation safety spanning more than 85 years. Frank Bedard and his Uncle Jack weren't swashbuckling dare devil pilots. They didn't fly across the Atlantic, win air races, or set new records. Their life's work just made it possible for these things to be done. People like Frank Bedard and Major Berry are rare and stand out in our society. Yet amazingly, the aviation industry seems to produce people like them in abundance. For the love of aviation, they quietly, and with little or no fanfare, go about doing their jobs. There are thousands of these unknown giants in aviation. To find them you only need to look to your local airport. He or she is the one who planned and built the runway, fixed your airplane, gave you your weather briefing, and made it possible for you to fly. Studying the life's work of Frank Bedard and Major Berry has taught me that we stand on the shoulders of unknown giants!

Don Dodge is the Airworthiness Safety Program Manager at the South Carolina FSDO in West Columbia, SC.

Pilot Decision-Making ABC's

Review the following points from Transport Canada's brochure, "Pilot Decision Making for the Recreational Flyer," and enhance your pilot decision making skills.

AIRCRAFT - Is it serviceable, equipped, and suitable for the intended flight?

BEHAVIOUR - Avoid horseplay typical of immature, macho, aggressive, strong-willed pilots who take foolish chances to impress others.

CHECKS - Pre-flight, in-flight, and post-flight. Follow an approved checklist (or flight manual) including checks for fuel and oil quantity. If interrupted, repeat completely. Post-flight - all switches off and remove the key from the magneto switch where installed.

DIVERT - If low fuel becomes a concern. Don't press your luck. You are not invulnerable-divert to nearest suitable landing area and refuel.

ENGINE - Check for fuel, oil, and exhaust leaks before starting. During flight, note changes that warn of impending engine failure, such as dropping oil pressure and rising oil temperature, or indications of carburetor ice through dropping manifold pressure and/or RPM.

FLIGHT PLAN AND FLIGHT SERVICE STATION - Always file a flight plan or flight notification for cross-country flights and use the flight services available before leaving and while flying.

GAS - During flight maintain 45 minutes reserve and keep a timed fuel consumption log [If this is an aircraft you normally use or own. If it is an unfamiliar rental, this may be hard to do.]. On the ground, guard against condensation by keeping tanks full, if practical. Check that the fuel source is correct and free from contamination by water or dirt.

HIGH DENSITY ALTITUDE - Check temperature, altitude, and obstacle clearance using field elevation and aircraft takeoff performance graphs. This is particularly important for short fields in summer. (Don' t expect tired old aircraft to meet performance criteria based on new aircraft.)

ICE - Never takeoff with ice or frost on the wings and avoid flying light aircraft under icing conditions. Watch for carb ice in conditions of high humidity and temperatures between -50ºC and +15ºC. Use full carb heat if carb ice is suspected.

JUDGEMENT - You gain the ability to make judgements from training, practice, and the willingness to learn from the mistakes of others.

KNOWLEDGE - Of aircraft systems, performance, limitations, weather, air traffic system, and airmanship used to think out courses of action, avoiding impulsive decisions.

LOST - Avoid getting lost and running out of fuel by using radio aids and current maps to check position frequently during flight.

MONITORING - Flight and engine instruments, fuel supply, navigation, radio weather, other traffic, runway conditions, such as reduced braking action due to ice or wet grass.

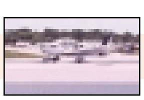
NAVIGATION - This is pre-flight route planning to take advantage of good checkpoints, such as rivers, powerlines, roads, railways, and radio aids. From the map obtain ground track(s), apply variation and note terrain elevation or spot height to determine the minimum safety altitude for the flight.

OUT - Always have a way out when flying into a narrow mountain valley with ascending terrain and/or lowering ceiling and visibility. [Fly as high as practical and to one side]. Avoid being resigned to continuing a flight when conditions appear suspect.

PROFICIENCY - Be proficient and confident on the aircraft type or obtain dual instruction.

QUICK DRAIN - Always open drain and inspect some fuel for water and dirt before flight, ensure drain closes properly. (Rock wings first if airplane is equipped with bladder-type tanks.)

RULES - Don't be anti-authority. Know and follow the essential



flight rules; others depend on you for this.

SUDDENLY - A door opens, a loud bang occurs, or the engine stops! Don't panic—assess the situation and, above all, fly the aircraft. The bang or engine stoppage won't kill you, loss of control will. Think and select the best option available to maintain flight or proceed with a forced landing.

TAKEOFF - Have an emergency plan in mind—never turn back at low altitude.

UNCERTAIN - During flight, if you are uncertain of present [or changing] conditions, [circle or] return to where you are certain and safe; then analyze your options. Use the radio to call for advice [also to announce position, update weather, or make a PIREP]. On the ground, delay departure and wait for better weather. Never proceed unless safety is assured.

VISION - Don't forget to clean windows, and in flight keep a good lookout or constant scan pattern to avoid midair collision.

WEIGHT AND BALANCE - Always load the aircraft within manufacturer's limits. Being outside Center of Gravity limits can get you into trouble.

X-WIND - Know your aircraft crosswind limits, use proper technique, and monitor landing area for danger signs, such as excessive drift or gusts on final approach. (Remember crosswind is a major cause of landing accidents.)

YOU - Know your own capability and limitations. Are you okay for the flight? In flight, are you aware of the "Programmed Mind Phenomena" (a tendency to continue as expected)? Check all incoming information and admit that something could change, requiring alternative action.

ZERO - The accident rate you wish to achieve by making valid decisions.

Editor's Note: This information is from a brochure published by Transport Canada. If you have any comments on this information, it should be sent to:

Transport Canada
Transport Canada Building
Ottawa, Ontario K1A0N8

From "The Curse of Troy"

(Dedicated to the victims and survivors of 9/11/2001)

Human beings suffer.
They torture one another.
They get hurt and get hard.
No poem or play or song
Can fully right a wrong
Inflicted and endured.

History says, Don't hope
On this side of the grave,
But, then, once in a lifetime
The longed for tidal wave
Of justice can rise up
And hope and history rhyme.

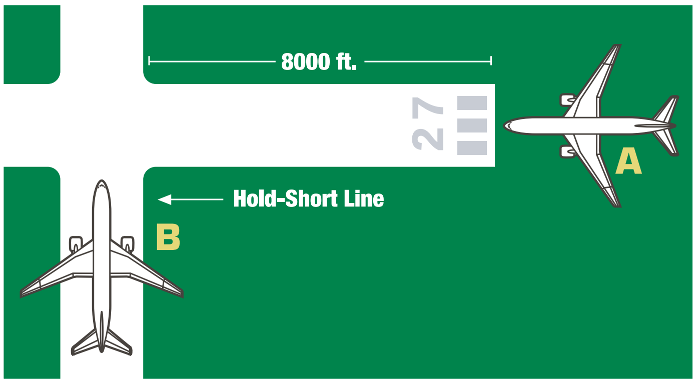
So hope for a great sea-change
On the far side of revenge.
Believe that a farther shore
Is reachable from here.
Believe in miracles
And cures and healing wells.

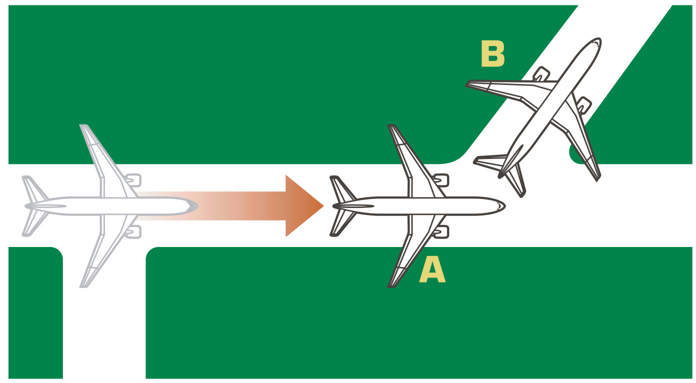
Call miracle self-healing,
The utter self-revealing
Double-take of feeling.
If there's fire on the mountain
And lightning and storm
And a god speaks from the sky.

That means someone is hearing
The outcry and the birth-cry
Of new life at its term.
It means once in a lifetime
That justice can rise up
And hope and history rhyme.

Seamus Heaney
Nobel Laureate in Literature, 1995

RUNWAY SAFETY CORNER





In the September issue of the *FAA Aviation News*, the Runway Safety Corner announced the establishment of four risk categories (A through D) to capture the severity of runway incursions. In this issue we plan to borrow a portion of the FAA Runway Safety Report - Runway Incursion Severity Trends at Towered Airports in the United States (page 7) to better explain why this new rating system is necessary. The following two cases both fit the definition of a runway incursion, yet the potential for an accident is vastly different.

Case 1:

Aircraft A is on approach to Runway 27, an 8,000-foot runway. Aircraft B is taxiing to a parking area on the north side of the airport and has been instructed by air traffic control to "hold short of Runway 27" in anticipation of the arrival of Aircraft A. When Aircraft A is on a quarter-mile final approach, Aircraft B's pilot informs the controller that he has accidentally crossed the hold-short line for Runway 27. Although he is not on the runway, the aircraft's nose is across the hold-short line, usually 175 feet from the runway.

A runway incursion has occurred since separation rules require that a runway be clear of any obstacle before an aircraft can land or take off on the runway. The controller instructs Aircraft A to "go around."

The potential for a collision is low, but by definition a runway incursion has taken place. It would be classified as a Category D incursion. This case exemplifies most frequently reported runway incursions.

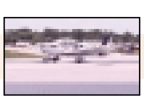
Case 2:

Aircraft A has been cleared to taxi into position and hold on Runway 9 following Aircraft B, which has just landed on the same runway and is rolling out. Aircraft B is instructed to turn left at a taxiway. Aircraft B acknowledges. The controller observes Aircraft B exiting the runway and clears Aircraft A for takeoff. A moment later the controller notices too late that Aircraft B has not fully cleared the runway and, in fact, appears to have come to a complete stop with much of the aircraft still on the runway.

Aircraft A has accelerated to the point it cannot stop and has only the option to fly over the top of Aircraft B.

The potential for a collision is high and typifies the common perception of a runway incursion. This case is more severe, but occurs infrequently, and would be classified as a Category A incursion.

These examples demonstrate why more descriptive runway incursion categorizations were necessary to capture the different margins of safety—or, conversely, varying degrees of severity—associated with each runway incursion. An accurate portrayal of runway incursion trends is essential to successfully find solutions that target prevalent errors and system deficiencies.



• Order of CFI'S

Recently, the topic of a "basic" certificated flight instructor (CFI) came up. The question was asked if everyone had to get the basic single-engine airplane CFI before say the instrument (airplane) instructor certificate.

Name withheld by request

The answer is no. There is no "basic" CFI. Each flight instructor certificate issued by FAA is a "stand alone" certificate. There is no required order to take any CFI test. As long as the applicant meets the applicable eligibility requirements outlined in 14 Code of Federal Regulations Part 61, the applicant can take any of the flight instructor tests in any order.

• Parts Approval Concerns

The Suspected Unapproved Parts (SUP) articles in the July/August 2001 issue of *FAA Aviation News* were very instructional. As an engineer and present restorer of a couple vintage airplanes, I greatly appreciate the ability to make the occasional parts that are no longer available. And, I better understand the logbook entries involved. However, perhaps SUP's may be reduced by a little common sense in the regulations.

What I find incredulous is the fact that my IA cannot make any of these parts without my participation. This would seem to mean that if I send one of my fuselages to a shop far from home with an airframe jig, that they can not even replace a skin without my participation. Is this interpretation correct? Does he really need my participation to replace a short beat up stiffener channel with one he can make?

In addition, I have found that engine push-pull controls and control surface cables are no longer available. I have contacted manufacturers of FAA/PMA engine controls and control cables for certified and experimental aircraft. I'm advised that they can copy or produce a control cable from a manufacturer's drawing and provide functional duplicates to the engine controls. However, the parts would come with no FAA paperwork, because they do not have a PMA for my particular part. They advise to install the part using a 337. My FSDO says that the part would be a counterfeit part.

It would seem that the FAA allows me to have my local tractor supply house make these cables and controls for me as an "owner produced' part and install them with only a logbook entry. But, it does not encourage manufacturers to make aircraft quality parts to provide custom-built parts using the same logbook sign off. We need more common sense.

David Cole
Via Internet

Thank you for your comments. First, regarding your IA, an IA has inspection authorization only. An IA is not authorized to make or manufacture a part for someone else. The same is true of an FAA certificated Airframe and/or Powerplant mechanic or a company without FAA authorization to produce a part. Your participation is vital. However, the same A&P/repair station can make parts if these parts are part of a repair and are made in accordance with approved data—field approval.

Regarding your comment about FAA Form 337, more commonly known as a field approval, your FSDO is correct. Unless the part was manufactured under an approved FAA process, the part would be a counterfeit part without the proper paperwork. Your option is to have the parts produced under your status as the owner of the aircraft as outlined in 14 Code of Federal Regulations (CFR), section 21.303, Replacement and Modification Parts. This is an option that has been available to owners or operator since 1946.

Subpart K-Approval of Materials, Parts, Processes, and Appliances, of 14 CFR Part 21, Certification Procedures for Products and Parts, outlines under what condition parts and replacement parts can be produced.

• Knowledge Review

I enjoyed another issue of *FAA Aviation News* as always. However, in the Aeronautical Knowledge Review section of the July/August issue, I noticed in the ENVIRONMENT (Airspace), Class G: is not depicted on charts (uncontrolled airspace). As having flown and instructed students on charts in Alaska, Class G airspace is depicted on the charts. Many areas of Class G abut Class E and it is depicted.

VFR MINIMUMS IN AIRSPACE CLASSES Section indicates G (over 10,000' MSL and under 2,500' AGL) I believe this should state 1,200' AGL

John Frederick
Via Internet

You are correct. At stated in the Aeronautical Information Manual *(AIM), Class G airspace (uncontrolled) is that portion of the airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace. Therefore, whenever a chart indicates some type of controlled airspace beside Class G airspace, by definition, the limit of the Class G is also shown.*

You are also right about the VFR minimums. The number should have been more than 1,200 feet above the surface and at or above 10,000 feet MSL. Readers should make the necessary correction to the article.

Send letters to H. Dean Chamberlain, FORUM Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

MODEL RECORD HOLDER

Austin Gunder was honored on May 30, 2001, in front of his fellow classmates at the Red Lion High School, Red Lion, Pennsylvania, for attaining the World Cup in model airplane flight. His parents, teachers, friends, dignitaries from the U.S. Government, the Commonwealth of Pennsylvania, and members of the National Aeronautic Association and the Academy of Model Aeronautics were in attendance

During the period of August 14 through 19, 2000, the US Junior Aeroanautique International Free Flight Model Aircraft Team, competed in the Junior World Championship contest held in Seaimovo Usti, Czech Republic. Austin, a 15-year old freshman at the Red Lion High School, was a member of the 6-member U.S. team. Austin was chosen by the Academy of Model Aeronautics (AMA), which has a membership of over 160 thousand to be a participant. This competition is the “Olympics” of the model airplane organization.

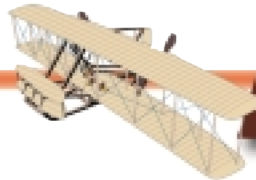
Austin competed in what is known as the “F1J” or the powered free flight event. This event involves flying a model airplane designed and constructed by the contestant, putting a very small engine and propeller onto it, launching it by hand vertically for an exact period of no more than seven seconds to the highest obtainable altitude, then having the engine shut off with the airplane going horizontal at exactly the right time to start its timed free flight glide. This is all done by rigging the small airplane to obtain peak performance, and by testing and practicing again and again to assure that every operation is perfect. The contestant must calculate the most favorable temperature and winds for the 10 minute window in which to fly. Austin achieved World Champion Ranking nine minutes into his flight, beating out 13 other contestants from all over the world who competed in the “F1J” event. Austin, who has been flying model airplanes since he was 5 years old, won the Gold Medal and World Cup for his achievement of his near perfect flight in this competition.

During the Red Lion High School ceremony, the Federal Aviation Administration’s Flight Safety Award was presented by Jim Pool, Harrisburg Flight Standards District Office, for Austin’s commitment to safety as demonstrated by his attention to detail and perseverance to achieve his personal best. As a future certificated airman, his qualities establish a foundation of high personal standards far exceeding the norms and present a clear indicator to his peers, of the attitudes we can hope to instill in all future airmen.

Austin was also presented citations and flags from National and State government officials and a Certificate of Achievement from U.S. Senator Arlen Spector. Donald Koranda, President of the National Aeronautic Association, presented a Certificate of Achievement.

REMINDER TO PILOTS

If you are a general aviation pilot and are unsure of your authorization status, please contact your local Flight Service Station at 1-800-WXBRIEF. VFR pilots must receive a full briefing from their Flight Service Station or DUATS, as well as familiarize themselves with the text of the NOTAM (Notice to Airmen). The FAA appreciates your understanding and patience during this recovery period.



AVNEWS

IDEA HOTLINE

FAA has established a means for interested persons to submit aviation safety ideas and suggestions to the agency as a result of the World Trade Center and Pentagon attacks. Ideas can be submitted to the Office of Research and Acquisition by e-mail at <9-AWA.TELLFAA@faa.gov>. The FAX number is (202) 267-5091. The telephone number is 1-866-289-9673. The telephone number will be staffed from Monday-Friday during normal working hours in Washington DC. The preferred method of submitting ideas and comments is by e-mail and FAX.

ICA CORRECTION

The September 2001 magazine contained an article about aircraft interiors titled “Interior Confusion.” The last page of the article discussed instructions for continued airworthiness (ICA). The article noted at the time of publication ICAW data was not required for FAA field approvals, but that the issue was being reconsidered.

The article was in error. Since the issuance of Flight Standards Handbook Bulletin for Airworthiness (HBAW) 98-18, with an effective date of 10-07-98, ICA have also been required for FAA field approvals. *FAA Aviation News* regrets the error.

AIR MARSHALS WANTED

FAA is hiring Federal Air Marshals (FAM) as part of the Nation’s increased security efforts to protect airline flights. Candidates must be U.S. citizens and must be under 37 years of age. Previous experience in a Federal law enforcement position may exempt candidates from this age requirement. Proof of date of birth will be required. FAM must be eligible for and maintain a TOP SECRET security clearance based upon a favorably adjudicated special background investigation as a condition of employment. FAM are required to maintain firearms certification and to participate in all elements of the FAM physical fitness program.

Those interested in becoming an air marshal should be aware that FAM perform regular and extended travel, both foreign and domestic, for several weeks at a time. They work irregular hours and shifts and are on call 24 hours per day. While deployed, they have limited personal contact with family and limited time off. FAM travel to and spend time in foreign countries that are sometimes politically or economically unstable and may pose a high probability of terrorist or criminal activity against the U.S. Government. In addition, some locations may present health hazards such as poor sanitation and unsafe water. FAM are required to have annual wellness physicals to meet and maintain medical standards.

For detailed information and requirements for the positions, applicants can view the following Internet web site <http://jobs.faa.gov>. Those without computer access can call the FAA’s Aviation Careers Division in Oklahoma City at (405) 954-4657 to request an employment package. The preferred method of contacting the FAA about becoming an air marshal is through the Internet.

Editor's Runway

from the pen of Phyllis-Anne Duncan

INFAMY

September 11, 2001

I now understand the inflection in the voices of my parents and grandparents when they said, "December 7, 1941."

Growing up, I thought of Pearl Harbor as a date in history, one we had to memorize for some test. Later, as I studied history I had an understanding of its significance, but it was still a distant event to me, nine years before I was born, a different time, a different world.

On September 11, 2001 my world, my time changed with events whose infamy, like that of Pearl Harbor, is indisputable.

Like Pearl Harbor the instruments of death on September 11 were aircraft; however, the Japanese aircraft that attacked the U.S. military forces in Hawaii were built for the express purpose of war. The aircraft used against the World Trade Center and the Pentagon were civilian aircraft whose sole purpose was to transport safely people to their jobs or their vacations. That was incredibly obscene to everyone, but especially so to those of us who have aviation as a vocation or avocation.

I love airplanes. I love everything about them—the sleekness, the noise, the smell, the ability to defy gravity, the perspective sitting in or flying them provides. To see them perverted for someone's hideous agenda overwhelmed me and everyone else who came to work that day in FAA headquarters in Washington, DC. As a pilot watching the determined, headlong flight of that aircraft into one tower of the World Trade Center, your hands long for the controls, your feet for the rudders, you silently implore whoever is flying to turn, turn. Then, you realize this was no accident. This was murder, and the worst kind of murder. As if this horror wasn't enough, less than three miles away from FAA headquarters, another aircraft struck the Pentagon. Built in record time at the height of World War II, the Pentagon had never been breached until an otherwise normal Tuesday morning. At FAA the sound of the explosion was faint, but the smoke was obvious, an all too tangible reminder that we work in the capital city of the United States and that that city was now a target.

I don't even ask why because there is no acceptable answer, but I am haunted by the image of terrified passengers and helpless pilots and cabin crew. On September 10 I boarded an aircraft and returned home from vacation—a common activity for millions of people every day. As a person involved with aviation safety, I step on board an airliner knowing that each day those millions of people will reach their destinations safely, and I allow myself a bit of pride at my small role in it. Twenty-four hours later, the world turned upside down.

I have now poignant memories of flying a small airplane through the New York VFR corridor and gazing in awe at the twin towers of the World Trade Center whose tops were above my altitude. To me they were never a symbol of evil so sufficient to provoke this undeserved attack. They were simply places where people worked. Every day on my way to work, I pass the Pentagon, just another government building like mine where people go to serve their country in their individual ways. Neither of those familiar places will be the same. One is gone irrevocably; the other is forever altered—like the people inside them, like those of us who were unwilling witnesses to events which to our children and grandchildren will be history.

I am haunted by what eight pilots must have had going through their minds, by cell phone calls made to loved ones: a passenger knowing he was about to die but telling his wife that he loved her and that he and two other men were going to "do something," one woman whose television commentary I never agreed with who called her husband, the Solicitor General of the United States, and, cool as a cucumber, asked, "What do I tell the pilot?"

Another unanswerable question. What do you tell a pilot who has been trained that the passengers are his or her responsibility to deliver safely? You tell him or her, if you could, YOU did not fail. Someone abrogated your responsibility, and I'm certain you fought it to the very end. You did not give up. It is becoming apparent that passengers on United Airlines Flight 93 didn't give up either, that they did "do something" because that 757 laden with fuel for a cross-continent flight did not reach its target and crashed instead in an unpopulated area of Pennsylvania.

I now understand the meaning of how my parents' and grandparents' voices sounded. I hear their echo now.

December 7, 1941. September 11, 2001.

Two dates separated in time and generation by 60 years, but united in infamy.

U.S. Department
of Transportation

Federal Aviation
Administration

800 Independence Ave., S.W.
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DO NOT DELAY -- CRITICAL TO FLIGHT SAFETY!