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AVIATION SAFETY FROM COVER TO COVER

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Federal Aviation Administration

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FEATURES

DEPARTMENTS

FRONT COVER: Piper Aerostar 601B
BACK COVER: Piper Navajo.

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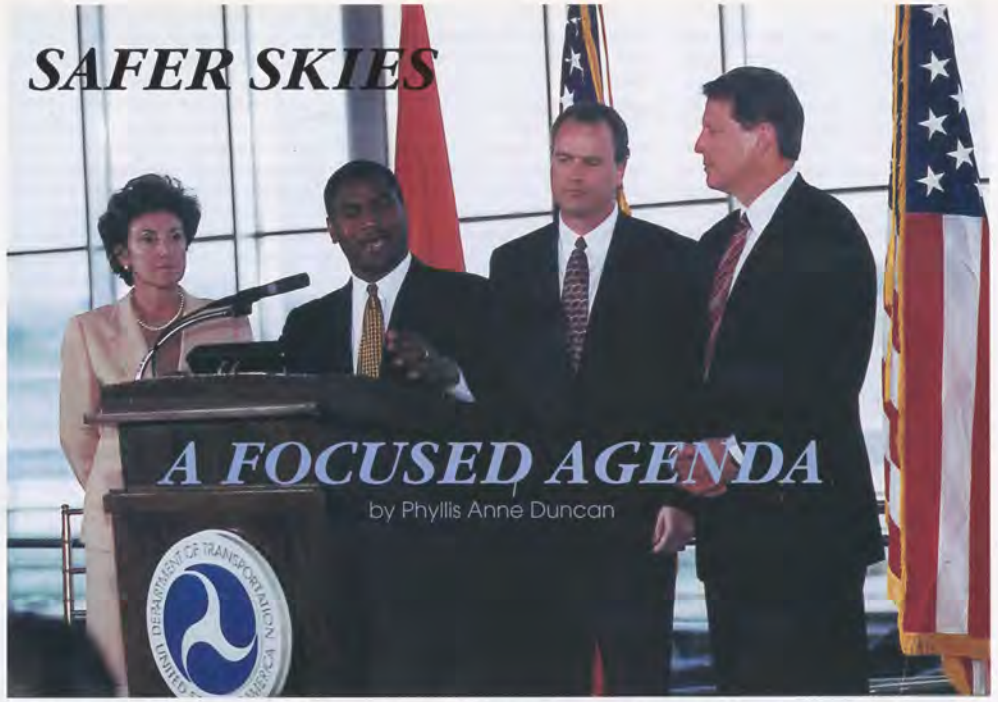


FAA Administrator Jane F. Garvey (left), FAA New England's Mark Liptak (second from right), and Vice President Al Gore (right) look on as Transportation Secretary Rodney E. Slater introduces FAA's new safety agenda. (Photo by Margaret Haldane)

A popular device for assessing the managerial potential of a candidate is an exercise called "The In Box." The candidate is presented with a series of typical items one might find in one's in box the first day of a new job. The task is to prioritize and deal with the items under a time constraint. In manager-assessment centers, this exercise causes the most frustration and lowest scores—and the exercise usually contains only 40 to 50 items.

Imagine, if you will, coming to a new job, a job you have been guaranteed for a five-year period, and discovering your in box has more than 1,000 items. Add to this high public and political expectations, and it could make you long for retirement.

This is exactly the situation which faced FAA Administrator Jane F. Garvey when she started her job last year. Her "in box" consisted of over 1,000 safety recommendations from various sources—the NTSB, the GAO, the IG, and FAA inspectors, to name but a few. Even after having the recommendations reviewed for duplication, the list still numbered 450. Her predecessors and the FAA workforce had worked hard at reviewing and responding to recommendations, implementing them as safety warranted, but when one item left the "in box" as closed, it seemed that others replaced it. The amount of human resources involved in dealing with such a mass of safety suggestions often detracted from the agency's overall safety mission. The dilemma for the new administrator was how to address these safety concerns with limited resources and, at the same time, address the day-to-day work of the FAA.

Very quickly, Garvey focused on four areas: safety, security, ATC modernization, and financing. Then, on April 14 at Washington National Airport, Administrator Garvey, Transportation Secretary Rodney Slater, and Vice President Al Gore announced the focused agenda for the first of these areas, safety.

"Safer Skies—A Focused Agenda" outlines the areas to which FAA resources will be committed with the goal of reducing commercial fatal accidents by 80% over the next decade. The importance of such a goal is evident when you examine the projections for the increase in passengers. U.S. carriers currently carry 600,000,000 passengers a year, but that is a growing number. In just a few years, 1,000,000,000 (one billion) passengers will be met and surpassed. Even in the safest aviation system in the world,

these numbers mean accidents must be reduced even further from the low level we now experience.

Said Vice President Gore, "The steps we are announcing today will make the safest skies in the world even safer...We will significantly reduce the number of plane crashes and save hundreds and hundreds of lives."

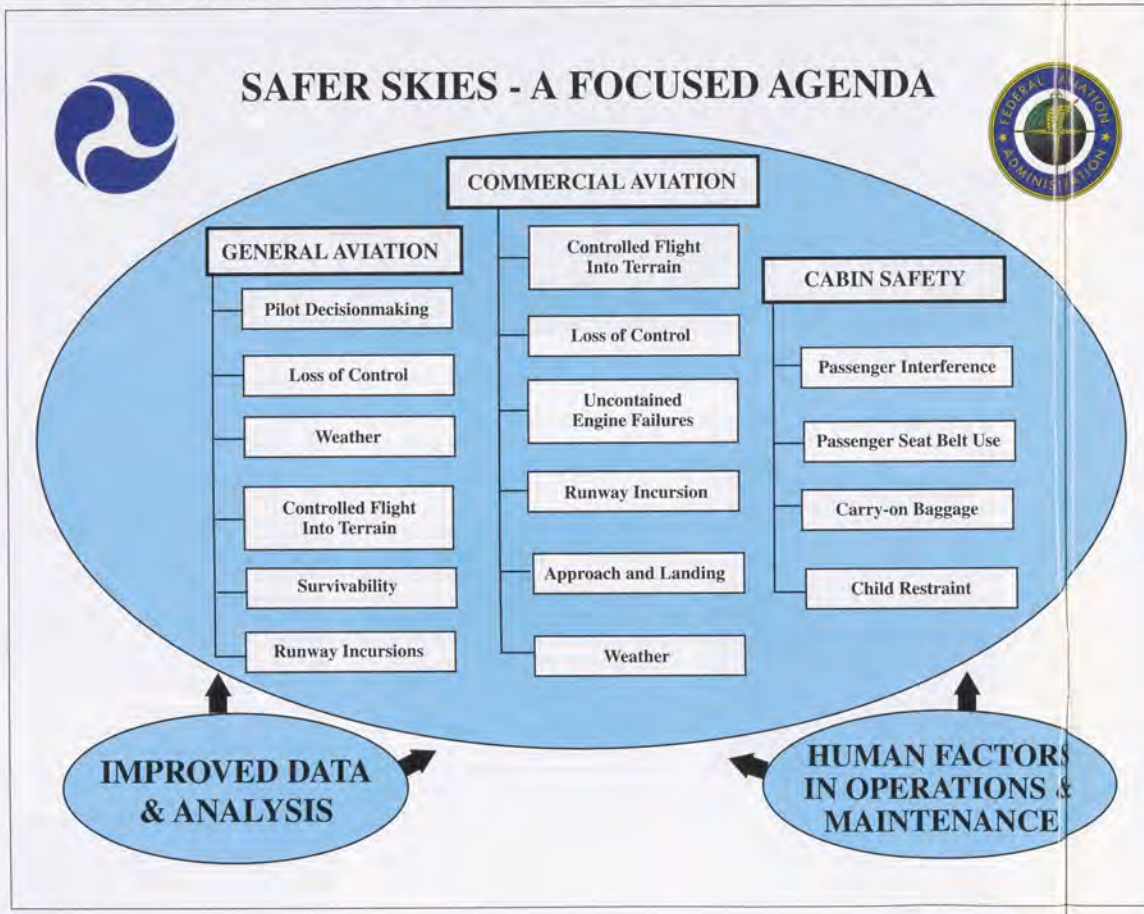
Administrator Garvey described the challenge for the FAA: "How do we raise the bar on aviation safety? How do we target our resources to take the steps that will bring the greatest benefits...Key to this is using newly available tools to analyze the historical data and then using this data to make the right, the informed decisions about what to put on our safety agenda."

Garvey went on to explain to the press, public, and FAA employees, "We have developed a focused, data-driven, and prioritized safety agenda that will get us to...a lower accident rate."

Mutual Goals

The safety goals announced by Garvey, Slater, and Gore tie in with recommendations from two blue-ribbon panels which examined aviation safety and security in the wake of two high-profile air carrier accidents in 1996. The White House Commission on Aviation Safety and Security recommended a five-fold accident reduction, a partnership with NASA and the aviation industry to develop the means to accomplish that reduction, and the development of tools to analyze safety data and then share that information.

The National Civil Aviation Review Commission (NCARC) recommended an 80% reduction in the commercial fatal accident rate within 10 years. NCARC recommended that the FAA and industry prioritize a safety agenda and implement a safety strategic plan, that safety programs become performance based, that a government/industry partnership be developed, and that international activities be strengthened.



The FAA and industry relationship has often been perceived as adversarial—the regulated versus the regulator. But, in fact, FAA and industry enjoy a professional partnership wherein both recognize the need for sharing safety information and mutual input on key aviation safety issues. Through the Aviation Rulemaking Advisory Committee (ARAC) industry has for years had input into the FAA's rulemaking process. An example of this was an FAA/Industry group which developed and implemented the "one level of safety" regulations for commuter airlines. Through petitions for rulemaking, petitions for exemptions, designee programs for pilot examiners, and so on, the FAA/industry partnership is well-established and will continue.

The focused safety agenda was announced in April, and the FAA has been one of the leaders in government in the strategic planning process. (This is a DOT/FAA initiative.)

Administrator Garvey herself saw as the cornerstones for the FAA's highest priority—prevention of accidents—a commitment of resources, a disciplined and focused approach, and partnerships with the aviation community.

Everyone, it seemed, was singing from the same sheet music.

A Focused Approach

Given the wealth of information available to aviation analysts in this information age, any approach to improving aviation safety must be data-driven. The approach must also take into account the history of accidents and incidents. In this manner analysts can identify precursors to accidents and develop an intervention strategy to keep future accidents from occurring. This type of analysis also allows the FAA to identify system improvements required for similar technology. Because information is a constantly changing stream, any "focused agenda" must be a flexible and living document, capable of addressing not just future problems but also immediate needs.

Using a timely safety issue—controlled flight into terrain or CFIT—let's examine how this approach might work. From a study of the history of CFIT accidents, analysts determine the root cause of such accidents, acknowledging that accidents are most often the end result of a chain of occurrences—intervene and break any link in that chain, and no accident occurs. From the identification of root causes, experts can develop appropriate interventions: the development of some new technology, the design of new training, or rulemaking, perhaps all three, or other strategies may be developed.

From these possible interventions, FAA and industry develop a joint safety action plan which is implemented. The key to the success of this type of approach is not to put new strategies in place and walk away but to continually evaluate and develop any follow-up interventions.

Another key to the success of such an approach is cooperation with other government agencies who have a stake (e.g., NASA and DOD), with the aviation industry and other users of the national airspace system, and with international organizations. The latter is important because of the global nature of aviation and the melting away of artificial borders as other countries' airlines fly unimpeded to almost any part of the world.

Safer Skies

The FAA has focused its safety agenda into three specific areas: general aviation, commercial aviation, and cabin safety. Within each area detailed goals and milestones have been developed and specific products identified. In all three areas, not only does the improved process of data analysis figure in but also the human factors involved in operations and maintenance.

Improved Data Analysis

The old computer adage "GIGO"—garbage in, garbage out—is no less relevant today. A data base is only as good as the information contained in it. Such data bases for general aviation are not as well developed as for commercial aviation, so the FAA's safety agenda will direct particular attention to the collection and analysis of general aviation information, accident and incident history, etc.

The FAA already has several systematic, proactive data collection programs proposed or in place:

- *Aviation Safety Action Programs* (ASAP) are intended to provide air carriers with the opportunity to identify and report safety issues to management and the FAA for resolution without fear of punitive legal enforcement action being taken.
- *Global Analysis Information System* (GAIN) is designed to help the aviation industry prevent accidents by making safety information available to aviation professionals worldwide who can use it to improve safety. The privately owned and operated international system would draw from various worldwide aviation information sources.
- *Flight Operations Quality Assurance* (FOQA) would give the FAA access to in-flight recorded data collected by airlines to improve safety in the following areas: flight crew performance; training; air traffic procedures; airport maintenance and design; and aircraft operations and design. Airline participation is voluntary. The FAA, labor, and industry are

working with NASA Ames on research and development.

- *Aviation Safety Reporting System* (ASRS) receives, processes, analyzes, interprets, and reports safety data provided voluntarily and anonymously by pilots, controllers, flight attendants, mechanics and other users of the national airspace system. Reports may not be used for enforcement action by the FAA. The database information may be considered for making systemic safety changes. The system is funded by the FAA and administered by NASA.
- *Safety Performance Analysis System* (SPAS) is a computer-based system designed to help inspectors identify potential safety risks by tracking the performance of operators, aircraft, and personnel.
- *Aircraft Certification Systems Evaluation Program* (ACSEP) monitors aviation safety performance and ensures continued operational safety of aircraft by the FAA providing a systematic and consistent evaluation of compliance with prescribed safety standards, maximizing cooperation with industry; and identifying technological trends that require development of new or revised regulations, policy, guidance, and training.
- *National Aviation Safety Data Analysis Center* (NASDAC) is an automated support capability that enables users to apply powerful state-of-the-art analysis tools to an integrated database containing safety data from multiple sources.

Human Factors

Human factors issues are associated with the majority of accidents, particularly in the area of the human interface with modern technology. Teaching an old "dog" new tricks is especially applicable with today's ever changing technology. This human factor is vital not only for the operation of modern technology—i.e., the likelihood of android pilots is still in the realm of science fiction—but the pilot or mechanic must be properly trained and capable of interpreting correctly the situation or data provided by the technology.

Minimizing the vulnerability of technology is accomplished by engineered redundancy, but the human's vulnerability to error in the face of daunting technology must also be reduced. FAA proposes to accomplish this, again, through appropriate interventions, namely dedicated research and policy development based on that research. Rulemaking will be used when education and policy do not address the problem adequately.

General Aviation

Six areas account for the large majority of general aviation accidents:

1. *Pilot Decision-Making.* This area of concern has been a focus of the FAA's Aviation Safety Program for the past five years. Through the Aviation Safety Program and other services in the FAA, new decision aids and educational training will be developed to enhance aeronautical decision-making skills. The pilot will have more "tools" to help ensure that the right decision is made at the appropriate time. Some of the on-going interventions include:
   - Development of an Aviation Safety Program action plan focusing on decision-making causal factors
   - Production of decision-making educational products like the Aviation Safety Program's Personal Minimums Checklist
   - Expanding dissemination of existing and new materials

   Future plans include educational programs on decision skills in fuel management, a curriculum to aid flight instructors in teaching decision-making, improved training in pilot/controller communications, and including standards for testing decision-making during the practical test for a certificate or rating.
2. *Loss of Control.* The old saw is still fundamental to safety: "Always fly the airplane." Loss of control accidents occur when a pilot does not heed that time-honored advice usually pounded into one by a primary flight instructor. FAA and industry will be developing training aids to train or "re-train" pilots in the methods or skills to avoid or recover from loss of control. Among the ongoing and planned interventions are:
   - New Aviation Safety Program educational seminars, including scenario-based training and stall/spin awareness
   - Enhancement of industry programs such as the Experimental Aircraft Association's (EAA) Flight Advisory and Flight Testing Programs and Aircraft Owner and Pilots Association (AOPA) Project Pilot program
   - Research with industry on the feasibility of the development of stall/spin resistant aircraft
3. *Weather.* We have all read one too many accident reports, "Continued VFR flight into IMC." Weather is probably the biggest cause of general aviation accidents, and the acquisition of an instrument rating has been shown to be one of the best weather accident prevention tool. With a recent change to FAR Part 61, pilots can now obtain an instrument rating as soon as they want after obtaining a private certificate—no more hours to accumulate. An instrument rating, however, is only as good as the weather information available for the pilot to interpret. In general aviation the pilot must be meteorologist, observer, and dispatcher for a flight and consequently requires the best and most easily interpreted information available.

FAA Administrator Garvey explains to Vice President Gore and Secretary Slater why uncontained engine failures are an important safety issue. (H. Dean Chamberlain photo.)

FAA and industry are already developing initiatives to provide pilots with complete, accurate, and timely weather information. FAA now has a National Aviation Weather Strategic Plan to accomplish this, and weather education programs will be conducted by the FAA's Aviation Safety Program. Among the current and planned interventions are:

- Developing recommendations in the FAA Inflight Aircraft Icing Plan for general aviation
- Computer based instruction via CD-ROM on recognizing and avoiding hazardous weather
- Practical and expensive methods to get current or real-time aviation weather information in general aviation cockpits

4. *Controlled Flight Into Terrain (CFIT).* Although CFIT is most often connected with commercial airline operations, it is a significant portion (17%) of general aviation accidents as well, and analysis has shown that the same causal factors apply—lack of situational awareness, lack of attention to crew resources management, etc. A general aviation CFIT action plan will be developed by FAA and industry, and guidance material existing for pilot training in this area will be revised accordingly. Among the existing or planned items are:
   - An action plan for general aviation Terrain Awareness Warning System (TAWS)
   - Providing higher resolution terrain database to industry
5. *Survivability.* In 1997 preliminary accident statistics indicated that although the number of general aviation accidents continued to decrease, the number of fatalities increased slightly. It is always preferable to lose the hull—that's what insurance is for. Improving the likelihood of surviving a general aviation accident will be the focus of FAA and industry research. The current and planned actions include:
   - An educational campaign to encourage the installation and use of seat belt/shoulder harness restraint systems in all general aviation aircraft
   - An Aviation Safety Program video and seminar on surviving water landings
6. *Runway Incursions.* The human factor, again, appears to be the major cause of runway incursions, whether it is misinterpre-

tation of controller instructions or a failure to use all available information resources. Runway incursions carry the potential of high loss of life—Tenerife still looms large in the collective aviation memory—and improvement in this accident-potential area will not only go far in reducing accidents and loss of life but also in preventing local airport authorities from restricting general aviation access to their mixed-use facilities. FAA will address the general aviation problem of runway incursions by:

- Forming an FAA/industry steering committee to examine the problem
- Developing a general aviation pilot educational program on runway incursions
- Expanding the availability and use of surface surveillance equipment

Commercial Aviation

The six areas of concentration for commercial airlines are similar to that for general aviation.

1. *CFIT.* Flying a perfectly good airplane into the ground is unacceptable under any situation, but recent accidents involving U.S. registered or manufactured aircraft in Guam, Columbia, and Bosnia have shown the human tragedy of such accidents. FAA will require commercial airplanes by 2001 to be equipped with improved terrain warning systems, so-called EGPWS®. Other interventions include:
   - Dissemination of a CFIT training aid
   - Establish guidance for CFIT training in simulators
2. *Loss of Control.* Loss of control—where a pilot inexplicably fails to maintain or fails to regain control of an aircraft—accounts for most U.S. airline fatal accidents. The 1994 accident near Pittsburgh, PA is one example of such an accident. Already indications of the root cause analysis for such accidents promote a "back to basics" approach for pilots of airliners, one which re-focuses on hand flying versus autopilot. Current and planned actions include:
   - Loss of control scenarios in simulator training
   - Enhanced situational awareness training to provide markers for crews to recognize when situational awareness has deteriorated
3. *Uncontained Engine Failures.* The failure of high energy rotating parts within an engine and the resulting damage and destruction to the engine is the leading engine-related cause of transport aircraft accidents. A 1996 accident in Pensacola, FL where the failure of rotating parts not only destroyed an engine but the parts also entered the cabin and fatally injured a woman and her son graphically illustrates this problem. FAA issued an airworthiness directive requiring airlines to conduct enhanced inspections of all engines for potential problems by June 1, 1998. Other interventions include:
   - Prioritizing the most hazardous parts and develop criteria for ranking them
   - Incorporating the enhanced inspection methods into the design approval process
   - Expanding the enhanced inspection process to propellers
4. *Runway Incursions.* Most runway incursion incidents involve a general aviation and an air carrier aircraft, so the logic of having this emphasis as a focus area for both these aspects of aviation is quite clear. As with general aviation, educational programs and technological advances will be used to reduce this occurrence, and the planned or current interventions are similar to those for general aviation
5. *Approach and Landing.* This is the phase of flight where most accidents occur—just over half of all airliner accidents. The irony that a flight can come to such a deadly end after a successful takeoff, climbout, and cruise and so close to the arrival airport environment is not lost on the aviation community or the FAA. Included in the interventions are:
   - Begin a root cause analysis and develop specific interventions
   - Expansion of GPS for non-precision approaches and develop more GPS precision approaches
   - Harmonize paper charts and flight management system data and displays for consistency
6. *Weather.* Although airlines have some of the most sophisticated predictive and reporting systems available, weather is responsible for one-third of U.S. airline accidents, and in-flight icing is a particular focus in this area. Interventions include:
   - Standardizing icing terminology
   - Improving ice detection systems on aircraft
   - Improving ground weather displays

Cabin Safety

The identified cabin safety issues have all received media and public attention in the past several years. FAA has had in place regulations concerning all the areas, but the efforts outlined in the safety agenda will enhance safety in the four specific areas.

1. *Passenger Interference.* The FAR are quite clear in this area—crewmembers cannot be interfered with, but apparently many passengers have not gotten the message. Injuries to flight attendants and cockpit crew as well as the number of these incidents have skyrocketed. An FAA/Industry work group already exists and is addressing this issue—Partners in Cabin Safety (PICS). The regulations prohibiting crew interference are deemed sufficient, but PICS will develop an education approach to address this issue. Among PICS' projects are:
   - Development of a passenger responsibilities and rights document
   - Targeted enforcement of regulations by FAA inspectors
2. *Passenger Seat Belt Use.* Encounters with clear air or unexpected turbulence has been the cause of many passenger injuries, and some have been fatal. The prevention of this type of accident is clear. Passengers wearing their seat belts are rarely injured by turbulence encounters. Existing regulations require cockpit crew members to wear their restraint system at all times they are at the controls. Passengers need only wear them for takeoff and landing and when the cockpit crew illuminates the "fasten seat belt" sign. A verbal announcement usually accompanies the illumination of the sign, but, again, some passengers do not listen. PICS' strategies in this area include:
   - An educational program for passengers, such as "Turbulence Happens," that includes a written product and a video with the purpose of shifting a paradigm among passengers to wear seat belts at all times in the aircraft
   - Targeted enforcement by FAA inspectors to assure existing regulations are being adhered to by airlines and passengers
3. *Carry-On Baggage.* Several U.S. airlines have recently enacted company requirements limiting the number of carry-on items passengers may bring into the cabin and stow beneath seats and in overhead bins. Carry-on baggage, in some reports, contributed to nearly 4,000 injuries a year, and because these injuries occur at the gate, when the aircraft has stopped and technically FAA's oversight of the flight has ended, they are rarely reported to the FAA. FAR require that baggage which cannot be properly stowed must be checked, and airlines must have a procedure to deal with this. As part of the safety agenda, FAA and industry will develop a public education campaign to show passengers why carry-on baggage limits are important, that the limits are really a safety and health issue and not the whim of a flight attendant.
   - A recently issued FAA brochure, "Unchecked Baggage," will be updated and re-issued.
   - An advisory circular for the public will be published.
   - FAA inspectors will be provided guidance to help them in approving airline carry-on baggage procedures.
4. *Child Restraint Systems.* For a number of years, FAA's campaign to encourage parents to place children under two in approved child restraint systems buckled into aircraft seats has been on-going. A public education campaign called "Turbulence Happens" has effectively explained that a parent cannot hope to hold onto a child safely when an aircraft encounters turbulence. Several airlines have begun offering reduced fares for their under-two passengers to assist parents in the decision to buy a ticket rather than hold an infant on their laps.
   - FAA will broaden this campaign with emphasis on use of child restraint systems.
   - FAA will also consider rulemaking requiring the use of child restraint systems.

Conclusion

Perhaps the single most optimistic aspect of the FAA's focused safety agenda is the commitment of Administrator Garvey to assuring there are dedicated resources fenced for the completion of it. No one will be able to siphon the resources for other agendas, and certain individuals will be dedicated as well to its accomplishment. Garvey herself stated the situation succinctly: "I know I speak for all of the FAA employees—all of the men and women whose work, whose hundreds of decisions every day, make a difference—when I say that we are committed to fully implementing this agenda."

The FAA's safety agenda identifies a great deal of work to be done to continue to assure the safest skies in the world as well as to make those skies safer. It represents a dedication to partnership with the aviation industry, which will only benefit from safer skies. And it represents a commitment to the public to provide them the safest air transportation in the world, as promised by Transportation Secretary Rodney Slater's words:

> "While we are moving America forward, we are doing all we can to make sure America is moving safely...As Americans, we enjoy the safest skies in the world, but the Department of Transportation, along with its federal and industry partners, can and will continue to do more."

For further information on the FAA's safety agenda, Safer Skies, go to http://www.faa.gov/apa/Safer_Skies/saftoc.htm .

The site has fact sheets and charts outlining the agenda's milestones as well as complete copies of the April 14 remarks by Vice President Gore, Secretary Slater, and Administrator Garvey.

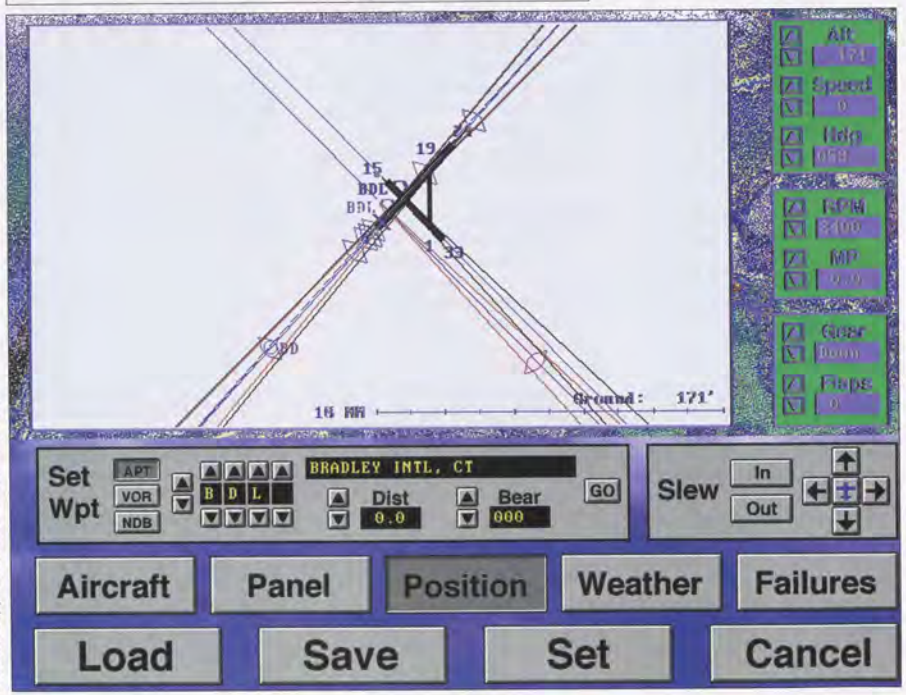
QUALIFIED PC COMPUTER-BASED TRAINING DEVICES TAKE OFF

Jeppesen Sanderson, Inc. photo.

by H. Dean Chamberlain

The use of FAA-qualified personal computer-based aviation training devices (PCATD) has been approved by the FAA for more than a year. At the time this article was written (May 1998), four companies had qualified their respective PCATD's under Advisory Circular (AC) 61-126.

Contrary to some people's belief within the aviation community, a "qualified" PCATD for use in an FAA-approved instrument training program requires more than just a personal computer, some software, and a couple of pieces of hardware from a video store. An FAA-qualified PCATD is a serious instrument training device designed to help prepare a pilot to fly in instrument conditions. Once qualified, the PCATD can then be used as part of an integrated ground and flight instrument training curriculum where it can be used for up to a maximum of 10 loggable training hours in an FAA-approved FAR Part 141 school, or in an acceptable instrument training curriculum under FAR Part 61.



Aviation Supplies & Academies, Inc. photo.

An FAA-qualified PCATD is not a computer game or toy, nor is it any collection of random miscellaneous computer parts. Like any FAA-qualified training device, only the specific type of equipment identified by make and model of hardware and specific version of software contained in the manufacturer's PCATD application to the FAA that meets all of the conditions outlined in AC 61-126 can become "qualified." Once qualified, only that manufacturer's specific combination of hardware and software may be used under that specific PCATD's qualification. Once qualified, that PCATD can then be used to develop an instrument integrated ground and flight curriculum for FAA review and subsequent approval at the Flight Standards District Office level, if so required.

Throughout this article, the terms "qualified" and "approved" take on special meanings. Regarding PCATD's, "qualified" means a manufacturer's specific combination of hardware and software to be used in a proposed PCATD meets all of the requirements listed in AC-61-126 for "qualifying" PCATD's under the AC.

FAA "approved" means two things regarding the use of PCATD's. First, it means that the FAA has reviewed the proposed PCATD and is satisfied that the equipment, hardware and software, does in fact meet the requirements of the AC, and that the manufacturer's subsequent units will continue to meet the qualification requirements. The second "approved" definition means that an FAA Flight Standards District Office has reviewed a proposed integrated ground and flight instrument training curriculum using a "qualified" PCATD from one of its FAR Part 141 training schools, and that the FSDO has approved the use of that PCATD-based training curriculum. For instructors teaching under FAR Part 61, the FSDO's approval means the instructor is using a curriculum that must be in compliance with the scope and content of a curriculum as it would be approved under FAR Part 141.

Under these respective definitions, an approved FAR Part 141 school curriculum using a qualified PCATD can include up to, but no more than, 10 hours of instrument training using the PCATD that can be credited towards meeting the instrument rating requirements under FAR Part 141. Since FAR Part 141 instrument training regulations permit up to 15 hours of instrument training in a flight training device (FTD) or a flight simulator (FS), the remaining five hours of available simulated instruction must be done in an FAA-approved FTD or FS. Under FAR Part 61 instrument training regulations, a qualified PCATD can be used to meet up to 10, but no more than 10, of the 20 hours of instrument training that can be done in an approved training device or flight simulator under Part 61. Under FAR Part 61, the remaining 10 hours of available training device or simulator authorization must be done in an FAA-approved FTD or FS.

FAR Parts 141 or 61 permit the use of up to 15 or 20 hours of simulated instrument training respectively, but neither part dictates that any or all of those hours must be used. The only requirement involving PCATD's in either FAR part is that the use of a qualified PCATD cannot be credited for more than 10 training hours.

For a pilot to be able to credit his or her PCATD training towards meeting the FAR instrument training requirements, each FAA-approved integrated ground and flight instrument training curriculum under FAR Part 141 or an acceptable integrated ground and flight instrument training program under FAR Part 61 using a PCATD must consist of and only consist of the specific hardware and software the FAA has qualified for each manufacturer's respective PCATD. If a PCATD contains non-qualified components or software, the training conducted with that PCATD cannot be used to meet the FAA's training requirements for an instrument rating even if the training was conducted under an appropriate integrated ground and flight instrument training curriculum.

Also, for the training time to be loggable towards meeting the training requirements for an instrument rating, the training must be provided by an appropriately rated instrument instructor. An authorized instructor may be either an appropriately rated instrument ground instructor for the respective ground segments of an integrated ground and flight training curriculum or a certificated flight instructor providing either ground or flight instrument instruction within the privileges and limitations of his or her respective certificate.

HISTORY

For those not familiar with the original PCATD concept, PCATD's were approved for instrument training under FAA Advisory Circular (AC) 61-126 issued on May 12, 1997. Approved units are now available for flight training toward satisfying the instrument rating training requirements under the provisions of Title 14 of the Code of Federal Regulations Parts 61 and 141 (FAR Parts 61 and 141). Approved PCATD's are distinct from flight training devices (FTD) qualified under AC 120-45, Airplane Flight Training Device Qualification, and flight simulators qualified under AC 120-40, Airplane Simulator Qualification.

POSITIVE TRANSFER EFFECTIVENESS

Based upon several years of scientific research including research done at Embry Riddle Aeronautical University and a study done at the University of Illinois, titled "Transfer of Training Effectiveness of Personal Computer-Based Aviation Training Devices: Final Report," dated October 1996, FAA

Aviation Teachware Technologies photo.

decided to approve the use of the new aviation training devices. The study reported that "...all instrument training tasks allowed by this AC have a positive transfer effectiveness, or no statistically-significant negative transfer effectiveness." As in the case of other FAA approved aviation training devices, FAA's concern was to ensure that the device meets its intended training goal without jeopardizing the quality of training by providing any type of negative training that would transfer to a real aircraft. Any type of approved training device must show that the training it provides is transferable to the safe operation of an actual aircraft.

AC 61-126 HIGHLIGHTS

Although AC 61-126 provides one means of showing compliance with the requirements of the AC, there may be others, and several important items must be pointed out.

- Any FAA-qualified PCATD must meet the requirements listed in the AC.
- Qualified PCATD's must functionally provide a training platform for at least the procedural aspects of flight relating to an integrated ground and flight instrument training curriculum as outlined in the AC.
- The PCATD must be qualified and approved by FAA for use in an integrated ground and flight instrument training curriculum under FAR Part 141.

Although the AC lists the specific requirements for qualifying a PCATD and under what circumstances the device may be used in training under both FAR Parts 61 and 141, two important requirements must be met to use an approved/qualified PCATD in an instrument training curriculum.

- An authorized instructor must present the instruction for its use to be credited towards meeting instrument certification requirements. This means the instructor must have the appropriate instrument instructor certificates. For example, a certificated flight instructor (CFI), airplane, single-engine land, (SEL), could not use a qualified PCATD to teach an instrument student instrument techniques and log that student's instructional time towards meeting an FAA instrument rating training requirement because the CFI is not an authorized instrument instructor (CFII) operating within the privileges and limitations of an instrument instructor.
- PCATD's that meet the requirements listed in AC 61-126 "...may be used in lieu of, and for not more than, 10 hours of time that ordinarily may be acquired in a flight simulator or flight training device authorized for use under Part 61 or Part 141."

It is important to note that the use of a PCATD in a training curriculum reduces hour for hour, up to the maximum of 10 hours authorized for use of a PCATD in a training program, the maximum hours approved for use of a flight simulator or a flight training device in an instrument training program under Part 61 or Part 141. For example, a maximum of 20 hours is authorized in an instrument training curriculum under Part 61, if a PCATD is used for 10 hours, then the remaining training device time is limited to 10 hours.

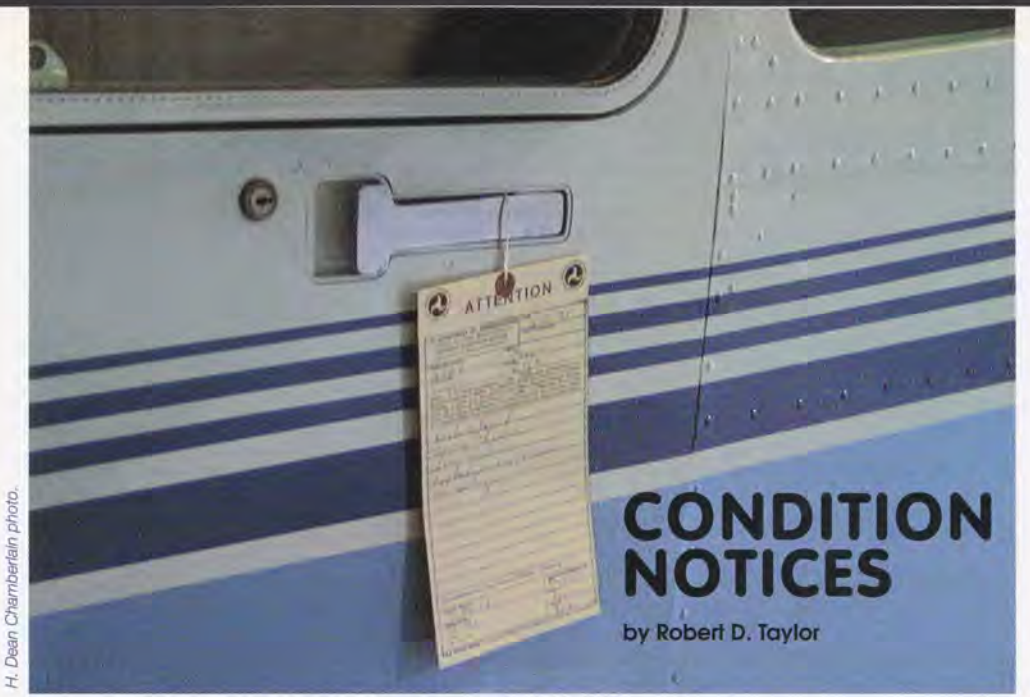
An FAA approved PCATD can only be used to teach those instrument training tasks listed in the AC. According to the AC, "These instrument tasks must be incorporated in an integrated ground and flight instrument training curriculum."

The AC also lists the physical, display, and operating requirements for a manufacturer seeking FAA approval for a PCATD.

Everyone should note the FAA has not authorized the use of PCATD's for conducting practical tests nor for accomplishing recency of experience requirements.

For more information, interested parties should obtain a copy of AC 61-126 by writing the U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Ave., Landover, MD 20785.

Copies are also available on the Internet under FedWorld or FAA. Readers can also contact the FAA's electronic Corporate Bulletin Board by dialing 1-800-224-6287. The requirements are 8 bits, no parity, 1 stop bit, and a baud rate of 300-14,400 BPS.



H. Dean Chamberlain photo.

CONDITION NOTICES

by Robert D. Taylor

It's beautiful out and a perfect day to fly. You go out to the airport thinking of your flight and planning on where you will go. Maybe to that little airport 40 miles south for lunch. They have great soups and pies there. You get to the airport, park your car, and walk out to your aircraft—a beautiful 1986 Cessna 182—which is tied down on the ramp. As you approach the aircraft you see a piece of paper flopping slightly in the wind and hanging from your right hand wing strut tie down ring. The first thing you see at the top of the paper in bold letters is "ATTENTION." Below that you see "U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION, AIRCRAFT CONDITION NOTICE."

At this point a little panic sets in. In the description block you read the information printed there, and sure enough it is your aircraft. The N-number, serial number, and model are all correct. Your eyes travel further down the form to the word "NOTE." More bold letters. Depending upon what is checked there, the sentences after the word "NOTE" could destroy your whole day or only agitate you a little. The next area of the form lists some discrepancies found on your aircraft:

1. Fasteners missing on right hand side of engine cowling;
2. Propeller blades need to be dressed;
3. Right hand tire appears to be worn;
4. Brakes appear to be worn.

At the bottom of the form is the signature of the FAA inspector who looked at your aircraft and wrote up the discrepancies.

A Condition Notice is one of the most misunderstood forms that the FAA Flight Standards Services uses.

This form is used by an airworthiness inspector when performing a ramp inspection on an aircraft. The Federal Aviation Act of 1958, Section 609 (which is now Title 49, Section 44709) states that the Administrator of the Federal Aviation Administration may re-inspect at any time a civil aircraft, aircraft engine, propeller, appliance, etc. This means that inspectors, who act for the Administrator, can at any time inspect a civil aircraft.

Although there are several types of inspections that an inspector can do, the most common inspection is the ramp inspection. This type of inspection is no more than a walk around inspection, but more intense than a pilot's preflight inspection. [Editor's note: The inspector does not have the authority to open the aircraft.]

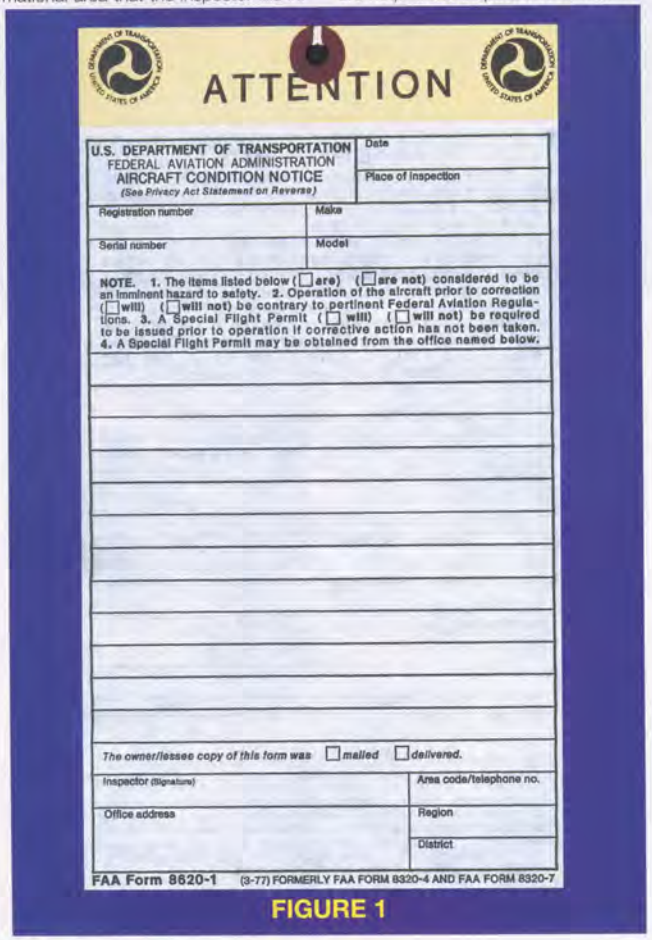
When an inspector does a ramp inspection, he or she first looks at the general condition of the aircraft. This is to spot any damage that could be considered an un-airworthy condition; i.e., loose fasteners; condition of tires, landing gear, brakes; condition of flight controls, condition of engine, and condition of propeller, and so on. The inspector also checks any placards for intelligibility and wear and makes sure the aircraft has the proper identification markings such as registration number and data plate (when accessible).

What happens when an inspector finds a discrepancy? How is the owner

of the aircraft notified? These two questions can be answered by the use of one form. (You know that this couldn't be a government operation without a form!) The form is FAA Form 8620-1, "Aircraft Condition Notice." (See figure 1.)

The Aircraft Condition Notice is a 9"x5" card with two duplicate forms hooked to it with carbon between each copy. The card has a hole in the top with a string so the card can be tied to a noticeable part of the aircraft. The top area of the form has an informational area that the inspector fills in: the date, place of the inspection, registration number of the aircraft that was inspected, make of the aircraft, serial number of the aircraft, and the model of the aircraft.

The next block below the information block is probably the most misunderstood part of the condition notice. The first word in the block is "NOTE," then the first statement will be numbered and will say, "1. The items listed below (❑ are) (❑ are not) considered to be an imminent hazard to safety." The inspector will check either (❑ are) or (❑ are not). If the inspector feels that the items combined or one single item would make the aircraft unsafe to fly, he or she would check (❑ are). This is simply saying through this statement that the owner/operator should take a close look at the discrepancies or have a mechanic check them out to determine if the items require a corrective action before the next flight. If the items are not considered to make the aircraft unsafe to fly, the inspector checks (❑ are not).



ATTENTION

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
AIRCRAFT CONDITION NOTICE
(See Privacy Act Statement on Reverse)

Date

Place of Inspection

Registration number

Make

Serial number

Model

NOTE. 1. The items listed below (☐ are) (☐ are not) considered to be an imminent hazard to safety. 2. Operation of the aircraft prior to correction (☐ will) (☐ will not) be contrary to pertinent Federal Aviation Regulations. 3. A Special Flight Permit (☐ will) (☐ will not) be required to be issued prior to operation if corrective action has not been taken. 4. A Special Flight Permit may be obtained from the office named below.

The owner/lessee copy of this form was ☐ mailed ☐ delivered.

Inspector (Signature)

Area code/telephone no.

Office address

Region

District

FAA Form 8620-1 (3-77) FORMERLY FAA FORM 8320-4 AND FAA FORM 8320-7

FIGURE 1

The second part of the NOTE says, "2. Operation of the aircraft prior to correction (❑ will) (❑ will not) be contrary to pertinent Federal Aviation Regulations." Now, we getting to the area where pilots/owners start to panic. The big question that comes to mind: Are they grounding my airplane? The answer is no, no, and no. Only the owner/operator of an aircraft can ground it. The owner/operator makes the choice of whether or not to fly the aircraft. However, if the discrepancies that were written up on the form are confirmed by the owner/operator or mechanic to be unsafe for flight and pilot or owner/operator decided to fly it in that condition, he or she could be in non-compliance with the regulations.

The third portion of the NOTE reads, "3. A Special Flight Permit (❑ will) (❑ will not) be required to be issued prior to operation if corrective action has not been taken." This statement will coincide with the other statements. If the discrepancies make the aircraft unsafe to fly and it would be contrary to regulations to do so, it will be necessary to have a Special Flight Permit issued. Remember, a Special Flight Permit (i.e., ferry permit) is only for a one-time flight to a place where the aircraft can be repaired.

The fourth and final portion of the NOTE says, "A Special Flight Permit may be obtained from the office named below." The inspector who conducted the inspection signs his or her name and includes his or her office address and office telephone number so that the owner/operator knows who to call for the ferry permit or with any questions about the condition notice.

The next area of the form below the NOTE is where the inspector writes up the discrepancies. At this point, let's look at the discrepancies "written up" at the beginning of this article:

1. *Fasteners missing on right hand side of engine cowling.* This is a common item missing on most aircraft, but it is an important part of the aircraft that should be attended to. No one needs the distraction of the cowling separating in flight.

2. *Propeller blades need to be dressed.* The question may come to mind, formal or casual dress?—just kidding. What this statement means is the leading edge of the propeller blades have nicks in them which should be filed and polished out to prevent cracks from occurring. If you thought the cowling separating in flight was exciting—just wait for three or four inches of your prop to separate in flight.

3. *Right hand tire appears to be worn.* The key word in this statement is "appears." Although the inspector is experienced in his or her field, there are certain things that only a manufacturer can determine. So, to be safe, the inspector uses the word "appears" and will leave it up to the owner/operator or mechanic to use the manufacturer's specifications to determine if the tire is worn.

4. *Brakes appear to be worn.* This would be similar to the reasoning behind item number three.

The bottom of the Condition Notice has another section that we previously didn't mention: "The owner/lessee copy of this form was (❑ mailed) (❑ delivered)." The inspector actually does both. By leaving the hard copy on the aircraft, the condition notice has been "delivered." Sometimes, though, the copies are difficult to read, especially after being out in the weather for a few days, so the inspector will mail a copy to the owner then keep a copy at his or her Flight Standards District Office.

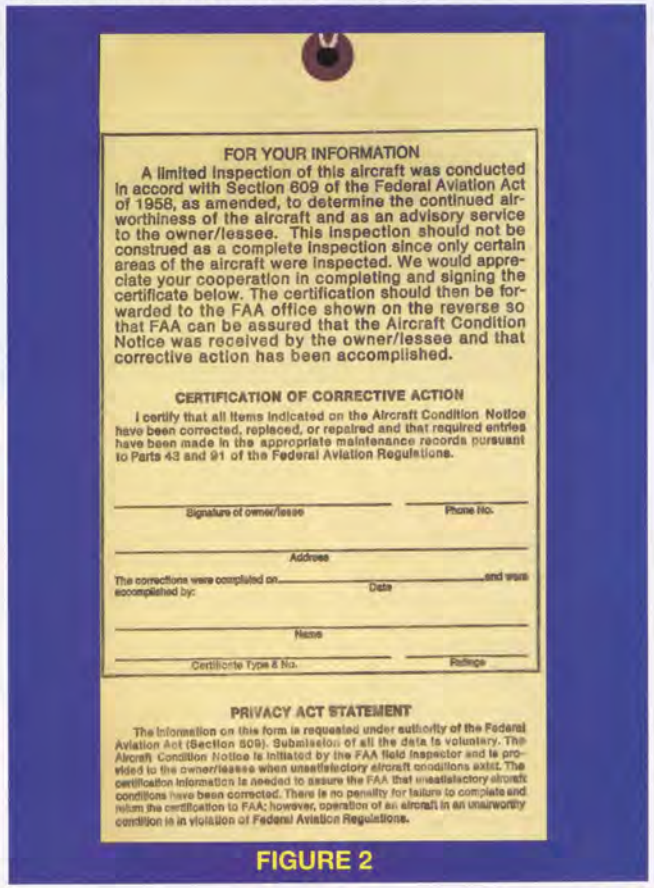
The copy of the form placed on the aircraft contains an item on the back that must be addressed. Toward the center of the back of the form after a lot of those government words again is another item in bold: "CERTIFICATION OF CORRECTIVE ACTION." This is followed by the statement, "I certify that all items indicated on the Aircraft Condition Notice have been corrected, replaced, or repaired and that the required entries have been made in the appropriate maintenance records pursuant to Parts 43 and 92 of the Federal Aviation Regulations." Below this statement is a place where the mechanic or owner can sign before sending the form in.

Now, the other big question: What if I don't turn the condition notice in? Read the last sentence on the back of the card at the very bottom: "There is no penalty for failure to complete and return the certification in to FAA. However, operation of an aircraft in an unairworthy condition is a violation of Federal Aviation Regulations."

We hope this has provided a little better understanding of an Aircraft Condition Notice when and if you see one on your aircraft. If you do, remember, there is an aviation safety inspector out there doing his or her job–assuring your safety.

Have a nice flight, and I hope that pie is good.

Mr. Taylor is the Airworthiness Safety Program Manager at FAA's Cleveland, Ohio Flight Standards District Office.



FOR YOUR INFORMATION

A limited inspection of this aircraft was conducted in accord with Section 609 of the Federal Aviation Act of 1958, as amended, to determine the continued airworthiness of the aircraft and as an advisory service to the owner/lessee. This inspection should not be construed as a complete inspection since only certain areas of the aircraft were inspected. We would appreciate your cooperation in completing and signing the certificate below. The certification should then be forwarded to the FAA office shown on the reverse so that FAA can be assured that the Aircraft Condition Notice was received by the owner/lessee and that corrective action has been accomplished.

CERTIFICATION OF CORRECTIVE ACTION

I certify that all items indicated on the Aircraft Condition Notice have been corrected, replaced, or repaired and that required entries have been made in the appropriate maintenance records pursuant to Parts 43 and 91 of the Federal Aviation Regulations.

Signature of owner/lessee

Phone No.

Address

The corrections were completed on Date and were accomplished by:

Name

Certificate Type & No.

Ratings

PRIVACY ACT STATEMENT

The information on this form is requested under authority of the Federal Aviation Act (Section 609). Submission of all the data is voluntary. The Aircraft Condition Notice is initiated by the FAA field inspector and is provided to the owner/lessee when unsatisfactory aircraft conditions exist. The certification information is needed to assure the FAA that unsatisfactory aircraft conditions have been corrected. There is no penalty for failure to complete and return the certification to FAA; however, operation of an aircraft in an unairworthy condition is in violation of Federal Aviation Regulations.

FIGURE 2

ATTENTION ALL CURRENT MILITARY PILOTS

by H.Dean Chamberlain

Recently, the Federal Aviation Administration's (FAA) Flight Standards Service's Certification Branch (AFS-840) was contacted by a former military pilot because the pilot didn't like the answers he was hearing from his local Flight Standards District Office (FSDO). The pilot wanted to apply for an Airline Transport Pilot (ATP) certificate. The problem was the pilot had been out of the military and off of military flight status for more than two years.

His local FSDO was telling him he had to take the private pilot knowledge and practical test. Once he was certificated as a private pilot, the former military pilot would then have to take the knowledge and practical tests for the commercial certificate and the instrument rating before he could then apply for the ATP knowledge and practical tests. The former military pilot would also have to have the appropriate flight instructor endorsements required for the various tests.

Needless to say, the former military pilot was not happy. He had expected to be able to just walk into the FSDO and take the ATP tests.

What's the problem, you ask? Military pilots—those currently on flight status and those planning on leaving the military—must remember the special FAA regulations that apply to them and, more importantly, when those special rules don't apply.

FAR § 61.73, MILITARY PILOTS OR FORMER MILITARY PILOTS: SPECIAL RULES

FAR § 61.73 outlines the conditions under which a military pilot or former military pilot may apply for a commercial pilot certificate by only taking a simple knowledge test and, based upon his or her military flight training and flight status within the 12 months before application, get a civil commercial pilot certificate with no other testing required. The same is true for an instrument rating, aircraft category and class rating, or type rating for those so qualified.

So, if you are a military pilot on flight status or one planning on leaving the military soon, you have a maximum of 12 months to use your military flight status as the basis for obtaining an FAA commercial pilot certificate by only taking a simple knowledge test on civil rules, pilot privileges and limitations, air traffic, general operating rules and accident reporting. The same is true for the other privileges outlined in the rule.

If you fail to take advantage of the rule, then continue to read the following answer, provided by AFS-840 to the pilot. The question and answer was also listed on the FAA's FAR Part 61 FAQ web site. (http://www.mmac.jccbi.gov/afs/afs600/index.html) Once you are in the index, you will need to scroll down to the FAR Part 61 Q&A section.

THE QUESTION

Question: (Rules that apply.) FAR §§ 61.153(d)(2) and 61.73(c); A former military pilot (has been out of the U.S. Air Force for over two years) and is now seeking an Airline Transport Pilot certificate with an airplane multiengine land rating. He did not take advantage of obtaining a pilot certificate in accordance with § 61.73 while he was in the military and he has now been off active flying status in the military for over two years. Can he apply directly for an ATP certificate in accordance with § 61.153(d)(2) on the basis of being a former military pilot?

THE ANSWER

Answer: § 61.73(c)(2); No, he may not apply directly for an ATP certificate. This former military pilot cannot comply with § 61.73(c)(2), as in, "...(2) Present documentation showing that the applicant was, before the beginning of the 12th calendar month before the month of application, a rated military pilot as prescribed by paragraph (b)(3)(i) or paragraph (b)(3)(ii) of this section."

The former military pilot did not apply for an FAA pilot certificate within the time period permitted [as in § 61.73(c)(2) "...before the beginning of the 12th calendar month before the month of application, a rated military pilot..."] So, this former military pilot may only use his military flight time to meet the aeronautical experience requirements of Part 61, but other than that he has to apply for his FAA pilot certificates just like any other non-military pilot. First, he has to meet the required aeronautical experience requirements for Private Pilot Certification - §§ 61.103, 61.105, 61.107(a)(2), 61.109(b). Next, he must meet the requirements for Commercial Pilot Certification - §§ 61.123, 61.125, 61.127(b)(2), and 61.129(b) and an Instrument Rating - §§ 61.65(a), (b), and (c) before he can even apply for an Airline Transport Pilot certificate with an airplane multiengine land rating. His aeronautical experience must also show that he has received the required ground and flight training for a private pilot certificate before he can take the required knowledge and practical test for a private pilot certificate. Likewise for the commercial pilot certificate and the instrument rating, his aeronautical experience must show that he has received the required ground and flight training for each before he can take the required knowledge and practical test for the commercial pilot certificate and the instrument rating.

USAF Photo

Some of you may argue that it is ridiculous to make a former military pilot obtain the private pilot certificate first, and then obtain the commercial pilot certificate with an instrument rating before applying for an Airline Transport Pilot certificate with an airplane multiengine land rating. For the sake of argument, do you believe it is reasonable for a person who is a former military pilot during the World War II era to now come in and apply for an Airplane Transport Pilot Certificate in accordance with § 61.73 some 50 years after he or she last flew an airplane in the military??? How about if it was only 40 years ago? How about if it was only 30 years ago? How about if it was only 5 years ago? I think you see what I am saying here. Section 61.73(c)(2) is only afforded to military pilots and former military pilots who were rated military pilots "...before the beginning of the 12th calendar month before the month of application..." In other words, the applicant was a rated military pilot within the past year before the month of application.

The relief afforded military pilots and former military pilots by § 61.73 recognizes the value of military flight training and aeronautical experience. However, military pilots who have not been involved in the military flight program, with all of its continuing training, proficiency flying, and evaluations for a period of 12 months or longer may not continue to retain a level of knowledge or skill equivalent to that of a private or commercial pilot. Therefore, it is necessary that former military pilots who have exceeded 12 calendar months (i.e., § 61.73(c)(2)) since being assigned on military flying status complete the required training, knowledge tests, and practical tests.

THE SOLUTION

The solution to this problem is simple. If you are a military pilot currently on flight status, and you want to get a commercial pilot certificate with appropriate ratings based upon your military training, MARCH (love that word) down to your local FSDO and take the special knowledge test for military pilots this week. If you wait until you are off flight status for more than 12 months, you won't like what you will be told at your local FSDO. Apply today!

HELICOPTER AUTOPILOTS DEMAND CAREFUL MANAGEMENT

by Joel S. Harris

An air ambulance helicopter departed the scene of an automobile accident with a critically injured patient onboard, en route to a hospital. Shortly after the night takeoff, the pilot inadvertently encountered instrument meteorological conditions (IMC). The helicopter was equipped with an autopilot, and the pilot elected to use the autopilot so that he could direct his attention to finding an approach plate with the frequency of a local approach control facility.

After rotating the heading selector to the proper course, he engaged the heading select mode of the coupled flight director mode selector. Next, he selected the vertical speed mode and chose a climb rate of 244 meters per minute (800 feet per minute).

Then the pilot began searching the cockpit for the approach plate. While searching, he felt an unusual sensation and looked at the instrument panel. He was surprised to see that the attitude directional indicator (ADI) was indicating extreme nose-up pitch. A quick scan of other instruments showed that the airspeed was rapidly decreasing, and the vertical speed indicator was showing a descent. The pilot quickly took manual control of the aircraft, increasing the collective pitch and lowering the aircraft nose to recover from the unusual attitude. He succeeded, but after landing he said that he was shaken by the event.

That incident was caused by mismanagement of the autopilot. The air ambulance pilot used the autopilot to establish a 244-meter-per-minute climb rate. The pilot did not make a corresponding collective pitch input and the autopilot attempted to satisfy the command by using aircraft pitch attitude. As the autopilot increased the pitch attitude, a corresponding reduction occurred in airspeed.

When the airspeed decreased below the best-rate-of-climb airspeed (V_{broc}), vertical speed began to diminish. As a result, the autopilot increased the pitch attitude; the final result was a zero-airspeed unusual attitude with a high rate of descent in night IMC with one pilot.

As the number of autopilot-equipped helicopters increases, proper use of autopilots becomes increasingly important. It is sometimes taken for granted that experienced pilots will know how to use these devices properly. Some check pilots and trainers assume that "anyone can fly using the autopilot," and they ask only for a demonstration of "hand flying" the aircraft. Data show this assumption is not always correct.

Another in-flight incident and a training session in a Level-C full-motion/visual helicopter flight simulator illustrate mismanagement of the autopilot.

The two-pilot crew of a corporate twin-turbine helicopter cleared at 915 meters (3,000 feet) mean sea level (MSL) was requested by air traffic control (ATC) to descend and maintain 610 meters (2,000 feet). During the descent, the pilot flying (PF) armed the flight director's altitude-preselect mode, setting it to level off the helicopter on reaching 2,000 feet. He then engaged the vertical speed mode, selecting a descent rate of 305 meters per minute (1,000 feet per minute), and made a corresponding decrease in collective pitch to maintain airspeed during the descent.

As the aircraft approached the target altitude, the altitude preselect feature enunciated a "capture." Illumination of the altitude-hold button on the flight director followed. A few seconds later the gear-up warning horn began to sound, triggered by an airspeed below 111 kilometers per hour (khp) or 60 knots.

Surprised, the pilots scanned the instruments and saw that the airspeed was decreasing rapidly, the aircraft pitch attitude was very nose-high, and the aircraft was in a descent. The PF quickly increased collective pitch and lowered the nose of the aircraft to increase airspeed before climbing to the assigned altitude.

In a simulator example, a medium twin-turbine helicopter experienced a single-engine failure in cruise flight while operating under instrument flight rules (IFR). The crew correctly followed checklist procedures and secured the failed engine.

The pilot not flying (PNF) then contacted ATC, advised it of the situation, declared an emergency, and requested radar vectors to the nearest instrument landing system (ILS) equipped airport. ATC issued a new heading and advised the pilots of the expected approach. After the pilots had completed their approach briefing, ATC issued an intercept heading for the final approach course and cleared the crew for an ILS approach.

The PF turned the autopilot heading selector to the new heading and armed the ILS function on the coupled flight director. On intercepting the course, the flight director enunciated a capture of the localizer and turned the aircraft onto the final approach. The pilots completed the prelanding checklist, noting that the airspeed was 185 kph (100 knots), and that the landing gear indicator showed "down and locked."

As the glideslope pointer on the ADI descended toward the centered position, the autopilot enunciated the capture of the glideslope, and the aircraft began its descent. The PF reduced the collective pitch until the engine power gauge indicated approximately 40 percent for the operating engine. The pilots, over-confident that the autopilot would complete the coupled ILS approach

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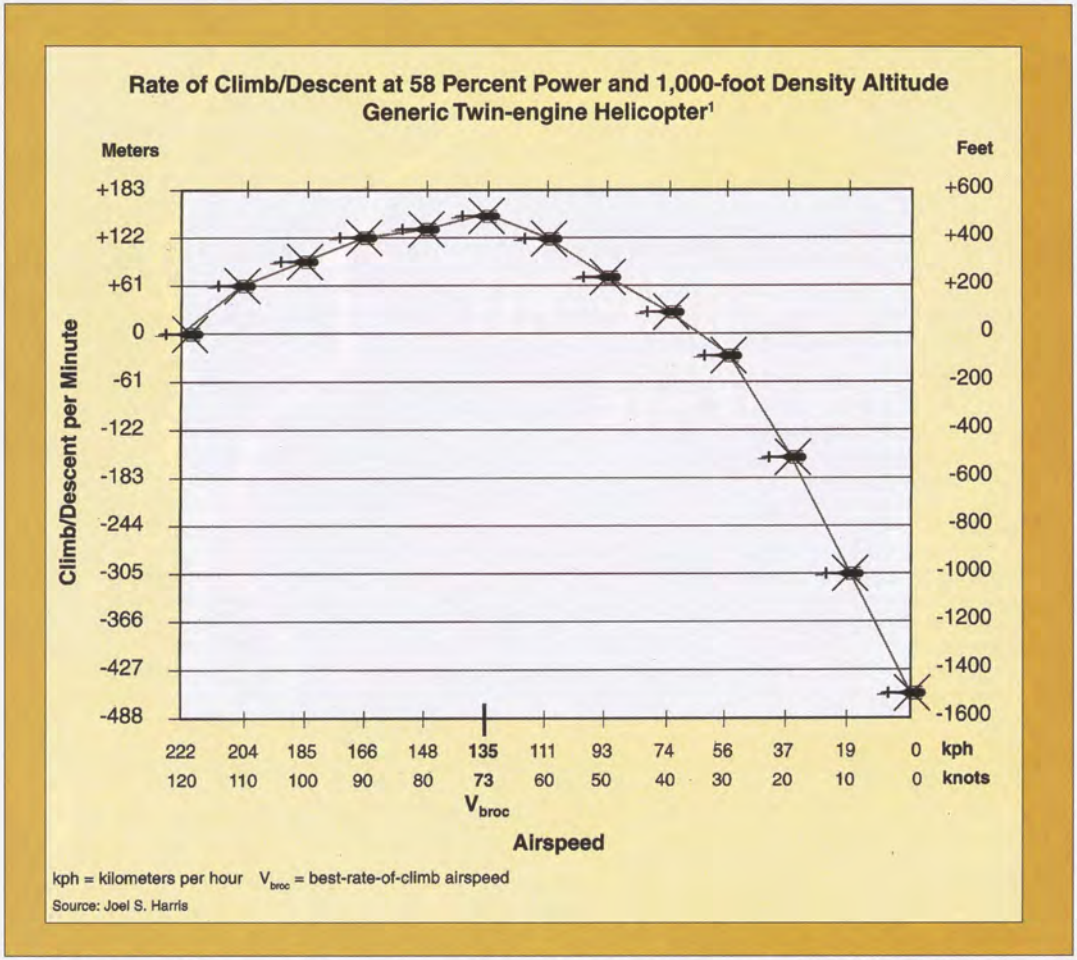

without further difficulty, relaxed their instrument scans.

Spin Induced During Descent

As the aircraft descended on the glideslope, the pitch attitude began to increase. As a result, the airspeed began falling. At 111 kph, the vertical speed indicator began to show an increasing descent rate, and pitch attitude continued to increase, which resulted in slower airspeed.

At 74 kph (40 knots), the pilots became aware that something was wrong but were unsure what corrective action to take. The airspeed indicator decreased to zero, the vertical speed indicator was racing toward the maximum position of 1,068 meters-per-minute (3,500-feet-per-minute) descent, and the aircraft began to spin to the right.

As the aircraft passed through 152 meters (500 feet) above ground level (AGL), the PF, having taken over manual control of the aircraft, raised the collective until the engine power meter reading was above the maximum one-engine-inoperative (OEI) power range, with an accompanying rotor droop.

This seemed to have no effect on the excessive descent rate, but instead increased the rate at which the helicopter was spinning. Seconds later the aircraft impacted the terrain about 1.6 kilometers (one mile) short of the intended destination. Almost certainly this would have been a fatal accident had it been an actual flight.

Although these examples occurred in different models of aircraft that were equipped with different autopilots, the examples have a common factor: mismanagement of the autopilot. Understanding both the function of a helicopter autopilot and the power-required curve is essential to careful autopilot management.

Although some helicopter autopilots can couple to and control collec-

tive pitch, most cannot. Even in those that can, the capability often is not used. When a pilot selects airspeed, vertical speed, altitude, or glideslope modes on the flight director, the autopilot—unless these commands are accompanied by a collective input—will use aircraft pitch attitude to accomplish these actions. Airspeed will increase or decrease, depending on the command.

For example, if a pilot selects the vertical speed mode and commands a climb of 152 meters per minute, but makes no corresponding collective pitch input, the helicopter's airspeed will decrease as aircraft pitch attitude increases to satisfy the command. If the pilot (or capable autopilot) does make a collective input, airspeed and pitch attitude can be maintained during the climb.

The reverse is true during a descent: An autopilot-controlled descent, whether it is in vertical speed mode or on an ILS glideslope, will cause an increase in airspeed, unless a corresponding decrease in collective is made.

Increasing Pitch Attitude Can Cause Either Climb or Descent

Increasing pitch attitude, for example, will result in a climb as long as the airspeed is above V_{broc}, as published in the rotorcraft flight manual. After the aircraft slows below V_{broc}, however, increasing the pitch attitude will diminish the climb rate.

The figure shows that at a nominal airspeed of 222 kph (120 knots) and a power setting of 58 percent, a generic twin-engine helicopter maintains level flight. As the airspeed decreases without a corresponding collective pitch change, an increasing rate of climb is established. The rate of climb continues to increase until the aircraft reaches its V_{broc} (135 kph or 73 knots). But as airspeed decreases below V_{broc}, the aircraft becomes less efficient and the rate of climb decreases until the aircraft begins a descent. As pitch attitude is further increased, the airspeed falls to zero and the descent rate falls to 458 meters per minute (1,500 feet per minute).

Using Autopilot to Descend/Climb Requires Changes in Collective Pitch

The pilots of the corporate twin-turbine helicopter used the autopilot to descend to a newly assigned altitude. The PF correctly made a reduction in collective pitch to maintain airspeed for the selected descent rate of 305 meters per minute.

Nevertheless, on leveling off at the new altitude, no corresponding collective pitch increase was made. Therefore, the autopilot attempted to maintain altitude by increasing pitch altitude, thus decreasing the airspeed. At the selected power setting, the descent could not be prevented by the autopilot and airspeed decreased until the gear-up warning horn alerted the pilots.

In a simulated OEI ILS approach, the autopilot was attempting to maintain the glideslope by adjustments in aircraft pitch attitude. Because the pilots had set the power to a value of only 40 percent on the operating engine, the autopilot was unable to maintain the glideslope at any airspeed. In trying to do so, pitch attitude increased until the aircraft was at zero airspeed in a very high rate of descent. With only one engine operating, the only viable recovery would have been to lower the nose of the aircraft to achieve flying airspeed. There was not sufficient altitude left to complete that successfully.

For example, as airspeed decreases from 287 kph (155 knots), the power required to maintain level flight also decreases until the airspeed reaches V_{broc}. At V_{broc}, the aircraft is most efficient and requires the least power to maintain level flight. Nevertheless, as speed falls below V_{broc}, the power required for level flight increases. This increase in required engine power continues to the point of zero airspeed.

If, for some reason, full power is not available, the pilot's judicious use of the autopilot is even more important. When flying with one engine inoperative, for example, the maximum power available is somewhat more than half of the power available with both engines operating. The availability of operating information, however, does not preclude good judgement.

In June 1992, at Mariposa, CA, an accident occurred shortly after takeoff. According to the NTSB accident report, the pilot started the Bell 222's engines on an intended flight the day before the accident flight. A medical crew member saw sparks emerging from the right engine, the engine temperature gauge "reading well above normal," and the engine's chip-detector light illuminating. After experimenting with the throttles in an effort to bring the temperature under control, the pilot secured the engines.

The next morning the pilot attempted to perform a single-engine ferry flight. The report said that "the pilot ... performed a takeoff with both engines running. After takeoff, the right engine's temperature rose and the pilot shut the engine down. The helicopter could not fly adequately with the power from the left engine and altitude could not be maintained. The helicopter collided with a tree and then the ground." The aircraft was destroyed and the pilot was injured.

When an autopilot's operation is understood by the pilot, safety is enhanced. If the autopilot's operation is not understood fully, the consequence can be an incident or accident.

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THUNDERSTORM STRATEGIES

By Bob Hill

Many volumes have been written on the science and development of thunderstorms, and I am confident most pilots would be able to locate such material if they so desire. Let us then chart a different course, and determine how to implement the theory and information we collect prior to a flight and use this data to make a "how far should I go decision."

There are four slices that make up the thunderstorm pie: water, lifting, stability, and temperature. These four ingredients must be present and be of sufficient magnitude to foster the growth of thunderstorm activity. Water is everywhere — oceans, lakes, wet ground, and the atmosphere. Pilots are able to ascertain the amount of water present for a particular flight from many sources including the Weather Channel, as well as Flight Service Stations. Moist areas have a high dewpoint, and a dewpoint of 40°F is enough water to support thunderstorm formation. Dewpoints of 53°F or higher is ample moisture to support potential tornadic thunderstorm cells. Recall that water is only one of four needed ingredients that are required to produce a cell. Additionally, reported dewpoints may be artificially lower than actual dewpoints in the vicinity of bodies of water.

Next, look at the lower level winds aloft at 3,000 and 6,000 feet to see if they are moving from a substantial body of water. Lower level winds blowing from bodies of water would serve to raise the dewpoint. The next ingredient is lifting. Water must now be lifted. Using surface analysis charts and satellite imagery available from many sources, look for large cloudless high pressure areas where thermals could develop. Rising warm air will carry moisture aloft. Again, look for low level winds moving toward rising terrain or ridges to provide a lifting mechanism. Surface analysis charts will also provide the necessary information on frontal movement which certainly provides for dynamic lifting.

The stability of an airmass can be acquired from a Flight Service Station or National Weather Service by requesting the Lifted Index data which is located on a four panel chart termed

the Stability/Composite Chart. When viewing this chart, the numerator of the depicted fraction is the Lifted Index, the denominator is called the "K" Index. The fractions denote the various reporting stations and the stability data is obtained at the 500 millibar level which equates to approximately 18,000 feet. The "K" Index (the denominator) indicates the moisture content of the air mass and is derived in a manner that is beyond the scope of this article. However, a high "K" Index value is indicative of a high moisture content and vice versa.

The Lifted Index depicted at each station is expressed in degrees Celsius and is the temperature difference that a parcel of air would have if lifted from the surface to the 500 millibar pressure level. When contemplating stability, always remember "warm over cold is stable," "cold over warm is unstable." For example, after a cold front passage, a cooler air mass has moved over relatively warmer ground. Cold over warm equals instability. When the parcel of air which has been lifted from the surface to 500 millibar becomes colder than the surrounding air mass, the Lifted Index is posted as a positive number and consequently the air is stable. If the parcel of air should remain warmer than its surroundings, a negative number will be shown. Therefore, negative Lifted Index values indicate instability. This single chart provides at a glance the areas in which thunderstorms are possible providing the other necessary ingredients are also present. A Lifted Index value of –2°C or less is unstable enough to make tornadic activity possible. And, after checking all these factors, take a look at the severe weather outlook chart.

Obtaining dewpoints, winds aloft, and stability data enhances speculation on the development of severe weather. Additionally, the Radar Summary charts are ideal for depicting organized activity. Flight Service and Enroute Flight Advisory Service (Flight Watch) should be utilized often when airborne and in the vicinity of thunderstorms. Circumnavigate all thunderstorm areas that have six tenths or greater coverage.

Airmass thunderstorms (nonfrontal) normally develop vertically. Consequently, when the mature stage is reached, the descending precipitation strangles the ascending updrafts and the cell dissipates. When a thunderstorm is able to lean downwind, the precipitation falls outside the rising updrafts and the cell will not strangle itself. These are the steady-state type thunderstorms. Check the winds aloft for significant changes in speed or direction that would allow a thunderstorm cell to lean. Steady-state storms are usually orographic (lifted mechanically by terrain). However, check for large wind changes aloft when speculating for potential steady state thunderstorms. Treat any storm where the Lifted Index is minus two or lower or with tops to 35,000 or greater as steady-state.

When navigating around airmass storms, try to stay above the convective layer (haze) for increased visibility. Select an area where the clouds are not solid above and you can see through to the other side. Find areas where the tops are fractured or fuzzy and not active. It's usually best to circumnavigate cells on the upwind side. It is less turbulent upwind, and most precipitation, hail, and gust fronts are found downwind of the cell. If navigation on the lee side of the cell is the only option, choose a cell clearance minimum of at least one nautical mile for each knot of wind at altitude. When maneuvering around the upwind side of the cell, use caution to avoid the right rear flanking shelf clouds on the southwest side of the cell as this is the area where tornadoes may be found. Tornadoes may also develop within the wall cloud under the cell.

When arriving at or departing from an airport where thunderstorm activity is in the vicinity (10 or 15 miles), use caution and be aware of the gust front that precedes the storm. Scud clouds sometimes mark the shear line of a gust front. The cold air descending out of a cell is similar to a miniature cold front, forcing the warmer more moist air aloft until it condenses into scud. The mechanical turbulence associated with a gust front can be ferocious. The speed of the cell also reflects its severity. Generally, if cell movement is over 20 knots it's strong, and over 30 knots it's severe.

When viewing frontal thunderstorm activity, the severity of the front may be determined by looking at the temperature difference ahead and behind the front. Generally, the larger the temperature difference at the surface (5°C, -10°F or greater), the more violent the front. If the warm sector (the area between the warm and cold fronts) is large, you may expect a violent cold front. The wind in advance of the front, when compared to the wind shift behind it, may warn of a more violent front, particularly if it's a large windshift. Beware of squall lines. Squall lines occur 50 to 300 miles ahead of a cold front and remain parallel to the front. Squall lines contain the most severe weather. They tend not to be active within 150 miles of the low's center, nor more than 500 miles out from the center.

Flying fronts require experience and preferably airborne weather radar. Cold fronts have lower storm bases than warm fronts and are best flown high above the convective layer of atmosphere. Warm front storms have high storm bases that are usually around four to six thousand feet. By studying the surface winds, it is possible to note cold front cells by the gusty surface winds associated with them. Warm front storms generally will not have gusty strong surface winds. When navigating around thunderstorms remember to slow the airplane down to the turbulence penetration speed and to have your seat belt properly tightened and items in the aircraft fastened down.

Finally, one method of thunderstorm avoidance is a precautionary landing prior to entering the vicinity of thunderstorm activity. Occasionally, it may be a wise decision to elect not to depart at all.

Even the pro's sometimes sit it out or turn and run the other way!

Mr. Hill is a Principal Operations Inspector at the Winston-Salem (NC) FSDO. This article originally appeared in the Winston-Salem (NC) FSDO's newsletter, The FSDO Flyer.

The Legend of Tuck's Luck

by Major Brian S. Cumming, USAFR

Robert Sanford Tuck was recognized by his fellow Royal Air Force (RAF) pilots as one of the great fighter pilots of WWII. He rose humbly, teetering one sortie away from washing out of flying school to tallying 29 victories and eight probable kills, making him the eighth-ranked RAF ace. Along with his great courage and hard-won flying skill, Tuck also had another trait working for him. That was luck—"incredible luck"—which many people believed had enabled him to escape from a multitude of life-threatening combat situations unharmed. "Tuck's Luck" became a legend in the Royal Air Force.

Ironically, Tuck had become a seasoned aviator and effective combat pilot after learning to shun his own luck. An incident early in his flying career convinced him that luck was something he ought never lean on. While on a formation training flight just 3,000 feet over Sussex, England, in his biplane fighter, Tucker had a midair collision after one of his formation members flew in front of him. After impact, he was pinned in the airplane until the wings finally broke off, taking the canopy with them and allowing Tuck a last-second bailout! He knew it was only by the skin of his teeth he had survived. After that incident, Tuck's attitude changed forever. He no longer took needless risks in flying. His historian wrote, "...he had learned that in military flying there were unpredictable factors that killed the best and worse pilots with terrible impartiality."

As if we have not learned from Tuck, we aviators are continually coerced to take "needless risks" at times. Every so often, we have allowed ourselves to be rushed by some external pressure. Let's face it—anyone who has flown airplanes as flight lead/wingman, pilot/copilot, or any other crewmember has "rushed to comply" with some type of restriction or constraint. Ever been rushed to get the flight airborne to meet a "fragged" range or tanker time? What about more subtle situations like meeting a controller-imposed altitude/fix crossing restriction, or dealing with a last minute runway change in Instrument Meteorological Conditions (IMC)? I've been there...you've been there. (If you have not been there, get ready...because your turn is probably coming up!)

As a first officer for a regional airline on the East coast, I have noticed a common (and refreshing) thread in the operation: Every captain I've flown with refuses to be rushed. Despite routine operations into airports like Boston, Kennedy, La Guardia, and Detroit, 30 minutes or less to "turn" the airplane on the ground, leg lengths often shorter than an hour, and all the weather complications East of the Blue Ridge, these guys have obviously learned Tuck's lesson about avoiding "needless risks," such as rushing to meet that next departure time. The foundation of this characteristic "refused-to-be-rushed" attitude is a rock-solid Cockpit Resource Management (CRM) program that stresses, among other things, the importance of pacing the flight to prevent errors of omission or commission. (This first-hand exposure to CRM only reinforces my notion of CRM's continued importance to the Air Force [and general aviation].)

One aspect of this program includes cockpit briefings as a tool for pacing the flight properly. A comprehensive series of briefings are accomplished at specific phases of each flight in the same way. Although this sounds obvious and familiar at first glance, the checklists are the product of research both in the simulator and "on the line." They cover key areas unique to the airplane, the airline's operation, and integrate the normal cockpit checklists to enhance their viability. Use of these CRM checklists at low workload times on the ground and in flight inherently promotes prior planning and consideration of variables ahead of time to avoid last-minute decision making or reliance upon plain old luck to ensure a safe flight. This improves crew coordination, situational awareness, and keeps everyone "ahead of the airplane." A safe, efficient, cockpit environment is the product of a flight crew that knows when to say "standby" or "negative" when asked to rush or comply with a clearance that affects safety of flight.

No matter who we fly for, we owe ourselves as aviators to resist that pressure to rush or comply. Why trade preparation, crosscheck, or procedural compliance in an effort to make up for factors that were probably beyond your control in the first place? It has been said, "The difference between being prepared and professional versus being unprepared and sloppy can be measured in minutes." However, the question is—which minutes? It possibly could be the minutes you are trying to make up in order to get back on schedule. If you pursue those minutes in a hasty rush, you are relying on luck to keep you from making a serious (albeit unintentional) error in judgement, planning, or just about anything else.

Making the right call and refusing to be rushed is essential to a safe flight. Sure, there are always times we need to pick up the pace temporarily, but when you sense your limits will soon be exceeded, it's time to speak up, slow down, and refuse to complete the notorious chain of events that could lead to an aircraft incident or worse...an accident. Refusing to rush is using CRM—not luck—to put time on your side! To fly any other way would be to rely completely on "Tuck's luck," of which some people shake their heads and say, "Tuck's luck—some have it; some don't."

Major Cumming is with the 953rd Reserve Support Squadron, USACOM, Norfolk, VA, and is also a first officer for a regional airline. This article originally appeared in the February 1998 issue of the USAF Air Combat Command's mishap prevention magazine, The Combat Edge, *and is reprinted with permission.*

CFI OR FLIGHT INSTRUCTOR?
TAKE THIS LITTLE QUIZ AND THEN YOU DECIDE . . .

by Jim Trusty

Do you go out and find your own students? Do you help them find the money to learn to fly? Ultimately, are you the final authority on whether they pass or fail? Are you available to your students 24 hours a day, seven days a week?

Are you restricted in the number of students you can have? Are all your ground school classes held indoors? Do you have an office? Do students have to call you Mr./Mrs./Ms.? Do you wear a tie to work? Are your students required to adhere to a dress code?

Do you design your own syllabus? Are you free to use any and all material that you feel necessary to teach?

Do you fly less than 100 hours a year with students? In order to renew your ticket, do you have to attend refresher clinics? Are you well-known at only your airport? "Ace of the Base?"

Are you preparing your students for the future or for the checkride? Do you keep up with former students and what they are doing? Do you help your students get jobs in aviation? Have you ever told a student they were not qualified to fly? Do you regularly do written test preparation, also?

Do you consider yourself a role model for your students? Do they think of you as a role model?

Are you on speaking terms with the FAA? Do you dislike the FAA and make this known to your students?

Could you stop seeking students right now and get by on referrals? What is your checkride pass/fail rate? How many of those that failed were your fault? How many failed because the FAA was picking on them or you?

Have you ever turned a student down because they couldn't afford your charges? How much importance do you place on your student soloing? Have you ever had a student get lost on a crosscountry?

Do you ever just go out and fly some kids just for the heck of it? No teaching, no money, just for fun?

Have you ever handed a student off because of a personality conflict? Is it your contention that anyone can fly an airplane? Do you feel that with your credentials you are above teaching private pilots? Are you easier on your friends than you are with a stranger in an airplane? Were you, in fact, a pilot before you became an instructor? In your mind, is a ground instructor a different breed from a flight instructor.

Are you able to use your former training and/or education in your training? Could you pass a private pilot checkride—written, oral and flight—today?

Have you personally received recognition for being great as a flight instructor? Are you as good as you think you are? If your answer is yes, who told you so?

On occasion, do you find an exceptional student or are they pretty much all the same? Do you consider yourself an extremely hard instructor? Do other instructors seek your advice?

Do you sometimes fly in airplanes you have never been in before? Are you current in IMC? Are you current at night? Have you actually gone out lately and done three touch and goes? Are you tailwheel current? How long has it been since you added to your ticket—certificate or rating? Are you happy with the way you personally fly? Do you subscribe to the theory that if you can't do it, you can't teach it? Are you fully covered with liability insurance that protects you and your students?

Do you believe we should do away with the FAA and self-govern ourselves? Do you avoid controlled airspace and teach your students to do likewise? Are you happy with your radio work? If you were looking for an instructor, would you hire you?

Do you agree with all the promotions to get people in the air? Are you a member of AOPA, NAFI, or EAA? Would you recommend that your students join them? Is it easier for you to get students to watch tapes on aviation or teach them in ground school? Do you think there really is a difference between a CFI and a full-time flight instructor?

If you lost your instructor ticket tomorrow, would you stay in aviation? Is your annual instruction income under $5,000? Do you limit the number of students you work with at one time? Have you ever considered yourself a full-time, free-lance flight instructor?

How many instructor candidates have you signed off on checkrides? If your CFI lapsed, would you go to the trouble to reinstate it? Could you explain to someone why you got your CFI in the first place? Could you explain METAR, AIRSPACE, new FAR, and PTS to another instructor and sound intelligent?

Is one of your greatest thrills in life soloing a student?

This little self-evaluation quiz should have told you a lot about yourself and your real role in the field of instruction. Are you a CFI or a Flight Instructor? Whichever you are, and the decision is yours alone, there is always room for improvement.

I'll see you at the airport! +

Jim Trusty is an Aviation Safety Counselor for the Nashville (TN) FSDO. He is also the 1997 National Flight Instructor of the Year.

Getting Ready for the 21st Century

by H. Dean Chamberlain

South Carolina FSDO Manager Joe Stuppiello talks about his safety vision for the Aviation Safety Program in his district. (H.Dean Chamberlain photo.)

As the world prepares for the next millennium, so must aviation. And FAA and its Administrator are leading the way. For example, FAA Administrator Jane F. Garvey is part of the changes occurring within FAA as it approaches the 21st Century. She is the agency's first woman Administrator. She is also the first Administrator with a Congressionally-mandated five year appointment. In other areas, FAA continues to lead. FAA continues to develop the global positioning system (GPS) as the country's navigation system for the 21st Century. When the Wide Area Augmentation System is in place and operational, Category One precision GPS approaches will be possible.

In addition, the air traffic system is being upgraded to meet the needs of the one billion annual U.S. airline passengers expected to be flying after the turn of the century. And within the parent organization of this magazine, the FAA's Flight Standards Service, changes are being made both within Flight Standards as a service and within its field offices as both work to meet the needs of those in aviation who operate, maintain, and fly the aircraft we will all depend upon beyond the Year 2000.

One example of such change in a field office preparing for the next millennium is occurring in the South Carolina Flight Standards District Office (FSDO) located in Columbia, SC. The FSDO, which is responsible for the entire state of South Carolina, is working hard today to meet the future needs of its aviation customers by making changes now to ensure it, too, is ready for the Year 2000 and beyond.

We have all heard of Vice President Gore's leadership role in aviation safety and the various safety recommendations released by the committee he chaired on aviation safety. All of the safety initiatives announced here in Washington by the Vice President and the FAA Administrator have stressed the critical importance of everyone in aviation going beyond the norm to find creative ways to ensure aviation safety goals are met in the next millennium. The need for such creative thinking, or thinking out of the traditional box or frame of reference as some people think of it, is based upon the chilling fact that with the anticipated growth in aviation over the next few years and if today's accident rates continue at the same rate into the future, the number of accidents based upon the growth and projected accident rates could cause the number of accidents to figuratively go off the charts. That is why FAA has announced its safety goal of a five-fold decrease in the accident rate within the next 10 years.

Everyone recognizes the problem. Everyone talks about the problem. The South Carolina FSDO is doing something about it as it prepares to continue its leadership role in the 21st Century throughout the aviation community of South Carolina.

One way the South Carolina FSDO plans to bridge that gap between tomorrow's needs with today's reality is by preparing to change the way the men and women in South Carolina think about their own aviation safety responsibilities. This is the story of how the FSDO plans on making a difference in its district in ways that go beyond the norm. It is not business as usual in Columbia anymore.

THE CHALLENGE

The FSDO's challenge was how to make a quantum change in how men and women operate, maintain, and fly aircraft in a state that includes such diverse areas as the Atlantic Ocean on its eastern border, through the lowlands and piedmont areas to the hill country of its western counties. Any change has to be flexible enough to meet the needs of a multi-cultural community such as aviation while accomplishing the regulatory needs of the FSDO. A change that works for maintenance technicians, aircraft operators, pilots, fixed-based operators, and others who all make up the South Carolina aviation community.

The question became one of how

do you make that leap from the 20th Century into the 21st Century, and do it effectively, so that all the people involved are willing to follow.

TRADITIONAL THINKING

Traditionally, FAA has taken two main approaches to promote aviation safety. The first technique is for airline and commercial operators. FAA simply assigns Flight Standards safety inspectors to each commercial operator to oversee the operator's compliance with the many detailed operating regulations that have been developed over many years to ensure a minimum level of safety throughout the industry. Air operators also have FAA-issued operation specifications (op specs) that, in addition to the Federal regulations, detail exactly what the operator is permitted to do and under what conditions.

Then for general aviation (GA), FAA has relied on its Aviation Safety Program for promoting safety within the GA community. The FAA's Aviation Safety Program was established in the 1970's to combat the extremely high general aviation accident rate at the time. Since then, the Aviation Safety Program has evolved into one of the FAA's most successful public programs, one that is recognized by everyone involved in general aviation as a program that not only saves lives, but one that also allows the FAA to wear the proverbial "white hat" as it deals with pilots and mechanics nationwide. It is a program that, according to preliminary stats, helped make 1997 one of the safest years on record for general aviation.

WHY CHANGE SUCCESS?

So why try and change something that works? Because according to the South Carolina FSDO, the current way of doing business there will not meet the needs of the South Carolina aviation community in the next century.

The South Carolina Flight Standards District Office Manager Joseph Stuppiello and his two Safety Program Managers Richard Hitt and Robert Switter have studied the issue long

Members of the Clemson-Oconee County Airport community listen as FAA safety inspectors explain airworthiness issues during a safety seminar at the airport. (H. Dean Chamberlain photo.)

and hard. After long hours of analyzing data and reviewing where they wanted to go as they prepared for the future, they and the FSDO staff decided they must do more than just complying with FAA directives to make sure their district is prepared for the 21st Century. They are now in the process of doing just that. They are going "outside of the box" to make sure safety becomes an integral part of the South Carolina aviation community's daily life. They want safety to be something that people always do rather than something they only do when reminded to be safe.

Call it great leadership, team work, hard work, dedication, or just great people on both the FSDO staff and throughout the South Carolina aviation community, but there is no doubt in their belief that the South Carolina FSDO's new approach to aviation safety will change the way safety is thought of in the state.

One reason for this belief was voiced by Dick Hitt, the FSDO's SPM since 1991, "The pilots and mechanics in this state appreciate the fact the FAA and the FSDO pay attention to them. We go and talk to them. We have seminars, and we make a place like the current Aviation Safety Program Safety Center located on the ramp of the Columbia SC airport available to them. They like that," he said.

In talking to FSDO members, it was apparent that both the aviation community and FSDO work well together to resolve aviation issues in the district.

SOUTH CAROLINA SAFETY CENTER

One innovative safety change the FSDO has made was the establishment of the South Carolina Safety Center. The SC Safety Center is unique within the Flight Standards Service. The Safety Center is located on the ramp of the Columbia airport in an FAA air traffic facility. Nothing unusual about an FAA office being at an airport, you say. What makes this location special is that the FSDO and its management is located several blocks away in an industrial park off the airport* while the Safety Program Managers work at the Safety Center.

The Safety Center provides many important benefits for the men and women of South Carolina and pilots flying through the state. For one, it provides a more convenient access to the FAA's safety message than the FSDO does. People can fly into the airport and taxi right up to the door of the Safety Center. It is not quite a drive- (or a fly-) through facility, but it is more accessible than many other FSDO's across the country.

Pilots can also arrange to do their check rides out of the Safety Center rather than having to meet the FAA inspector doing the check at the FSDO. This benefits both the applicant and inspector in two ways. The applicant and FAA inspector conducting the check ride have more privacy in the Safety Center for their examination; plus the pilot has access to the safety information available at the Safety Center.

A classic story of both the pilot applicant and the FAA inspector benefiting.

Although one or two other FSDO's have FAA Safety Centers such as the ones at Lakeland, FL, the home of the annual Sun 'n Fun EAA fly-in, and the one at Oshkosh, WI, the home of the annual EAA Convention and Fly-in, these facilities are different from the one in South Carolina. For one thing, the Lakeland and Oshkosh centers are very large facilities designed to provide many FAA services for hundreds if not thousands of visitors at the fly-ins. Also, the Lakeland and Oshkosh centers don't have their respective FSDO's SPM's located in the centers. This is one more example of the far-reaching thinking occurring in South Carolina aviation.

The South Carolina Safety Center's easy access also makes it convenient for pilots and mechanics to visit the SPM's. It provides a certain degree of privacy for airmen wanting to meet with the SPM's on safety matters without having to stop at the FSDO. Like most of the other FSDO's and the FAA in general, the South Carolina FSDO is a large office layout with inspectors and staff people working in modular furniture cubicles. Like the cubicles here at FAA Headquarters and as evidenced by any "Dilbert" cartoons, "cubes" don't provide much privacy. The South Carolina Safety Center provides the type of privacy many people want when talking about aviation safety or personal aviation matters.

According to Hitt, people find the Safety Center less intimidating than the FSDO. He said, "They are more comfortable at the Center, plus the Center provides them a wide-range of safety products that can make them safer pilots and mechanics."

Hitt said, "Things like the Safety Center are important to the aviation community in South Carolina." He described his working relation with that community by saying, "The people of South Carolina are good people. They appreciate how the FAA can help them."

THE FSDO MANAGER

Hitt told how FAA earned that support. He related the story of how the FSDO Manager Joe Stuppiello gave up going to watch his son pitch in a Little League baseball game so that he could go speak to a group of volunteer Aviation Safety Program Counselors. Hitt said South Carolinians appreciate and remember such actions on the part of FAA personnel.

Establishing the Safety Center was only part of an overall plan for change by the FSDO as it works to make South Carolina one of the safest areas in the country.

In talking to several FSDO employees about what is going on in the FSDO, they said the force behind the changes is the manager. They like his vision for the future and the way he does things. He is innovative, calculates the odds, and does in depth analysis of problems to come up with workable solutions.

According to Nanette Hargrove-Henry, an aviation safety assistant, Stuppiello is willing to try new things and if they don't work, he is willing to let them go, but if they work, he is willing to promote it and promote it until it is perfect. She said that attitude is shared by the office's inspectors who also strive to make things perfect.

When meeting Stuppiello for the first time, you get the feeling here is a man in constant motion. Even when he is sitting down, he projects a sense of barely contained energy. A person that is on top of everything he sees.

When entering his office, you know you are meeting a person with two passions. Aviation is one. The other is baseball. His office walls are covered by kids' baseball team pictures. From the baseballs sitting around his office to the plaques on his walls, Stuppiello's passions are reflected by his office and in his attitude.

It was his passion for safety that lead to many of the changes occurring within the South Carolina Safety Program. Gone are the days of business as usual.

"As an agency, for years we gave lip service to the Safety Program, but we didn't give it our full support," he said. "We would go out and try to educate the public and things like that but in a lot of cases we wouldn't put the resources where our mouth was."

"With necessity being the mother of invention, we [the FSDO] were being crowded and squeezed out of space here. We had the line station at the airport for check rides, and Dick and I got to talking, and we decided it would be great idea to move our Safety office up there and establish a Safety Center. Someplace where people could come and see a video, read a magazine, pick up a brochure, or just sit down and talk safety. Someplace where people could meet and talk hanger talk but at an FAA facility. "So we got some funds and on a shoe-string budget we put it together.

"The volunteer Safety Counselors jumped on it and made it work. We had a Safety Program Counselor Renewal meeting here recently. At the meeting, the counselors said never in the history of South Carolina has the level of support for the Safety Program been so great. They said the Safety Center was an ideal concept where people can come and learn about safety."

SAFETY COUNCIL

When asked about his vision for making South Carolina safer, Stuppiello said the plan is not a short term project. He thinks it will take from three to five years for the desired cultural changes to become totally effective. "The first year is basically an analysis year where we can all learn how to make the concept of a safety council come alive," he said.

You have to learn to walk before you can learn to run. The same is true of

the FSDO's new Safety Council.

Safety councils are not new. They have been used for years in many industries, but the concept is new to the FSDO.

As part of its plans for the future, the FSDO took the initiative and added an airworthiness safety inspector to its Aviation Safety Program because airworthiness issues are going to play an important role in the FSDO's future safety initiatives. The Safety Council is the FSDO's first step towards its goal of changing the culture of safety within South Carolina.

The importance of maintenance and within maintenance, avionics, is best illustrated by the fact that there are two ASI's from each of the office's safety inspector disciplines: airworthiness, avionics, and operations plus other office support staff as needed. The Safety Program Managers Dick Hitt and Bob Switter chair the council.

The Safety Council is Stuppiello's way to make sure all the segments of the FSDO's inspector force are involved in the FSDO's safety mission. As a former avionics inspector, maintenance supervisor, and principal operations inspector, Stuppiello knows and understands the significant contribution maintenance workers make to aviation safety.

During an interview with him, he told how maintenance workers don't get the type of acknowledgment that pilots often get when greeting passengers after a flight. But he said without everyone involved in maintenance doing their job right, that aircraft may never have arrived at its destination. "There are no marching bands for maintenance workers, but without them, there is no aviation," he said. Maintenance is the backbone of aviation."

Because of his background, Stuppiello wanted to make sure that the Council provided a method for all of the FSDO's safety inspectors to support and promote aviation safety throughout South Carolina as the FSDO works to change the safety culture in the district in time for the kick off of the new century. He did that by involving each specialty's expertise in the office's pursuit of safety.

But, the long-term goal for the Safety Council is for the South Carolina aviation community to take over its functions. The idea is for everyone involved in aviation in the state to become motivated about their own safety and to help manage their own safety program. All of which would be done in cooperation with FAA.

This type of cultural change takes time, which is why the FSDO expects the transition to take up to five years. Time the FSDO is willing to provide as it restructures its own safety goals to meet the changing needs of the people as they all work towards the 21st Century.

EDUCATION AND ITS ROLE IN SAFETY

According to Stuppiello, "Education is the key to aviation safety. We (FAA) are a service organization. At times we may forget that because of the regulatory hat we have to wear, but we have to remember the needs of those we serve. In many cases, that means providing education and increasing the safety awareness of those in aviation."

He noted, everyone has the desire to be safe in their airplane. "Why would anyone want to be a hazard to themselves," he asked.

"We can help provide that safety awareness through education. Our challenge is changing the lifestyle and culture of the people we work with. The Safety Center and Safety Council are our way of making those changes."

"Right now we are between what we call the old safety concepts like the rest of the country is still doing and transitioning into a new lifestyle or cultural change or shift we are trying to make happen here in South Carolina.

"Right now our Safety Council has three commitments. One is to make good on all of our present day commitments. This means providing all of the seminars, special programs, and other programs we promised this fiscal year.

"The second step is working towards our cultural shift. We need to do a detailed analysis of the history of South Carolina as it relates to accidents, incidents, and violations. This means more than just reviewing records. It means going out and talking to operators, inspectors, and others who have been involved in aviation for 20 or 30 years to get a feel for where aviation was, is now, and where it is headed in the state, including getting to know where the pitfalls are, so we can build some models of what events lead up to the type of accidents we have here in South Carolina. We want to be able to model the events' stages such as A-B-C-D-E-and F that lead up to the accident G. We want to be able to use these historical models as part of our Safety Council so that when we see events A-B-C-D-E and F happening, we can take action to stop the accident, G, from happening. It is a concept as old as aviation, but we want to be able to model our accidents so that we can take action at the beginning of the A-B-C chain so we can prevent the accident from happening."

The third and final stage is for the South Carolina aviation community to take over the Safety Council. FAA then would coordinate and provide resources for the Council while overseeing its efforts.

"I like to use our relationship with the banner tow industry along the coast, such as along Myrtle Beach, as an example of where I see the Council going. At one time the accident rate for banner towing pilots was high. We worked with the industry, and the industry developed its own safety procedures and programs that met FAA requirements. They worked to improve their own safety standards. They did it themselves. And it worked. That is how I see the Council evolving to meet the needs of South Carolina pilots and mechanics.

"We want to get the aviation industry involved to the level where they are controlling their own future with us. We want to work together with everyone in the industry to increase everyone's safety. Aviation is a business. We understand that. We know our operators enjoy being in aviation. They can make money doing it, and they can still get to their dreams while working towards increasing their own safety by working with us. We want them to work with us while they are working on their own safety rather than running from us. We know commercial operators need to make money to stay in business. We just want them to work with us and be safe while they are doing it. By cooperating with us, ultimately, they will all be safer. And safety is good for business," he said.

SAFETY COUNCIL GOAL

"Our goal through the Safety Council and our education initiatives is to change the culture of aviation safety in South Carolina. We want the entire district to always be looking for those identifiable early risk factors so that they, themselves, can recognize when some of a safety model's A-B-C's elements are beginning to occur, and they can take corrective action early to stop an accident from happening," Stuppiello said.

"It is a lifestyle change. Every inspector in this office is involved in the change. Now, our inspectors are looking for 'areas of weakness' as they work with our operators, mechanics, and pilots in the district. If an area of weakness is discovered, they report it and we work to see how education can correct the situation.

"The Safety Council works as a clearing house as it reviews these reports. The Council looks for trends developing throughout the state that in the past might have been overlooked as only isolated incidents or situations when reported by individual inspectors.

"The Council also receives information from throughout the state. Counselors, inspectors, operators, and the public can all provide input. We also have an Internet web site for people to provide data.

"In order to understand what is happening in the district, you have to have that free for all communication back and forth. We are spending a lot of energy to establish those kinds of relationships so we can understand what it is we need. South Carolina is unique. Based upon our location, size, type of aviation in the state, and people, I am betting in three to five years, we are going to see a change.

"We are going to see the results of everyone's efforts. We expect to have working models by Fiscal Year 2000 that we can teach to. The whole goal of all of this is to increase safety awareness. We want to change the culture here so that the men and women here can see, recognize, and eliminate problems before an accident or incident occurs.

"We also expect to see a change in how people operate. Although the quantifiable success of the program will be a reduction in accidents and incidents, we really want to change people's attitude towards how they fly and work. We want them to become safe pilots and mechanics where safety is an integrated part of their normal activities," he said.

CHANGE IS CONSTANT

Change is nothing new for the world or aviation. There are still people alive today who saw the world go from the Wright Brothers first flight at Kitty Hawk to space flight and moon walks. We all know how two bicycle shop owners, the Wright brothers, helped move the world from bicycles to airplanes.

The South Carolina FSDO is working to make a similar quantum change in aviation safety, a change that goes from the traditional concept of trying to teach aviation safety to people to a whole new approach of making safety an everyday way of life for the aviation community in South Carolina.

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** (Editor's note: More and more FSDO's are being force to move off airport as the rental rates for on-airport facilities continue to skyrocket. Although FAA can save money or for the same rate rent better facilities for its employees and its aviation customers, there is a corresponding loss of access for the aviation community such as being able to flying into an airport and taxi up to the FSDO to conduct business.)*

A CHANGE IN PHILOSOPHY

South Carolina FSDO, like most of the FSDO's around the country, routinely depended upon its one assigned Safety Program Manager to develop and manage its Safety Program. The problem was one person can only do so much. Flight Standards Headquarters recognized this problem several years ago when it changed the title of the former Accident Prevention Specialists to Safety Program Managers. The title change was a way to highlight the need for the new SPM's to manage a safety program rather than always giving the program as an accident prevention specialist may have done.

A key element in this change in philosophy was the greater importance placed upon the many FAA-appointed volunteer Aviation Safety Counselors who promote aviation safety within their respective districts. Counselors promote safety in their local areas by working with pilots and maintenance technicians on a very informal basis. In many cases, it is easier for a counselor to help someone than a FAA inspector because some people feel intimidated by FAA inspectors. In addition to working with airmen, many counselors present safety programs and provide other support as needed within their local areas. Without the volunteer safety counselors, the Aviation Safety Program could not accomplish its mission of promoting safety throughout the aviation community nationwide.

In expanding and changing the scope and role of the Safety Program Managers several years ago, FAA Headquarters also recognized the need to increase the direct participation of FAA Airworthiness (AW) Safety Inspectors in the Aviation Safety Program. Although AW inspectors are now working full time in the Safety Program at the Regional Flight Standards headquarters level, it was left up to the local FSDO's to manage their own inspector work force. South Carolina FSDO chose to add an AW inspector to its Safety Program.

Meet the South Carolina Safety Program Managers

FAA Safety Program Managers Dick Hitt (l) and Bob Switter in front of their South Carolina Safety Center at the Columbia Airport. (H. Dean Chamberlain photo.)

DICK HITT

Dick Hitt has been the SPM at South Carolina since 1991. Before that he worked as a Principal Operations Inspector in the Allegheny FSDO in Pittsburgh, PA. Dick literally grew up in aviation. His parents owned and operated an FBO in upstate New York. Dick's father also was a pilot. With a background like that, flying came naturally to Dick. He tells the story of how as a child he wrote the then CAA, the forerunner of the FAA, asking how he could get a job with the CAA. Finally, years later, he was hired by the FAA.

He had fulfilled his dream of working for the FAA. "I thought as an FAA inspector, I could put something back into aviation and help others too," he said.

"After I got into the FAA, I found out I could really help them more in the Safety Program.

"I am happier now that I am helping more people.

"One of the rewarding things about this job is that sometimes, after a safety seminar or a remedial training session, a pilot will come and talk to me. Oftentimes the pilot will tell me that they had not known that particular thing before. Or that they now are going to fly differently now that they know this. I know that learning has taken place, and that I have helped them to fly safer and longer. I feel that I have helped make aviation better. I have helped my fellow pilots. I like that," Hitt said.

BOB SWITTER

Bob Switter is the newest member of the SPM Team at the South Carolina FSDO. He is its airworthiness member. He joined the FSDO in January 1998. Before that he was a Principal Maintenance Inspector in the Farmingdale FSDO in New York.

Bob worked for Pan American Airlines for 27 years both in maintenance and maintenance management before retiring from Pan Am and joining FAA. Like many FAA employees, Bob started his aviation career in the military where he spent four years in the Air Force as a jet engine mechanic.

When asked why he joined the FAA, he said, "I think the FAA is a good place to share my years of experience in aviation."

Bob is looking forward to adding his experience and expertise to the FSDO's Safety Program. He is particularly interested in making sure both pilots and maintenance technicians understand the responsibilities each have regarding the airworthiness of the aircraft they fly or maintain.

SAFETY ALERTS STOP

THAT DOG DOES HUNT

As the former owner of beloved and much missed English Border Collie Sam, who has gone on to his just reward, this was a heart-warming story from *The Philadelphia Inquirer*—and it even had an aviation tie-in. We have written in the past about the dangers of bird strikes and the various techniques employed to reduce or move bird populations from airports. If you're having trouble with birds and you're seeking an inexpensive or less drastic alternative, consider what the U.S. Navy recently accomplished. At Willow Grove Naval Air Station, the Navy had tried everything to keep birds from posing a danger to landing and departing aircraft—shotguns firing blanks, sirens, water hoses, trained falcons. Nothing worked until they purchased Jackie, a black-and-white Border Collie. Jackie has been on the job almost a year, and there have been no bird strikes at Willow Grove. Other airports are looking into Jackie's success and may be getting dogs of their own. Hopefully, for civilians the red tape will be considerably less—Willow Grove had to go to the Chief of Naval Operations for approval to purchase Jackie, a process that took two years. Jackie is allowed to indulge his herding instincts, and the birds are kept away from runways and taxiways. Way to go, Jackie.

THE PERILS OF COYOTE-HUNTING

Hunting sometimes is just as deadly for the hunter as for the hunted. Four participants in a little-known federal program over the past 17 months have died while hunting coyotes. Did the coyotes exact some Stephen King-like revenge, and what does this have to do with aviation anyway? The four who died were pilots of low-flying aircraft or helicopters who were allowed to hunt from their aircraft under a Department of Agriculture program which permits it if the animals are preying on livestock.

A number of safety issues come to mind for this type of operation:

- Even if you are not the hunter but the pilot flying the hunter, you can be distracted from your piloting duties by the "thrill" of the hunt.
- These operations typically involve very low-level flight which reduces the time available to respond to an emergency.
- The pilot's focus can become limited to the tracking or following of the animal rather than paying attention to terrain, fuel status, engine instruments, obstructions, etc. The list could go on.

The Department of Agriculture is reviewing the aerial hunting program. Hunting from aircraft is outlawed by federal and state statute except under the conditions of the USDA program.

ALUMINUM OR STEEL CUTTERS?

After a recent accident of a Weatherly 620B crop duster where the pilot was killed, investigation revealed that the wire cutters on the aircraft clipped a powerline approximately 3/8-inch in diameter. The wire cutters did not cut the wire, and the aircraft crashed with fatal injuries to the pilot. The wire cutters were factory-installed and were aluminum. This raised the question that since most powerlines have a steel core that wire cutters on aircraft be steel instead of aluminum.

FAA design standards do not address wire cutters since they are added by the manufacturer as optional equipment at the request of the purchaser. Many of the powerlines today are too thick even for steel cutters. The installation of wire cutters can also cause stress and corrosion problems when mounted on a spring steel landing gear.

Wire cutters have saved lives in agricultural aircraft operations, but reliance on wire cutters alone to deal safely with wire strikes is not in the operation's best interest. Site surveys before spraying begins, pilot attention to flying the aircraft, and situational awareness are the safest means of accident prevention.

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to 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.dot.gov

• ALCOHOL AND PASSENGERS

In the past, logging pilot in command time and operating in the old control zones were hot topics that generated many responses in our FlightFORUM section of the FAA Aviation News. But the April 1998 issue's topic "Is It Time To Ground Alcohol" may have to be added to the multiple comments list. Several readers wrote and outlined their support for not serving alcohol on flights. Although we are not going to print their letters in full, we would like to include excerpts.

-Forum Editor

"I thought it was a great idea, and at first, wondered why no one hadn't thought of it before. Then I realized it really hadn't been a problem until now. I've flown on business and pleasure for the last 23 years of my working career and have noticed a gradual increase in the abuse of alcohol during airline flights. It wasn't a problem 10 or 15 years ago, people seemed to be more considerate of those around them and moderate in their drinking. Now, whether it's a different class of people flying or just the decrease in personal responsibility of the public in general, but there seems to be more 'problem drinkers' and unruly passengers on board aircraft these days.

"I am not anti-alcohol. I've had drinks on a flight myself and know that most people who drink on a flight are not a problem. However, based on the past few incidents with passengers who had too much to drink, it seems likely there may be more dangerous incidents in the future. Trying to have the flight attendants police the distribution of alcoholic beverages to the passengers is asking too much of an already overworked crew. Also, trying to identify the likely problem drinker is nearly impossible until it's too late. Removing the alcoholic beverages from the aircraft seems to be the logical solution."

Ron Kelley
Via email

Another reader summed up his feelings this way. "I agree with Deborah Scheetz in your April 1998 issue of *FAA Aviation News* that alcohol should be prohibited on airlines. I have flown on many flights where passengers clearly drank too much and put themselves and others at risk for injury.

"I am not against drinking—as long as the drinker does not in any way interfere with the rights of other people. I feel that like smoking, it is better done in a more suitable environment. The cabin of an aircraft is not that place."

Richard Henrikson
Via email

FAA is concerned about the increasing level of violence exhibited on aircraft these days against both flight attendants and other passengers. Part of the problem may be because of the increased number of passengers on each flight, the stress of having to spend more time waiting to board flights because of increased security, and the problems of getting to and from the airport. But whatever the reason for the increased violence is, every passenger has a responsibility to both him or herself and other passengers for two important reasons. The first is simple courtesy and respect for another human being. The second is each passenger has a unique safety responsibility to all of the other passengers on board an aircraft. In the event of an aircraft incident or accident, each passenger must be able to comply with the safety instructions of the flight attendants. A passenger who cannot or will not comply because of being under the influence of alcohol is a danger to both him or herself and to the other passengers onboard. An unruly or incapacitated passenger who blocks an aisle or exit can trap other passengers which could conceivably result in their death in a critical situation.

It is important that every passenger remember that FAA requires flight attendants on aircraft for a vital safety reason. They are trained and there to respond to any onboard emergency situation and to help passengers evacuate the aircraft if so ordered by the captain. Flight attendants are not on the aircraft to serve coffee, sodas, or alcohol. They also don't have time to police passenger behavior.

• CHANGED SITUATION

Let's make one change in the situation outlined in "Logging Time" by Chad J. Bawcum in the Flight Forum column in the September 1997 issue of *FAA Aviation News*. The two multi-engine pilots are practicing instrument flight in VMC with each taking turns acting as safety pilot, FAR §91.109(b). Does not FAR §61.51(e)(ii) then permit both of them to log PIC?

Jim McNeill
Via email

Yes, under the above situation both can log PIC time. One can log time as the rated pilot manipulating the controls in accordance with FAR §61.51(e)(1)(i). The other can log PIC time as the required safety pilot in accordance with FAR §61.51(e)(1)(ii).

• LOGGING SAFETY PILOT FLIGHT TIME

I have been hearing that you can log pilot in command (PIC) for being a safety pilot for someone getting current for their instrument privileges. Is this true? I can't seem to find anything on it.

Thanks Terry,
Via Internet

Yes. FAR §61.51(e)(1)(ii) applies.

1997 AIRLINE FATALITIES DOWN; GENERAL AVIATION DEATHS RISE

The year 1997 marked the first full year that a substantial number of FAR Part 135 carriers with 10 or more seats came under the regulations of FAR Part 121, but fatalities from accidents involving airlines decreased last year.

There were three fatalities from 42 accidents involving Part 121 airlines in 1997. Two of the fatalities were passengers, one who fell through an open catering door while boarding and the other killed when the aircraft on which she was riding encountered turbulence en route. That passenger was not wearing a seat belt. The third fatality was a ground crew member crushed by the nose wheel of an L-1011.

In Part 135 scheduled operations there were five fatal accidents, accounting for 46 fatalities. This is up from one accident and 14 fatalities in 1996. Air taxi accident rates dropped, as did the number of accidents and fatalities. Charter airlines operating under Part 121 registered lower accident and fatal accident rates. There were seven accidents, one of which was fatal when the crash of a cargo jet killed four crewmembers and one person on the ground.

The number of general aviation accidents declined from 1,905 to 1,854 in 1997. However, the 646 fatalities were 15 more than in 1996. Still, the 1997 figure is the second lowest in 15 years in general aviation.

For additional details, more statistics and charts, contact the NTSB at (202) 314-6100.

EIGHT EUROPEAN COUNTRIES COMPLY WITH SAFETY STANDARDS

The FAA recently announced that its assessment of eight countries providing air service to U.S. citizens comply with international safety standards. The countries are Austria, Denmark, Finland, Iceland, Ireland, Norway, and Sweden.

The assessments are not an indication of whether individual foreign carriers are safe or unsafe; rather, they determine whether or not foreign civil aviation authorities are in place and the extent to which those authorities ensure that operational and safety procedures are maintained by their air carriers. The civil aviation authorities are assessed for their adherence to International Civil Aviation Organization (ICAO) aviation safety standards, not FAA regulations. The civil authorities are rated either Category I (does comply with ICAO standards), Category II (did not meet ICAO standards but FAA is negotiating with the authority on corrective measures), or Category III (does not comply with ICAO standards and not permitted to operate in the U.S.).

Travelers may call 1-800-FAA-SURE (1-800-322-7873) to obtain a summary statement about whether a foreign civil aviation authority has been assessed and the results of that assessment.

FAA AND ECAC MEET ON MAJOR ISSUES

A March meeting in Paris between Administrator Jane F. Garvey from the FAA and Andre Auer, President of the European Civil Aviation Conference (ECAC) resulted in a joint statement of both agencies' commitment to various global aviation safety issues.

Among the issues discussed were implementation of world-wide satellite-based navigation systems, accommodation of increased traffic growth, aviation security, flight crew licensing proposals, and U.S. overflight charges. Both agencies agreed to build upon results of International Civil Aviation Organization (ICAO) meetings in these areas.

Administrator Garvey said of the meeting, "It is very helpful and productive for us to meet in a forum where we can hear the collective views of ECAC's 36 member states. We look forward to continuing our dialogue with ECAC at the ICAO General Assembly in September and to developing consensus on important aviation safety and security issues."

ECAC's member states consist of Armenia, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, Turkey, and United Kingdom.

U.S. PILOTS TO RETRACE HISTORIC RUSSIAN FLIGHT

Two pilots from Nashville, TN will leave the U.S. in their Maule M-5 on July 5 for an around the world trip. One stop will be in Moscow, Russia, and from Moscow they will retrace the historic 1938 flight of Rodina between Moscow and the Far East.

Sixty years ago three Soviet women pilots—Valentina Grizodubova, Paulina Ossipenko, and Marina Raskova—flew Rodina on a 6,000 kilometer non-stop flight. All received the highest award of the then-Soviet Union, and Marina Raskova went on to set up the training of Soviet women fighter pilots who saw service in World War II.

This year, Nikki Mitchell and Rhonda Miles will use the Maule M-5 to retrace this historic flight. Mitchell and Miles have been training in the Yukon Territory and in Alaska for the arduous trip. A Russian club of women pilots, Aviatrissa, will join the commemorative effort. Two Russian women pilots will fly side by side with Mitchell and Miles in a unified flight of honor and good will.

Miles' aviation career began an a flagperson for her father's crop dusting operation. She has now logged over

3,000 hours and has been a pilot for Cracker Barrel restaurants, Hank Williams, Jr., and StarStruck Jets, owned by Reba McEntire. Mitchell drew inspiration also from her father, a C-130 flight engineer, and a neighbor known as the "Flying Doctor." She is currently the on-staff pilot for singer Waylon Jennings.

For further information and updates contact Mitchell at (615) 329-9180 or check the "A Bridge of Wings" web site at www.bridgeofwings.com .

TWO AIRLINES BEGIN MANDATORY SEAT BELT USE

American and United Airlines in March instituted company requirements for passengers to keep seat belts fastened at all times when seated in the aircraft. Passengers are required by Federal Aviation Regulations to wear seat belts during takeoff and landing and any time the seat belt sign is illuminated. American and United have made these moves to address injuries which occur when aircraft encounter clear air turbulence, sometime violent enough to throw unbelted passengers from their seats. In December a woman died from injuries suffered when the aircraft on which she was a passenger encountered turbulence over the Pacific. She was unbelted.

A year ago FAA began its public awareness campaign, "Turbulence Happens," to inform the public of the safety aspects of keeping a seat belt fastened at all times while in the aircraft. Flight crews must wear seat belts at all times during flight. Several other U.S. airlines are expected to begin their own requirements, similar to the American and United programs.

FAA Administrator Jane F. Garvey issued the following statement: "Keeping your seat belt fastened all the time is the best way to protect against injury in case of turbulence. I congratulate American and United for taking this positive safety step and encourage other airlines to consider doing the same."

WOMEN IN AVIATION CONFERENCE CONTINUES TO GROW

A record 2,127 attendees—women and men in aviation—came to Denver, CO for the 9th Annual International Women in Aviation Conference in March. All 50 U.S. States and nine foreign countries were represented. The conference's theme was "Rising to New Heights," and the attendees enjoyed the stirring words of aviation notables such as FAA Administrator Jane F. Garvey, NTSB Vice Chair Robert Francis, Astronaut Bonnie Dunbar, and Carroll Suggs of Petroleum Helicopters, Inc. Women in Aviation also premiered its new magazine, *Aviation For Women*. Some $286,000 in scholarships were awarded during the three-day conference.

FAA Administrator Garvey, in addition to emphasizing her safety agenda, told the attendees, "We can be the difference in rejuvenating a system. Given the opportunity women can perform and perform well. All we ask is the opportunity."

NTSB Vice Chair Francis lauded Administrator Garvey for the initiation of a new FAA program called FOQA—Flight Operations Quality Assurance. This program allows data from aircraft flight data recorders and cockpit voice recorders to be analyzed for safety trends and prevention of accidents. FOQA, he said, "allows a look at the aviation environment on a normal day, and the information can help preempt accidents."

An FAA Aviation Safety Program safety seminar featuring aviation speaker and instructor Rod Machado attracted nearly 1,000 attendees, and a Teacher Workshop provided resource material to area teachers.

The 10th Annual Women in Aviation Conference will be held in Orlando, FL March 18 - 20, 1999. For further information call (937) 839-4647.

Didn't prepare
Exhausted fuel
Aerobatics too low
Take-off run too short
Hit high ground

Weight/balance out of limits
Ignored weather
Stall/spin
Hit other aircraft

These are the causes of 90% of FATAL ACCIDENTS!

Editor's Runway

from the pen of Phyllis-Anne Duncan

Change \(chānj\ *vb*

According to *Webster's New Collegiate Dictionary,* the definition of change is "to make different: to make radically different; to give a different position, course, or direction to."

"Change" and the "new millennium" are words overused in today's media, and we're all probably getting pretty tired of being reminded not only of an upcoming new century but the onset of the next millennium. Yet, both change and time are inexorable—they occur with every revolution of the earth around the sun, the galaxy around its core. We can sit back and let things go by us, or we can evolve and transition and inherently improve. This is true for people, for organizations, and, if they wish to endure, for governments.

Two articles in this issue have focused on changes currently being made in the FAA to enable it to face the challenges of aviation and safety in the next century. "Safer Skies" (page 1) details FAA Administrator Jane F. Garvey's new safety agenda which focuses agency resources on specific safety goals and projects. "Getting Ready for the 21st Century" (Page 23) depicts one FAA FSDO's approach to meeting aviation's next century challenges. But these are not two, isolated events in the continual, evolutionary process of the FAA.

One of the latter definitions of change in *Webster* is "to undergo transformation, transition, or substitution." FAA is in the throes of this type of change, and I use the word "throes" not for its negative connotation but because it is descriptive of just how transforming change can be to a bureaucracy. Above all, change is flexible, and bureaucracies and the governments they serve must be as flexible as that change, as the ever-changing people from whom they derive their power. A new aviation inspection process announced in May by Administrator Garvey promises to deliver that flexibility and openness to the constant flux in aviation.

Called the Air Transportation Oversight System, or ATOS (one thing that hasn't changed is our propensity for cute acronyms), this is a data-driven program that will enable FAA inspectors to spot safety trends and problems *before* they lead to an incident or accident. Rather than one single, national surveillance plan for all air carriers, each major airline in the country will have a surveillance plan designed for its specific operations. Inspectors will do more than check for the currency of pilot certificates and maintenance entries. They will examine the carrier's overall picture—management practices and philosophy; past accident, incident, and enforcement history; and other parameters that could indicate problem areas. Rather than trying to conform the airline's operations to a generic plan, a plan will be designed specifically for each airline.

ATOS will be phased in, with Phase I beginning on October 1 and focusing on the 10 major U.S. passenger carriers: Alaska, America West, American, Continental, Delta, Northwest, Southwest, TWA, United, and USAirways. Any new entrant carriers certificated by the FAA will also be overseen by the ATOS process.

To get a better picture of what this means to the traveling public, let's use what some newspapers do when the old year ends and the new one begins—what's in and what's out.

What's Out

- Inspections by the number; currently national inspection guidelines call for each air carrier to receive the same number of inspections annually
- Data that is not driven by a systems approach, i.e., a set of numbers to be crunched
- The "lone inspector" approach to oversight
- Geographic inspectors without carrier-specific training
- Lack of a structured process and an ongoing evaluation process

What's In

- Inspections tailored to the carrier (more or fewer as data analysis indicates) conducted by certificate management teams armed with information and training specific to the carrier and based on information from databases that identify safety trends and potential problems
- Risk assessment
- Geographic inspectors assigned to specific carriers and trained in that carrier's operations
- Ongoing review of ATOS by Continuous Improvement Teams (CIT)
- Periodic audits to evaluate ATOS' effectiveness

Even though ATOS was not yet in place, the mind set was present in the recently announced inspections of certain models of 737 aircraft for wiring anomalies. We can no longer afford the old model of inspect, accident, investigate, analyze, then change. That is reactive in a proactive world. The 737 inspections, and their fall-out for other makes and models, are indicative of the way the "new" FAA will do business. Even with ATOS there will be little visible difference in day-to-day travel on the airlines, except perhaps we can all reassure our non-aviation friends that as they book their travel into the next year and beyond, the skies can indeed be safer than the safest.

Change for change's sake, you might say. Or, "Why change a system which has given us the world's safest skies?" The answer is as simple as not resting on one's laurels. What works today will not work in future, and it is far less painful to evolve into a new system of safety oversight than to be thrust into it, unwillingly, kicking and screaming.

Oh, and to the reader who wrote to say we were "self-serving" the last time we highlighted FAA accomplishments on this page—sorry, we did it again.

'Til next time...

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