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Talking CAPACITY---

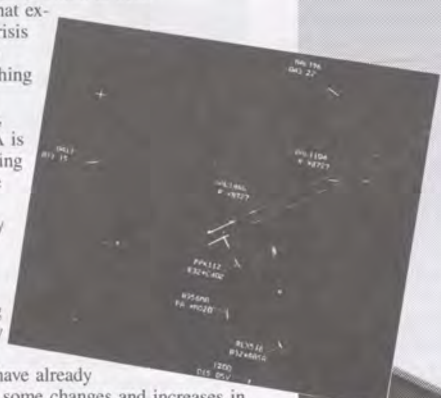
By Phillip M. Swatek

PRM Testing in Progress

Wringing the last bit of capacity out of existing airports is on almost everyone's agenda as a way to solve airport congestion and delays that some critics say are slowly beginning to choke the U.S. air transportation system.

There are those who insist that nothing less than building a number of major new airports in the right places will keep the system functioning in the next century. They believe new techniques, new technology to get more productive use of the runways we've got are necessary to buy the time to build new airports—a 10-year proposition at best.

To what extent a crisis is really approaching can be debated, but FAA is proceeding as if the sky is certainly threatening. New thinking and new techniques have already brought some changes and increases in airport capacity, some steps in the right direction. Other projects will require new equipment as well as new thinking. Critical on this list is the Precision Runway Monitor Program in operational test now at Raleigh-Durham (RDU) and Memphis (MEM) airports.

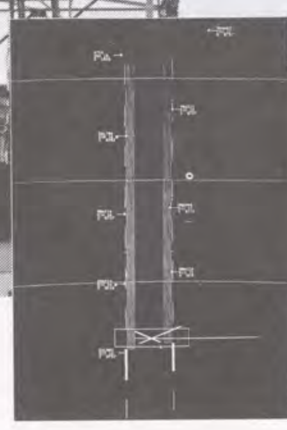


The test objective of the Precision Runway Monitor Program—"PRM"—is to determine the feasibility of permitting simultaneous independent Instrument Flight Rules (IFR) approaches to parallel runways less than 4,300 feet apart, the present standard. If the tests should prove successful—they will be concluded this fall—it won't mean the national airport capacity problem is solved forever, but it will mean a big step in the right direction.

Right now, only dependent IFR approaches to parallel runways closer than 4,300 feet apart are authorized. The aircraft must be staggered: one airplane remains behind another even though they

(Continued on page 2)

This electronic scanner antenna is at Raleigh-Durham, one of the two PRM test sites. It provides target updates to the controllers every second or faster.



A retired FAA official, Phil Swatek was a journalist and a free-lance writer before his government service.

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FAA Administrator
James B. Busey

Assistant Administrator—Public Affairs
Hugh O'Neill

Manager—Public & Employee Communications Div.
Vacant

Editor
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Art Director
Eleanor M. Mayonnis

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The test facility at Memphis shows the back-to-back Mode S or secondary radar antenna. The displays are in the trailer where the test exercises are run.

are separated laterally. There must be two miles between them. Obviously, this stretches the landing sequence out for both runways; it reduces the number of flights that can land on the pair in a given hour by nearly 40%.

When the pilots can see each other under Visual Flight Rules (VFR), this restriction doesn't apply. Controllers tell each pilot of the nearby aircraft; the pilots acknowledge seeing "the traffic" and maintain their own safe separation.

In bad weather, the pilots obviously can't do that and must rely on the controllers.

If PRM works—including a successful demonstration of controller and pilot response times—simultaneous IFR approaches could be conducted to runways spaced less than 4,300 feet apart, perhaps to as little as 2,500 feet separation, depending on the tests. That would mean the tight parallel runways at New York's JFK, for example, could handle 49 flights an hour in bad weather, rather than 37. Twelve key airports could benefit from this new standard tomorrow, including JFK, Chicago's O'Hare, Atlanta, Cincinnati, Baltimore and Orlando, as well as Memphis and Raleigh-Durham.

In addition, the new reduced separation standard could make it practical to build new runways at several large existing airports. Five are being planned now.

The critical contribution of PRM is getting more frequent updates to controllers on where the airplanes are as they approach the runways. The information also has to be displayed so the controller can monitor the operations effectively and react quickly should the need arise.

"Instead of telling you where the airplane's been, it tells you where it is," Will Cliatt of the Atlanta tower says of the system he is helping to test at RDU. It's "a whole new window," he believes.

At present, Airport Surveillance Radar (ASR) produces an update of aircraft targets for the controller every five seconds, the time it takes the antenna to make one revolution.

It takes at least two targets, or points, to project a line or course of flight. That's 10 seconds at a minimum. Assuming that an errant aircraft could move toward an aircraft on the adjacent runway at 120 feet per second, in 10 seconds it could be 1,200 feet off course before the controller could spot the deviation—called a "blunder" in the new lexicon.

The controller then has to communicate to the pilot of the blundering airplane, telling the pilot of the course deviation. The pilot must then react and get the airplane back on course.

Two of the PRM test controllers at Memphis: Dan Strawbridge, seated, and Greg Barrett, at right. Tower manager, Ron Liszt, is behind Strawbridge.

To improve on the 4,300-foot standard in place today, it is obvious that a radar update every 5 seconds won't do. The signals have to come in much faster, and they must be displayed in such a way that the controller can spot any blunder at once and communicate first with the blundering pilot, and, if airspace incursion has gone too far, with the other pilot as well. The other pilot might have to make a missed approach.

The test at RDU employs electronic scanning of approaching aircraft. It uses

a radar antenna, but the antenna doesn't revolve in the familiar way. This system—which will cost approximately 3 million—updates aircraft positions every second or faster.

"You can almost see the pilot turn his head," said Clint Matheny, another test controller from IAH, Houston.

"E-Scan," as the equipment is called, would be new in the FAA inventory, though the antenna principle has been used in other applications for many years.

The test at MEM uses two garden-variety Mode S or secondary radar antennas mounted back-to-back on top of a basic ASR antenna. The joined antennas don't revolve any faster, but having two back-to-back, each updating the targets of approaching aircraft, the controller gets the picture in half the time—2.4 seconds, not 4.8 seconds.

While the machinery being demonstrated at Memphis doesn't offer the speed that the electronic scanner at Raleigh-Durham does, it would be less expensive, being essentially an addition to the new Mode 5 ground system. It also will be familiar equipment to the FAA technicians who will be responsible for keeping it going.

"That was our job," said Ron Liszt, manager of the tower at Memphis, "to see whether PRM could work with modified but existing hardware.

"That was the question," he says. "Not whether a fraction of a second is better than 2.4 seconds, but, rather, will 2.4 do the job?"

"E-Scan might well be financially justified in some circumstances," the MEM tower manager agrees. "The 2.4-second update may be right in others. We are not comparing systems."

Two MEM test controllers, Dan Strawbridge and Greg Barrett, agree that a one-second update may have advantages, but they are not sure if it would be necessary for them at Memphis where the parallel runways are 3,400 feet apart.

"It works," says Barrett of the 2.4 presentation with which he has been working. Both expressed some surprise at how much more effective a 2.4 second update is than a 4.8, though it is only twice the speed they normally use.

Target information on approaching aircraft comes to the controllers at the two test sites in different ways and at different speeds, but the data is processed and

The electronic scanner antenna for PRM is shown with the Raleigh-Durham tower in the background. Landon Harris (left), radar unit supervisor, is with George Marshbourne (center), a former FAA technician now with MSI, the PRM testing contractor. Roger Lentz, also of the radar unit, is at the right. The electronic scanner has worked flawlessly thus far.

Among the 52 out-of-town controllers participating in the PRM tests were Will Cliatt (left), Atlanta, and Clint Matheny, Houston. They were part of the "E-Scan" tests at Raleigh-Durham.

displayed in exactly the same way.

Controllers monitoring the approaches—one for each runway—have a high-resolution display, 20 inches by 20 inches, in color. The displays will show, identically, the approach airspace for both runways, the runways themselves and the missed approach areas. The space between the parallel runways, which must not be entered—called the "No Transgression Zone" (NTZ)—appears in red.

When an aircraft target—identified with a data block the way they are today in the ARTS system—is projected to be going too far off course, an alarm comes up on the controller's screen. The target pulses in cautionary yellow. The controller tells the pilot of the deviation.

Houston's Clint Matheny finds the yellow numerics particularly arresting, even more than red.

"Maybe it's because of driving," he says. "You know something is going to change."

A second alarm is displayed—the target pulses in red—if the blundering flight pierces the NTZ. At that point, the controller handling the other parallel runway would consider issuing "break out" instructions to any flight abeam the off-course aircraft. Something would have to be clearly wrong on the flight deck of the blunderer. "Break out" would mean turning away from the threatening aircraft, circling and starting the approach over again.

When the tests are completed, 104 controllers will have participated, half from the two test sites, MEM and RDU, and the other half from facilities around the country where parallel ILS approaches are run to runways spaced 4,300 feet or more.

Tests involve a series of scenarios, each reflecting a problem, some minor and some critical—happily simulated. Real airplanes are used on occasion, but more typically, the problems are generated from FAA computers and airline flight simulators.

What everyone wants to find out, with no room for doubt, is how much time it takes for a PRM controller to identify a blunder and notify the pilot, and then how much time it takes for the pilot to correct the deviation. That will ultimately determine how much closer than 4,300 feet the parallel runways can be for safe operations.

Other areas of testing involve false alarms and what their impact may be, should they be frequent. What happens when there are very strong crosswinds or when there is turbulence is being studied. Not overlooked in the tests is the possibility that a pilot, breaking out from the overcast, might head for the wrong runway. Can the controller pick that up quickly enough to set things right?

The PRM system, should the tests continue to go well and the system become part of the National Airspace Plan, will not solve the airport capacity and delay problems by itself. Nor will all the innovations and improvements being worked on now, all put together, solve the problem much beyond the year 2000 without new airports.

But PRM does promise to help get all the capacity possible out of existing runways and airports and to keep the U.S. air transportation system vigorous and growing to meet the extraordinary travel demands of the 21st century. ■

A Visit to

By Diane Spitaliere

While it is FAA's responsibility to ensure the safety of the flying public, the American Society for the Prevention of Cruelty to Animals operates Animalport at Kennedy Airport, in conjunction with the U.S. Department of Agriculture, Customs Service and Fish and Wildlife Service, to ensure the safety of a different kind of flying public—the four-legged kind.

The ASPCA Animalport, the first and largest facility of its kind in the Western Hemisphere, has been tending to the health and safety needs of animals in transit since 1958. Last year, the professionally trained staff fed, watered, exercised and cared for 11,651 animals from all over the world. Personnel routinely assist owners, shippers and airlines in solving the unusual problems that can occur when living creatures are transported.

Animalport mascot "Stormy" has been at the facility since director Kathi Travers rescued him from abandonment at Flushing Meadow Park several years ago.

Playful kittens are among the many boarded pets enjoying the care of the Animalport staff while their owners are on vacation.

The 24-hour facility has stalls, cages and pens which are used to house animals being boarded as well as those in transit. All Kennedy Airport personnel receive a discount when boarding their pets there. The facility is commonly referred to as "JFK's Hotel for Animals" by the Animalport staff.

Animalport director Kathi Travers with one of the many thoroughbred horses that come through the facility.

The Animalport serves a large variety of animal species. According to Kathi Travers, director of the Animalport and animal-lover extraordinaire, the facility has cared for dogs, cats, rabbits, birds, horses, monkeys, camels, llamas, frogs, snakes, geese, a panda, a hippo and many more.

"We care for everything from canaries to elephants at this facility," said Travers.

One of the functions performed at the facility is ensuring that all animals are properly caged. The crate must be large enough so that the animal can stand up, turn around and lie down. In addition, certain ventilation requirements must be met. If these requirements are not met, the animals will not be released to the airlines until they are recrated.

These parrots were "guests" at the Animalport after being confiscated by the U.S. Fish and Wildlife Service.

A major problem with shipping animals is that the airlines sometimes forget they are carrying live cargo. The crates are sometimes left out on the runway for an extended period of time. This can be detrimental to the animals in extremely hot or cold weather.

"The airlines have to realize that they are dealing with 'precious' cargo, said Travers. "I always tell them—just treat these animals as you would your own pets."

Travers recently became involved in an "Animals in Transit Training Seminar for the Airlines" where she has had the opportunity to address the people most directly responsible for commercial shipment of animals.

"Since these seminars the airlines are much better at caring for animals in transit. It is now safe for any animal to come through Kennedy Airport," said Travers.

The Animalport has had its share of celebrities over the years. Among them have been Ling-Ling, the famous panda lent to the United States by China; Siegfried and Roy's famous white tiger; Dolly and Dennis, parents of Clint Eastwood's orangutan Clyde; and various stars from Ringling Brothers & Barnum and Bailey.

Travers, who has been director of the Animalport for three years, stresses that the humane conditions at the facility are achieved largely through the efforts of her dedicated staff of eight. Jimmy Florio, who she affectionately refers to the "Felix Unger of the Animalport," has been an animal care technician there for 20 years.

"If an animal gets loose in the belly of a plane, Jimmy is the one I send out to rescue it. He can recover an animal in record time," said Travers. ■

Diane Spitaliere is editor of the Eastern Region Intercom.

Al Lupinetti heads up the Tech Center's Office of Research and Technology Applications.

Technology Transfer: Paving the Way for More Innovative Research

by Lisa Aveni

In an effort to maintain U.S. preeminence in the world market of technological and economic development, Congress has enacted the Federal Technology Transfer Act.

The act provides the means to improve the transfer of commercially useful technologies from federal laboratories to the private sector. More than $20 billion annually is spent on research and development at more than 700 federal laboratories. While much of the R&D results may be commercially applicable, only about 5 percent of this technology ever reaches the marketplace.

It is in the national interest, however, that federal laboratories collaborate with universities and industry to ensure that scientific knowledge continues to advance and to translate these advances into commercial endeavors.

The 1986 Federal Technology Transfer Act states that "the government shall strive where appropriate to transfer federally owned or originated technology to state and local governments and to the private sector."

The act stimulates technology development through key items, such as economic incentives to individual inventors, cooperation between private corporations and federal laboratories, and channeling the flow of technical and other knowledge among the military, universities, private corporations, and civilian government agencies.

In October 1989, Administrator James Busey signed an FAA order (9550.6) establishing the Technology Transfer program in the FAA.

It adopted as FAA policy the commitment of the federal government to establish federal labs as nuclei for technology development. Part of this commitment encourages federal workers' creativity and productivity by allowing them to obtain patents and to receive royalties for their work. This policy also serves as an incentive to attract and maintain top-notch talent in the FAA.

The Technical Center's Office of Research and Technology Applications, headed by Al Lupinetti, is managing the program for the FAA. Dave Nesterok is the project manager. Each federal laboratory will include a similar office to manage the smooth transfer of technology among government, industry, and universities.

"Technology transfer allows government to reap the maximum benefit from research and development activities through cooperative research and development agreements [CRDAs] with industry, universities, and other government agencies," Lupinetti remarked.

The CRDAs permit company representatives to work side by side with government scientists to maintain a steady flow of information among the parties; stress interpersonal commitments; and allow the commercialization of inventions by employees while in government service.

Nesterok and Lupinetti are excited about the future implications of technology transfer. "CRDAs between the FAA and industry will open doors to many areas of aviation research we couldn't touch in the past," said Lupinetti.

Such agreements will allow the government to provide industry and universities with personnel, services, facilities, equipment, and other resources to conduct research. Non-federal parties also may provide resources for specified research and development efforts that are consistent with the mission of the FAA.

A prime example is the Traffic Alert and Collision Avoidance System program. FAA employees spent years developing specifications for the current TCAS II system. A private corporation was awarded a contract to build a prototype TCAS II. Government scientists at the Technical Center used FAA labs and aircraft to evaluate the prototype and to develop the TCAS specifications into a mature system.

Tony Tech demonstrates his zeal for competitiveness, research, and savings.

"The cooperation of government and industry to achieve mutual benefits from labs, facilities, knowledge, and people resources is what technology transfer is all about," said Tom Grygotis, manager of the Collision Avoidance and Data Systems Branch at the Center.

The increase in joint programs with industry and universities is sure to motivate research and development personnel, and the ability to conduct research jointly with industry without slowing the process through procurement actions will speed up the R&D process. "The Technology Transfer program will allow the Technical Center to make extensive use of technology exchange with various organizations," said Nelson Miller, manager of the Center's Aviation Safety Division. The potential to conduct joint research is therefore enhanced because many of the constraints are eliminated.

What does this program mean to the government employee involved in technology development? "It means huge employee incentives, including patent licensing, royalty sharing, and other job-related incentives," said Lupinetti. "Both the government and the federal employee benefit. Federal technological activity increases through joint research programs, and the employee receives personal incentives from marketable innovative development."

FAA scientists or laboratory managers who develop commercially marketable goods can receive 25 percent of the royalties the government receives from industry for the right to use government-owned inventions.

Prior to the establishment of the Technology Transfer program, government regulations would not permit federal scientists and engineers to exploit inventions created on government time. Employees would spend years designing and developing specifications for avionics equipment, only to have their inventions exploited by the industry with no recognition of their efforts.

In addition to allowing government employees to negotiate licensing agreements for government-owned inventions, the program also offers other incentives, such as an awards program. This could mean monetary rewards for innovative development by FAA employees or organizations.

Each agency that spends more than $50 million annually for R&D in its government-operated laboratories is to establish a cash awards program to reward scientists and engineers for inventions contributing to commercial development, outstanding technical contributions, and technology transfer.

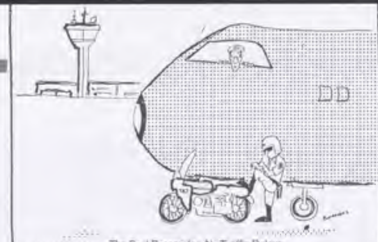
Participation in this technology transfer will benefit not only the FAA, the federal government, private industry, universities, and taxpayers, but also the American economy.

"As we move forward into the 21st century, this partnership will enable us to maintain our world leadership in aviation and meet our goal of a strong and healthy economy for the well-being of all United States citizens," Lupinetti concluded. ■

Lisa Aveni is a public affairs specialist at the FAA Technical Center. She currently is the Center's Intercom *editor.*

FAAer Cartoons Agency Humor

By Kristy Wooley

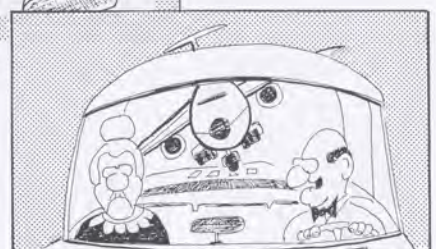


The Real Reason for Air Traffic Delays

Controller Nightmares

Frank, don't move!

Once again, Bob has cheated death and not returned his tray to the up-and-locked position.



Relax, Edna. We're not lost. The terminal is around here somewhere.

The next time you do something funny at work, look out. You may end up as the subject of the newest cartoon for readers throughout the FAA.

Mike Burroughs, an air traffic controller at the Memphis, TN, Air Route Traffic Control Center, uses office snafus as subjects for some of his creative impulses: He draws cartoons, many of which have been published in employee publications and airport newspapers. Cartoons, which were compiled while he worked at the Dallas/Ft. Worth International Airport, were published in the book *Airport Antics*.

It takes only a few minutes for Burroughs to create a cartoon—from funny thought to finished product. "Once something funny happens, I get a picture in my mind, and it's easy. It's harder to sit down and try to think up an idea."

He says the drawing in a cartoon is secondary. "The basis of a good cartoon is a good idea—it displays more of the humor. Some people can draw but can't put a humorous word on paper; other people are very funny and can't draw. The picture really gets the point across."

Before moving to the Memphis center almost two years ago, Burroughs' single-panel cartoons were published in the weekly newspaper, *DFW People*. "Most of them were about the people I worked with," he says.

"When I was drawing cartoons for *DFW People*, I had to come up with a cartoon weekly. Sometimes I'll come up with five or six at a time, then go a week with nothing."

Despite the fact that many of his cartoons have been published, Burroughs calls the drawings a hobby. "It's a release; I do it for fun. I doodle all the time . . . and then show it around. It's more fun to see peoples' reactions than drawing the cartoons," he says.

Burroughs says his favorite cartoonists are Bill Watterson who draws "Calvin and Hobbes" and Gary Larson who draws "The Far Side." "I like their offbeat humor. Watterson has a perfect source of humor with that little boy [Calvin]. I also like Mother Goose and Grim."

Burroughs says that he'll draw anything. "It's an acquired talent, I guess. I've always had a creative type mind. I haven't had any formal art training. Instructors always want you to draw pots and flowers," he says. "People say that all cartoonists are really frustrated artists anyway."

Now Burroughs' cartoons are frequently paired with national stories as editorial cartoons in the Southern Region *Intercom*. ■

A recent graduate of the University of Maryland, Kristy Wooley is a frequent contributor to FAA publications.

Development of Aviation Noise Standards

By Richard W. Danforth

This Gulfstream turboprop is tracked during noise certification.

The issuance of the Part 36 noise standards marked the climax of a unique period in the development of aviation noise law that remains exciting to me even today. Now, 20 years later, I would like to celebrate the context of the process that led to the issuance of federal aircraft noise standards.

The new regulation was the ultimate product of many factors, including far-sighted planning by a few lone "voices in the wilderness" in FAA, the Office of the Secretary of Transportation, other agencies such as the National Aeronautics and Space Administration (NASA), the aviation industry itself, and the airport and consulting communities here and abroad.

Until the late 1960's, the notion of a federal authority to regulate aircraft noise at the source was radical, to say the least. Since the Air Commerce Act of 1926, the history of aircraft design control had been uniformly and exclusively centered on airworthiness. This airworthiness focus had been essential to the growth of aviation in the United States and to the international fabric of a civil aviation based on comprehensive and detailed airworthiness codes. Except for a few isolated studies, such as the Doolittle Report on military aircraft noise in the early 1950's, there were few organized attempts to channel the complex environmental-psychological-technological-economic-political phenomenon called aircraft noise into a basis for framing effective national policy.

But times were changing. A cumulative noise metric had been developed for the Port Authority of New York and New Jersey in 1957, and a monitored noise limit was adopted by the authority in 1958, the year that also saw the introduction of the first commercial jets. This was followed two years later by a noise limit at London and the formation of the National Aircraft Noise Abatement Council, composed of representatives from diverse aviation groups.

Significant legislative interest in jet noise was reflected in the United States in the Harris Committee hearings of 1962 (the year that the Supreme Court resolved a long-standing legal controversy by holding that airport operators bear responsibility for airport noise damages) and, in the United Kingdom, in the 1963 Wilson Report to the Parliament. Meanwhile, land use planning documents were evolving within the FAA and the Air Force and were published in 1964. In 1965, increasing international interest in aircraft noise resulted in adoption of the Perceived Noise Level concept by the International Standards Organization.

Critical Events

This chain of events led, in 1966, to three occurrences of critical importance to the final shaping of Part 36. The first was the creation, under Presidential Directive, of the Program Evaluation and Development Committee, which included representation by NASA, FAA, airport operators, air carriers, acoustical experts, and aircraft manufacturers. The second was the London Noise Conference, which focused a broad international consensus that aircraft should be certificated for noise purposes. The third event was the creation of a new Department of Transportation, whose Secretary had cabinet rank, to grapple with the awesome task of developing a unified national approach to critical transportation issues.

These events were rapidly followed, in 1967, by the transfer of the federal noise abatement program from the Office of Science and Technology to the newly created DOT and by important agreements among the United States, Great Britain, and France concerning proposed noise certification concepts. Work began almost immediately on draft legislation that would bring the noise rules to fruition. This effort succeeded in July 1968 with the adoption of Public Law 90-411 giving the federal government specific authority to regulate aircraft noise. Meanwhile, intensive detailed negotiations on aircraft noise certification were taking place in the International Civil Aviation Organization in Montreal.

Policy Foresight

Even before Public Law 90-411 was enacted, the regulatory drafting process had also begun. The challenge—understood even more clearly today than at that time—was to synthesize a product from previous events that would move the development of aircraft noise standards forward without sacrificing essential aspects. A broad public review process was initiated in which over a thousand comments (a large figure for that time) were received from private citizens, citizens' associations, local governments, and aviation interests.

From this broad input, several key principles emerged, including the concepts that noise documentation and approval should be an integral part of the complex body of airworthiness approval requirements rather than a separate process; that the new rules even should be applied to aircraft already well along in certification; that a noise descriptor based on Perceived Noise Level concepts should be used; that the certification procedure should be uniformly applied to all aircraft and should be in a form that encourages international standardization; that new technologies should be aggressively pursued and applied to noise abatement, consistent with the economic realities of air transportation; and that the public has a right to know the certificated noise levels of aircraft.

A microphone is installed for noise certification under Part 36.

Although these concepts seem such an obvious basis for aircraft noise standardization and are unquestioned today, each involved significant policy foresight 20 years ago. We are in debt to all of those who persisted with such foresight. ■

Richard W. Danforth, manager, Airports/Environmental Law Branch, Office of the Chief Counsel, at FAA, was the legal architect of the Part 36 aircraft noise standards. This article is an adaption of his commentary for the Airport Noise Report.

FAA-approved friction measuring equipment (left to right): Saab Friction Tester, BV-11 Skiddometer, Mu-Meter, and Law Friction Tester.

The BV-11 Skiddometer consists of a three-wheel trailer towed behind a vehicle. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

Technicians are calibrating the Saab Friction Tester, which can give pilots a computerized report on runway friction data analysis.

The Saab Friction Tester incorporates a fifth wheel mounted behind the rear axle of the vehicle. This wheel is driven by a chain transmission connected to the rear axle.

The ML Aviation Mu-Meter performs tests on simulated ice.

Promoting Safety a High Tech Way

Runway Friction Measurement and Maintenance

Think about this. Each time you fly, you take for granted all of the factors that ensure your safe take-offs and landings. These factors include the roles of the air traffic controllers, the airline maintenance mechanics, and the cockpit personnel in your particular airplane.

The FAA deals with many other factors essential to aviation safety. For instance, the agency issued Advisory Circular (AC) 150/5320-12A, titled "Measurement, Construction and Maintenance of Skid Resistant Airport Pavement Surfaces," dated July 11, 1986.

Basically, this document incorporates FAA standard specifications for skid-resistant pavements, including standards on grooving and texturing, friction measuring equipment, frequency of conducting friction survey, and friction measurement procedures.

The recommendations in the AC provide the basis for a program of periodic friction measurement on airport pavement surfaces, whether conducted by individual airport operators or on a statewide basis.

The potential of poor runway pavement surface conditions of contributing to the loss of aircraft braking action has been recognized by both the FAA and the National Transportation Safety Board (NTSB). As a result, the approximately 650 million square yards of runway pavement surface at our Nation's airports represent an important responsibility.

Vital research at the FAA Technical Center is being done to provide new and improved standards and guidelines for the design, construction, operation, and maintenance of airports.

Satish Agrawal, the Center's manager of the Airport Technology Branch (ACD-110), is heading up several projects to develop data and to provide guidelines for improving safety, decreasing construction cost of airport facilities, increasing capacity, and reducing delays.

Efficient movement of aircraft on the runway surface enhances both airport operational safety and capacity. This efficiency can be determined by optimum use of aerodynamic drag, engine thrust, and aircraft braking.

Generally, aircraft braking action is degraded on runways covered with ice, snow, water and rubber deposits, and under extreme operational and environmental conditions loss of aircraft can result. Therefore, Center engineers are constantly investigating methods for improving snow and ice control, removal of heavy rubber deposits, and efficient drainage of water from under the aircraft tires.

Additionally, at the request of the Air Traffic operations office, the Technical Center has certified specific runways at Chicago O'Hare and Pittsburgh International Airports for a demonstration program titled "Simultaneous Operations on Intersecting Runways under Wet Conditions." The tests required runway surface characteristics to be measured before and after the removal of rubber deposits.

More recent testing has been conducted at Dulles International Airport, Brunswick Naval Air Station in Maine and Bangor, ME, International Airport. The Dulles tests involved high-speed exit evaluation using the FAA B-727.

At the latter two airfields, tests are being conducted to determine the effects of anti-icing chemicals on runway friction characteristics. Runway anti-icing chemicals were applied so that freezing rain could not form a bond between ice and the pavement. The chemicals also simplify the removal of ice/snow by mechanical equipment.

The tests at Brunswick (non-grooved runway) and Bangor (grooved runway) will determine how anti-icing affects slipperiness (the reduction of friction levels) on airport runways.

Four commercially available chemicals are being tested: Union Carbide U-CAR, Chevron ICE-B-GON, Ashland Chemical Urea, and MCA. These chemicals are applied on a dry pavement surface at the application rates specified by manufacturers, and friction measurements are made using a Saab Friction Tester.

The pavement surface is then subjected to various rates of simulated rain, with friction measurements being taken after each rain simulation. Indications are that after a simulated rain equivalent to 0.01" water depth, the friction levels will stabilize. Test results will be used to revise AC 150/5200-30, "Airport Winter Safety and Operations," issued on April 20, 1988.

Additional tests have been conducted by Agrawal's branch during the past few months. In August the American Society for Testing and Materials commissioned tests on a new set of tires proposed for use on runway-friction measuring devices. At the National Aeronautics and Space Administration Wallops Flight Research Facility an eight-person team completed 288 tests daily to check tire consistency, reliability, and performance.

Results showed that the friction-measuring tires occasionally vary by as much as 10 mu numbers between batches, probably because of poor quality control by the tire manufacturer. The test runs were conducted for six days, for a total of 1,649 runs. Still, the new set of tires will be recommended as standard equipment on the friction-measuring devices.

Research organizations around the world have developed various ground vehicles for measuring the coefficient of friction developed between a tire and the runway. Test vehicles are equipped with devices in which a tire is forced to operate with a longitudinal slip or at a slip angle; some of the devices have two tires operating identically.

The following are commonly used ground vehicles used to administer the tests:

The Saab Friction Tester (SFT) incorporates a fifth wheel mounted behind the rear axle of the vehicle (see photo). This wheel is driven by a chain transmission connected to the rear axle. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph. The torque required to drive the wheel is a measure of the coefficient of friction.

The Skiddometer (SKD) consists of a three-wheel trailer towed behind a vehicle; the wheels are connected by means of roller chains and sprockets with differing number of teeth. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph. The torque required to drive the wheels is a measure of the coefficient of friction.

The Mu-Meter consists of a three-wheel trailer behind a vehicle; the two outer wheels are held at a fixed toe-out angle of 7½ degrees from the direction of travel. The side force generated between the wheels, as the vehicle moves, is a measure of the coefficient of friction. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

The Runway Friction Tester (M-6800) incorporates a friction measuring wheel connected to the rear axle by a gear drive producing a constant longitudinal slip of 13%. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

Technical Center engineers have investigated the procedures used in rubber-deposit removal at six major airports in Florida and on various runways at Baltimore-Washington International Airport, Chicago O'Hare International Airport, JFK International Airport, Newark International Airport and Pittsburgh International Airport.

At the request of the Office of Airport Standards, Agrawal, along with program manager Rick Marinelli, have undertaken a study on the accumulation of large rubber deposits on runways to determine if the extent of rubber deposits can be visually inspected.

In the tests, the engineers used a Saab Friction Tester and a Mu-Meter runway friction measuring vehicle. The former is basically a "souped up" Saab vehicle that can give pilots a computerized report on runway friction that's as valuable as the reports they now get on wind speed and runway visibility. While European and military pilots have relied on these friction reports for years, the current goal for using the friction data in the United States is to determine its relationship to the braking action required for various types of aircraft.

The numerous tests were conducted in accordance with procedures in AC 150/5320-12A. Their major conclusions: Visual inspection of rubber deposits cannot identify the true condition of the runway; and although high pressure water cleaning removes the bulk of the rubber deposits, it still leaves microscopic traces attached to the concrete aggregates.

These conclusions have resulted in an increased awareness among the airport operators and runway cleaning contractors with regard to the importance of cleaning and cleaning methods. Methods incorporating rotary cleaning actions, the use of chemical detergents, and the application of very high pressure water (35,000 pounds per square inch) have been proposed by the contractors.

This investigation, to be completed in 1991, will provide an efficient method of cleaning rubber from the runway surfaces. It will also provide the airport management with the information needed to keep the runways clean for safe operations of aircraft. ■

A Philosophy of Management

Remarks by
Admiral James B. Busey, Administrator
Federal Aviation Administration
Before the Embry-Riddle Management Club
Daytona Beach, Florida, April 10, 1990

There are good managers, and there are poor managers. I have some ideas about what makes a good manager, about the approach that he or she brings to the job.

First, a bit of personal background that'll give you an idea about where I developed my management style. I joined the Navy as an enlisted man 38 years ago. A year later, I entered the Navy's aviation cadet program, and a year after that, I got my wings and a commission.

Last year, after 37 years in the Navy, I retired. Two days later I started a second career with the FAA.

Along the way, I earned a B.S. and an M.S. in management at the Naval Postgraduate School out at Monterey, California. I learned a lot there. Certainly, we can all profit from a good formal education.

You'll discover—as I did—that your management style will really be shaped by the trial and error that comes from hands-on experience and by working for all kinds of managers, both good and bad.

By observing your superiors, you can learn very quickly what a good management style is and how it achieves results—and what a poor style is and how it turns people off and fails to get results.

I've watched both good and bad managers in my career, and it taught me a lot. For one thing, I learned the value of an open mind.

You don't pre-judge the organization or the people. You don't come in with a negative view. You don't come in with a pre-set agenda or a lot of flashy ideas about how you're going to change things. Changes, if necessary, come only later, after you've had a chance to study the organization and its people.

The idea is to work from within the organization, slowly, with a great deal of patience. You accept the organization as you find it, and you accept the people as you find them too. You take the time to get to know them, to get to know their gifts and skills, and you don't move them to new jobs or assignments until you really understand what they can do well. Then you can move them, if that's what's needed to utilize their skills better, to make them and the organization more productive.

At the same time, you work to get your people to buy into your ideas. You want them to think of an idea as their idea, because then they'll do almost anything to accomplish the objective.

You can't get them to buy in if you dogmatically insist that your view must be adopted blindly, without thought or discussion. Rather, you lead people by a process of reasoning to the point where they adopt the idea as their own, where they accept it with enthusiasm.

When that happens, there's almost nothing that can keep them from reaching the goal. And when they do reach it, you make sure to give them the credit for doing it.

As far as I'm concerned, this is the real challenge of leadership: To get people to buy into an idea, to think of it as their own, and then, when the goal is reached, to give them full credit.

Only a good manager can do all of that well. It takes patience; it takes skill; and it takes a willingness to let other people get the credit.

Wise old Ben Franklin first discovered the magic of this technique when he was raising money for the country's first public library. He didn't get much when he said it was his idea. But he succeeded when he gave the credit to others, and he used this technique many times in his long career.

Franklin didn't worry about who got the praise. As he said in his biography: "The present little sacrifice of your vanity will afterward be amply repaid."

Once you've set the goal and your people have taken ownership of the idea, then you must give them the authority and the responsibility to do the job. You must get out of the way and let them do it.

You don't tell them how to do it. You tell them what to do, and then you let them do it. It works. Believe me, it works.

I saw it many times in Vietnam. You can't expect a wingman in combat to protect you from some threat that's coming from six o'clock if he doesn't feel like he's a full, participating, voting member of the team.

Now if you want people to feel like they're on your team, you must show your trust in them. You must show them that you respect their ability and that you want them to use their skills in the best way they can. That means you must preserve their initiative, their freedom of action.

I saw a number of instances in Vietnam where senior officers expected their people to become virtual automatons, acting with little freedom and no thought. They'd tell the wingman, "You just stay locked on me. Don't think. Don't do anything else, and when you see the bombs come off my airplane, you get yours off too."

Well, that didn't work. You've got to bring people in, get them on your side, make them full participating members of the team, get them to buy into the whole idea—and then give them freedom of action.

I must say, however, that sometimes we didn't have that full freedom in Vietnam. And that's why many of us who survived Vietnam, and got on up to higher rank, worked to change the rules of engagement.

It really comes down to good management, that's all—which is what I tried to practice when I took over the command of the Naval Air Systems Command.

This organization buys all the aviation-related equipment in the U.S. Navy—from the aircraft to the avionics gear that goes in the aircraft, to the test equipment that maintains the aircraft and the avionics, to the bombs, the guns, the missiles, to all the spare parts, and everything else.

I took over with no pre-set plan of reform, no flashy ideas designed to get a lot of attention. I took my time, learned about my people, and studied the organization and how it operated.

It wasn't very long before I realized I had inherited an over-layered, heavily bureaucratic structure. We had contracts that were running late because there were too many people who could only say "no" and not enough who could say "yes."

There were layers of bureaucrats that were imposed on top of program managers—and everyone in the layer was very quick to tell the program managers, "No, you can't do it that way." There was no one around who would say, "Yes, go ahead."

So our poor program managers were just being stifled and burdened to the point where they couldn't execute their procurement programs the way they should.

I realized that if we wanted the work to flow smoothly and on time, we had to carve away those non-productive bureaucratic layers. We had to get them out of the way, and that's exactly what we did.

Admiral James Busey is the FAA's 11th Administrator.

We changed the structure and streamlined the whole process.

At the same time, we gave the program managers the responsibility and the authority to make decisions. We gave them the freedom to take some risks, the freedom to make mistakes. And we made them accountable for their decisions.

It took a long time to get it all in place, but the guys who succeeded me kept it rolling. It was institutionalized. They didn't see a need to change it, and it rolled right along. Five years after I left, the Naval Air Systems Command got an award as the best performing acquisition organization in the Department of Defense.

I did the same thing in the NATO command in southern Europe. In fact, I've tried to do that all my career; and it's what I'm doing now at the FAA, where we're still in the buy-in phase. It's too early to talk about results, but we'll have them, eventually.

To summarize the seven main principles of my style of management:

- You have no pre-set agenda for change.
- You take the time to get to know the organization and the people.
- You put the people in jobs they can do well.
- You get them to buy into your ideas.
- You give them the authority and responsibility they need to do the job.
- You hold them accountable, but you stand out of the way and let them do it.
- And, finally, you give them credit for reaching the goal.

As you can see, there are no secrets. It's all just common sense.

It's worked for me in my career, and I think it'll work for you, too. ■

People

Aeronautical Center

Thaddeus A. Bookman, unit supervisor, Flight Procedures/Inspection Section, Battle Creek, MI, FIFO, from Frankfurt . . . **Henry K. Boren,** manager, Medical Review Branch, Aeromedical Certification Div. . . . **Raymond L. Bradford,** manager, Academy Maintenance Support Branch, from FAA Depot . . . **Shirley J. Dark,** staff officer, Program Support Staff, Aeromedical Certification Div. . . . **Jack R. Delong,** manager, Quality Control Branch, FAA Depot, promotion made permanent . . . **Elaine A. Downey,** section supervisor, Storage & Transportation Branch, FAA Depot . . . **Patricia L. Garrambone,** instructor, Radar Training Section, Air Traffic Branch, FAA Academy, promotion made permanent . . . **Lindsay A. Helquist, Jr.,** instructor, General Ops & Airspace Systems Section, Aviation Standards Branch, FAA Academy, promotion made permanent . . . **Virginia A. Hicks,** manager, Program Management Staff, CAMI . . . **H. C. Huff,** unit supervisor, Electronic Production Section, Engineering & Production Branch, FAA Depot . . . **Cecelia L. Hunziker,** manager, Management Services Div., from Northwest Mountain Region, promotion made permanent . . . **Marvin L. Julian,** unit supervisor, Storage & Transportation Branch, FAA Depot . . . **Irving A. Long,** supervisor, Line Maintenance Section, Atlanta, GA, FIFO, Flight Procedures & Inspection Div., promotion made permanent . . . **Tona K. Mann,** section supervisor, Airmen Certification Branch, Airmen & Aircraft Registry Div. . . . **Teddy C. McIlwain,** section supervisor, National Flight Procedures Development Branch, Flight Procedures & Inspection Div. . . . **Robert E. Murati,** manager, Anchorage, AK, FIFO, Flight Procedures & Inspection Div. . . . **Harry D. Pelphrey,** instructor, Specialized Training Section, Air Traffic Branch, FAA Academy . . . **Michael J. Rogers,** section supervisor, Purchasing Branch, Acquisition Div., promotion made permanent . . . **Jeannie J. Van Nest,** section supervisor, General Accounting Branch, Accounting Div., promotion made permanent . . . **William R. Voss,** instructor, Revision & Development Section, Air Traffic Branch, FAA Academy, promotion made permanent . . . **Alfred J. Weidner,** instructor, Radar Section, Airway Facilities Branch, FAA Academy . . . **Mike J. Zink,** manager, Systems & Programs Staff, FAA Depot, promotion made permanent.

Alaskan Region

Edgar P. Billiet, manager, Kenai AFSFO, South Alaska AFS . . . **Joseph H. Boswell,** unit supervisor, Anchorage ARTCC AFS . . . **John D. Brister,** supervisor, Installation Section, Establishment Engineering Branch, Airway Facilities Div. . . . **John R. Cline,** systems engineer, Anchorage ARTCC AFS . . . **Charles F. Criswell,** manager, System Management Branch, Air Traffic Div., from Miami ARTCC . . . **Trent S. Cummings,** manager, System Requirements Branch, Air Traffic Div., from Northwest Mountain Region . . . **John R. Hallinan,** chief, Situation Monitor Staff, Flight Standards Div. . . . **Rebecca A. Moore,** manager, Juneau ATCT, from Fairbanks ATCT . . . **David R. Palmer,** asst. manager, plans & procedures, Anchorage ARTCC . . . **Peggy L. Smith,** manager, Resources & Planning Branch, Airway Facilities Div. . . . **Stephen W. Smith,** unit supervisor, Anchorage FSDO . . . **Paul J. Williams,** manager, Fairbanks AFSFO, North Alaska AFS . . . **Michael T. Wise,** supervisor, Electronic Engineering Section, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **Anthony M. Wylie,** area supervisor, Anchorage ARTCC, promotion made permanent.

Central Region

Lloyd W. Adams, section supervisor, Resources & Planning Branch, Airway Facilities Div. . . . **David A. Allgire,** unit supervisor, Maintenance Engineering Branch, Airway Facilities Div. . . . **Warren E. Barlow II,** area supervisor, Olathe, KS, ARTCC . . . **James W. Brunskill,** section supervisor, Planning & Programming Branch, Airports Div. . . . **Lloyd E. Gardner,** area supervisor, Lambert Field ATCT, St. Louis, MO . . . **Larry D. Gray,** manager, Lambert Field ATCT, St. Louis, MO, ATCT-TRACON . . . **Robert D. Long, Jr.,** manager, Grand Island, NE, AFS . . . **Thomas O. Mathison,** asst. manager, plans & procedures, Kansas City International Airport ATCT, from Chesterfield, MO, ATCT . . . **Eugene S. Mitchell, Jr.,** unit supervisor, Olathe, KS, AFS . . . **Peter L. Molsen,** asst. manager, Omaha TRACON, Bellevue, NE, from Grand Island ATCT . . . **Donovan D. Schardt,** manager, System Requirements Branch, Air Traffic Div., from Lubbock, TX, ATCT . . . **Charles W. Seger,** asst. manager, Wichita, KS, AFS, from regional headquarters . . . **Gary S. Thomas,** unit supervisor, Establishment Engineering Branch, Airway Facilities Div.

Eastern Region

William R. Becker, Jr., manager, Harrisburg AFS, from Capital AFS . . . **Glenn L. Broomell,** area manager, Baltimore ATCT . . . **Edgard E. Calderon,** section supervisor, Establishment Engineering Branch, Airway Facilities Div. . . . **William R. Carver,** area supervisor, Baltimore ATCT, from Dulles ATCT . . . **Michael P. Cataruzolo,** section supervisor, Telecommunications & Spectrum Engineering Branch, Airway Facilities Div. . . . **Bruno Codispoti,** manager, Oceana AFSFO, Virginia Beach, Norfolk AFS, from Norfolk, VA, AFSFO . . . **John W. Cuthel,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **David L. Dixon,** area supervisor, Washington ARTCC, Leesburg, VA . . . **Michael J. Fitzgerald,** manager, Norfolk ATCT, from Oakland, CA, TRACON . . . **Edward J. Frawley,** asst. manager, traffic management, Washington ARTCC, Leesburg, VA, promotion made permanent . . . **Renard A. Gaddi,** section supervisor, Establishment Engineering Branch, Airway Facilities Div. . . . **Richard J. Haldeman,** section supervisor, System Management Branch, Air Traffic Div., from Poughkeepsie FSS . . . **Charles W. Hannon, Jr.,** area supervisor, New York TRACON, Garden City, from regional headquarters . . . **Ruey-Long Huang,** unit supervisor, LaGuardia AFSFO, Metro NY AFS, from regional headquarters . . . **Thomas G. Jones,** asst. manager, plans & procedures, Baltimore ATCT, from Washington Headquarters . . . **John F. Kelley,** area supervisor, North Philadelphia ATCT, from Philadelphia ATCT . . . **Edward T. Masterson,** area supervisor, Philadelphia ATCT, from Newark, NJ, ATCT . . . **Jerome L. McCarty,** area supervisor, Washington ARTCC, Leesburg, VA . . . **Stephen Mielnicki,** unit supervisor, Pittsburgh, PA, AFSFO, Pittsburgh AFS, promotion made permanent . . . **Sheldon R. Moskowitz,** unit supervisor, LaGuardia AFSFO, Metro NY AFS, from regional hedquarters . . . **John C. Ohey,** area manager, Leesburg, VA, AFSS . . . **Wayne E. Resetar,** area supervisor, Greater Pittsburgh Airport ATCT, promotion made permanent . . . **John G. Rosenwald,** manager, Buffalo AFSFO, Empire AFS, from Syracuse AFSFO . . . **Bruce E. Sarnoff,** manager, Rochester, NY, AFSFO, Empire AFS, from regional headquarters . . . **Edward L. Snyder,** manager, Williamsport, PA, ATCT, from Fairfield, NJ . . . **Louis C. Traini,** asst. manager for program support, Washington ARTCC AFS, Leesburg, VA, promotion made permanent . . . **Joseph M. Wall,** section supervisor, Facility Operations Branch, Air Traffic Div., promotion made permanent . . . **Roger B. Whitney,** area supervisor, Du Bois, PA, FSS, promotion made permanent . . . **Roger N. Wray,** unit supervisor, Clarksburg, WV, AFSFO, Charleston AFS, promotion made permanent.

Great Lakes Region

Harold N. Beeler, asst. manager, airspace and procedures, Cleveland, OH, ARTCC, Oberlin . . . **Dorothy G. Bowden,** manager, Position & Pay Administration Branch, Human Resource Management Div. . . . **Andrew S. Bowman,** supervisory electronics technician, Indianapolis AFS . . . **Gudmund M. Broin,** unit supervisor, Watford City, ND, AFSFO, Bismark, AFS, from Pipestone County, MN . . . **Gary V. Corbett,** asst. manager for training, Cleveland, OH, AFSS . . . **Kevin J. Cramer,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Richard E. Curths,** area manager, Terre Haute, IN, AFSS . . . **Dennis L. DeForest,** area supervisor, Flint, MI, ATCT, from Bismarck, ND, ATCT . . . **Kenneth L. Durham,** area supervisor, Detroit Metro Airport ATCT . . . **Michael J. Eichten,** unit supervisor, Chicago, IL, AFS, from regional headquarters . . . **Robert R. Ethier,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Robert F. Everson,** supervisor, Planning Section, System Requirements Branch, Air Traffic Div. . . . **Jimmy J. Fodrocy,** unit supervisor, St. Joseph County (South Bend) IN, AFSFU, Indiana AFS . . . **Albert E. Gladu,** manager, Romulus, MI, AFSFO, Michigan AFS, Belleville, from regional headquarters . . . **Terry L. Hall,** area supervisor, Chicago O'Hare ATCT . . . **William R. Halleck,** asst. manager, Chicago O'Hare Airport ATCT from Albuquerque, NM, ATCT . . . **Allan M. Hamamey,** asst. manager for training, Chicago O'Hare Airport ATCT, promotion made permanent . . . **Martin K. Hanson,** area supervisor, Indianapolis, IN, ARTCC, promotion made permanent . . . **Paul R. Heitzman,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Barton Holtz,** asst. manager, Systems Maintenance Engineering Branch, Airway Facilities Div., promotion made permanent . . . **Ward E. Huston III,** area manager, Chicago ARTCC, from regional headquarters . . . **Bruce M. Jeckel,** asst. manager, plans & programs, Cleveland, OH, ARTCC, Oberlin, from Cleveland, OH, ATCT . . . **William L. Johnson, Jr.,** asst. manager, programs, Cleveland Hopkins Airport ATCT, from Hebron, KY, ATCT . . . **Curtis L. Kaler,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Peter P. Kitta, Jr.,** area supervisor, Dayton, OH, AFSS . . . **Henry L. Kowal,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Anthony D. Kowalewski,** unit supervisor, Grand Forks, ND, AFSFO, Dakota AFS, Bismark, from Cleveland, OH, AFS . . . **Thomas M. La Fond,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **James L. Lenz,** area supervisor, Rochester, MN, ATCT, promotion made permanent . . . **John D. Lewkowicz,** manager, Ann Arbor, MI, ATCT, from Detroit Metro ATCT . . . **Marchelle A. Linkletter,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Georgene A. McDonough,** section supervisor, System Management Branch, Air Traffic Div. . . . **Larry S. Minor,** area supervisor, Ohio State University Airport ATCT, from Port Columbus International Airport . . . **Kenneth A. Myers,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Peter T. Phillips,** manager, Flight Procedures Branch, Flight Standards Div., promotion made permanent . . . **Lewis A. Reece,** AF watch supervisor, Romulus, MI, AFSFU, Michigan AFS, Belleville, from Washtenaw County, MI . . . **Robert W. Ritter,** unit supervisor, Springfield, IL, FSDO, promotion made permanent . . . **Douglas L. Romain,** asst. manager, operation, Detroit, MI, Metro Airport ATCT,

(Continued on page 12)

Romulus, MI . . . **Timothy S. Sheridan,** area supervisor, Indianapolis, IN, ARTCC, promotion made permanent . . . **Glynn A. Williams,** unit supervisor, Chicago, IL, AFS, promotion made permanent . . . **Curtis L. Wixon,** unit supervisor, McCook, IL, AFSFO, Chicago AFS, from Finley, ND, AFSFO.

New England Region

David N. Anderson, unit supervisor, Bangor, ME, AFSFO, Bangor AFS, promotion made permanent . . . **Gregg W. Anderson,** area supervisor, Quonset Point, RI, TRACON, promotion made permanent . . . **Henry E. Benson,** manager, Windsor Locks, CT, AFS . . . **James J. Collins, Jr.,** area supervisor, Beverly, MA, ATCT, promotion made permanent . . . **Daniel A. Downing,** manager, Quonset Point, RI, TRACON from Logan Airport, ATCT, Boston . . . **Robert A. Ferreira,** manager, System Management Branch, Air Traffic Div., from Quonset Point, RI, TRACON . . . **Paul F. Funaiole,** unit supervisor, Bangor, ME, AFSFO, Bangor AFS, promotion made permanent . . . **Kenneth A. Jeffery,** asst. manager for program support, Windsor Locks, CT, AFS . . . **Kathleen F. McDonald,** area supervisor, Norwood, MA, ATCT, from Lawrence, MA, ATCT . . . **James F. McGarry,** area supervisor, Logan Airport ATCT, Boston . . . **William G. Morris,** manager, Resource Management Branch, Air Traffic Div., from Washington Headquarters . . . **Kenneth R. Morse,** area supervisor, Quonset Point, RI, TRACON, promotion made permanent . . . **Charles J. Peahl,** asst. manager, programs, Boston ARTCC, Nashua, NH . . . **Michael G. Salisbury,** area supervisor, Otis AFB ATCT, Falmouth, MA, from Los Angeles TRACON . . . **Wojciech S. Wojcicki,** communications specialist, NAS Planning & Program Management Branch, Airway Facilities Div., promotion made permanent.

Northwest Mountain Region

Charles C. Abnet, area manager, Seattle-Tacoma, WA, ATCT . . . **John J. Alex,** manager, Casper, WY, ATCT, from Billings, MT . . . **Lloyd N. Allred,** unit supervisor, Salt Lake City, UT, AFSFO, Salt Lake City AFS, promotion made permanent . . . **Clarence Boren,** unit supervisor, Cedar City, UT, AFSFO, Salt Lake City AFS . . . **Ray H. Brewer,** manager, Cascade, ID, AFSFO, Portland, OR, AFS, from Boise, ID . . . **William T. Butler,** asst. manager, plans & procedures, Seattle-Tacoma, WA, ATCT . . . **James F. Carlson,** unit supervisor, Helena, MT, FSDO, promotion made permanent . . . **Richard V. Freeman,** supervisor, Environmental Engineering Section, Maintenance Branch, Airway Facilities Div. . . . **Raymundo C. Garcia,** unit supervisor, Denver, CO, FSDO . . . **Lonnie D. Jackson,** manager, Dallas, OR, AFSFO, Portland, OR, AFS . . . **Roy K. Kamigaki,** asst. manager, quality assurance, Denver ARTCC, Longmont, CO . . . **David J. Kohn,** chief, Resource Management Branch, Air Traffic Div. . . . **Dale W. Kunkel,** manager, Portland, OR, AFS, from Denver, CO, AFS . . . **John J. Liebig,** manager, Cortez, CO, AFSFO, Denver, CO, AFS, from Billings, MT . . . **Glenn M. Lytle,** manager, Renton, WA, ATCT . . . **Michael D. Manley,** unit supervisor, Eugene, OR, AFSFO, Portland, OR, AFS, promotion made permanent . . . **George D. Olson,** area supervisor, Denver, CO, ATCT, promotion made permanent . . . **Jerry W. Parker,** manager, McMinnville, OR, AFSS, from regional headquarters . . . **David L. Pyle,** area supervisor, Denver, CO, ARTCC, Longmont, CO, from Albuquerque, NM . . . **Gordon B. Stewart,** area supervisor, Boise, ID, ATCT, promotion made permanent . . . **George E. Wagner,** unit supervisor, Redmond, OR, AFSFO, Portland, OR, AFS . . . **John E. Warner,** area supervisor, Seattle ARTCC, Auburn, WA, promotion made permanent . . . **Richard D. Wilder,** manager, Salt Lake City, UT, AFSFO, Salt Lake City AFS, from Seattle, WA, AFS.

Southern Region

Walter R. Cochran, area supervisor, Hampton, GA, ARTCC, promotion made permanent . . . **Gene T. Crabtree,** asst. manager, San Juan, PR, AFS, from Pensacola, FL, AFSFO . . . **Julian Doskow,** unit supervisor, Miami, FL, FSDO . . . **Kenneth O. Duckett,** manager, West Columbia, SC, AFSFO, Columbia, SC, AFS, from San Juan, PR, AFS . . . **Ronald E. Ferguson,** manager, Jackson, MS, FSDO, from Orlando, FL, FSDO . . . **Levon Garden,** manager, Fort Myers, FL, AFSFO, Tampa, AFS . . . **David R. Garrett,** manager, Chattanooga, TN, ATCT, from Nashville ATCT . . . **Jeffrey C. Granier,** group supervisor, Engineering Services Support Staff, Establishment Engineering Branch, Airway Facilities Div., promotion made permanent . . . **Russell R. Hammer,** unit supervisor, Miami, FL, FSDO . . . **William L. Hogan,** area supervisor, Charlotte, NC, ATCT, promotion made permanent . . . **Burnie G. Hughes,** systems engineer, Miami, FL, ARTCC AFS . . . **Bobby W. Hutchins,** manager, Louisville, KY, AFSFO, Covington, KY, AFS, from Miami (Hub) AFS . . . **Brian L. Ingraham,** section supervisor, Fort Lauderdale, FL, FSDO . . . **Anthony F. Kijek,** section supervisor, Miami, FL, FSDO . . . **Brian E. Lentini,** manager, Montgomery, AL, RAPCON, from Pensacola, FL . . . **James H. McCannell,** area manager, Hilliard, FL, ARTCC . . . **Robert J. McGrath, Jr.,** area supervisor, Hampton, GA, ARTCC, from Washington Headquarters . . . **James R. McKenzie,** area manager, Hampton, GA, ARTCC . . . **James A. Miceli,** area manager, Hebron, KY, ATCT . . . **Clifford C. Monteau,** manager, Hilliard, FL, ARTCC . . . **Jesse M. Moton, Jr.,** asst. manager, Hebron, KY, ATCT . . . **Charles T. Oxford,** area supervisor, Hampton, GA, ARTCC, promotion made permanent . . . **James L. Parker, Jr.,** unit supervisor, Charleston, SC, AFSFO, Columbia, SC, AFS . . . **Richard D. Parrottino,** unit supervisor, Memphis, TN, FSDO, Nashville, from Jackson, MS, FSDO . . . **James E. Robinson,** crew chief, Memphis, TN, ARTCC AFS, promotion made permanent . . . **David C. Royal,** area supervisor, Hartsfield International ATCT, Atlanta, GA . . . **Tredgar R. Smiley,** unit supervisor, Atlanta, GA, FSDO, College Park, GA . . . **David G. Smith,** asst. manager for program support, Hub AFS, Jacksonville, FL . . . **Richard C. Smith,** area supervisor, Tampa ATCT, promotion made permanent . . . **Luther J. Spaulding, Jr.,** technical program manager, Safety Analysis & Resource Management Branch, Flight Standards Div. . . . **Fred V. Thornton,** systems engineer, Atlanta, GA, ARTCC AFS, Hampton, GA, promotion made permanent . . . **Ronald J. Tokar,** asst. manager for program support, Columbia, SC, AFS . . . **Charles A. Underwood,** area manager, Raleigh-Durham, NC, International Airport, ATCT . . . **James M. Valentine,** manager, Meridian, MS, RATCF Tower, from Greenville, SC, ATCT . . . **John H. E. Walton,** asst. manager, quality assurance, Atlanta, GA, ARTCC, Hampton . . . **John R. Young,** crew chief, Memphis, TN, ARTCC AFS, promotion made permanent.

Southwest Region

Glenn A. Adams III, manager, Shreveport, LA, RAPCON, Barksdale AFB, from Pittsburgh ATCT . . . **Patricia S. Adams,** asst. manager, Fort Worth, TX, ARTCC . . . **Donald A. Barnes,** asst. manager for program support, Houston, TX, AFS, from Baltimore, MD, AFSFO . . . **Cavin C. Bennett,** asst. manager, Resources & Planning Branch, Airway Facilities Div. . . . **James F. Biggs,** area supervisor, Houston, TX, ARTCC, promotion made permanent . . . **John R. Chitwood,** manager, Dallas/Fort Worth, TX, TRACON Tower, from Shreveport, LA, RAPCON . . . **Charles G. Creek,** area supervisor, Fayetteville, AR, ATCT . . . **Robert A. Edwards,** unit supervisor, Little Rock AFSFO II, from Monroe, LA . . . **William D. Fey,** team supervisor, Dallas, TX, FSDO . . . **Lonam R. Fogleman, Jr.,** unit supervisor, Albuquerque, NM, AFS . . . **Raymond B. Foltz,** manager for program support, San Antonio AFS, from Illinois AFS . . . **Freddie Founteno, Jr.,** area supervisor, San Angelo, TX, AFSS . . . **Ronald M. Franklin,** area supervisor, Lubbock, TX, ATCT . . . **Joseph W. Frantz,** team supervisor, San Antonio, TX, FSDO . . . **Herschel Gillins,** area supervisor, Jonesboro, AR, Transition Staff, Facility Operations Branch, Air Traffic Div., from Shreveport, LA, FSS . . . **Paul B. Gray,** security officer, Dallas/Fort Worth, TX, Civil Aviation Security Field Office . . . **John F. Hanna,** unit supervisor, Austin, TX, AFS, from Houston, TX, AFS . . . **Sandra L. Hansen,** security officer, Houston, TX, Civil Aviation Security Field Office . . . **Daniel E. Hedenberg, Jr.,** area supervisor, Oklahoma City, OK, ATCT, from Shreveport, LA, ATCT . . . **Burnis D. Horton,** asst. manager, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **Robert D. Lane,** area supervisor, Houston, TX, ARTCC, promotion made permanent . . . **Henry L. Lewis,** asst. manager, New Orleans, LA, AFS, St. Rose, LA, from Charleston, WV, AFSFO . . . **Herman J. Lyons, Jr.,** manager, Resource Management Branch, Air Traffic Div. . . . **Stanley J. Massett, Jr.,** area supervisor, Baton Rouge, LA, ATCT, from New Orleans, LA, Lakefront Airport ATCT . . . **James M. McMains,** manager, Beaumont, TX, ATCT, from Brownsville, TX . . . **Glen C. Miller,** staff officer, Evaluation Staff, Airway Facilities Div., promotion made permanent . . . **Joyce G. Moody,** manager, Air Security Branch, Civil Aviation Security Div. . . . **Ronald H. Peay,** manager, Investigation and Internal Security Branch, Civil Aviation Security Div. . . . **William A. Phipps,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **Patrick W. Preston,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **Walter J. Price,** manager, Houston, TX, FSDO, from Frankfurt, West Germany . . . **Mark R. Schilling,** manager, Special Programs Office, Rotorcraft Directorate . . . **James J. Schuman,** area supervisor, Abilene, TX, RAPCON, from Houston Intercontinental Airport ATCT . . . **Jimmy R. Sentell,** area supervisor, Little Rock, AR, FSS . . . **Max E. Shannon,** supervisory engineering technician, Houston, TX, AFS . . . **Michael L. Smith,** area supervisor, Shreveport, LA, RAPCON, from Tulsa, OK, Riverside, ATCT . . . **Steven E. Stephens,** area supervisor, Dallas-Fort Worth ATCT, from Love Field ATCT, Dallas . . . **Boyce W. Tate,** area supervisor, Houston, TX, Intercontinental Airport ATCT, from Houston Hobby ATCT . . . **Comer C. Wolfe, Jr.,** area supervisor, Dallas/Fort Worth ATCT . . . **Lee Y. Wong,** asst. manager, Resources & Planning Branch, Airway Facilities Div.

Technical Center

John J. Dyson, technical program manager, Navigation, Communications & Spectrum Branch, Communications/Navigation/Surveillance Div., from Washington Headquarters . . . **Lloyd Hitchcock, Jr.,** technical program manager, ATC Technology Branch, Concepts Analysis Div. . . . **Wilfred H. Huber,** technical program manager, Surveillance & Weather Systems Branch, Communications/Navigation/Surveillance Div. . . . **Howard E. Kimpton,** supervisor, Environmental Section, Engineering/Environmental Branch, Plant Engineering & Services Div., promotion made permanent . . . **Edward J. Schuman,** deputy division manager, National Automation Engineering Field Support Sector, Maintenance Engineering Div. . . . **Louis M. Spagnuolo,** unit supervisor, Hardware Engineering Branch, Technical Facilities Div. . . . **Ralph J. Yost,** technical program manager, Navigation, Communications & Spectrum Branch, Communications/Navigation/Surveillance Div.

Washington Headquarters

Jeri L. Alles, asst. manager, Field Programs Div., Flight Standards Service . . . **Dean A. Christy,** manager, Special Programs Integration Div., NAS Transition & Implementation Service . . . **Theodore H. Davies,** manager, Terminal Procedures Branch, Procedures Div., Air Traffic Operations Service, from Los Angeles ATCT . . . **Tommy L. Dome,** asst. division manager, Brussels, Belgium, Civil Aviation Security Staff, Office of Civil Aviation Security . . . **Harold W. Donner,** asst. manager, Accident Investigation Div., Office of Accident Investigation . . . **Cecelia G. English,** manager, Evaluation & Analysis Branch, Executive Staff, Flight Standards Service, promotion made permanent . . . **Garrome P. Franklin,** chief, Program Management Staff, Systems Maintenance Service . . . **James L. Hevelone,** manager, Information Systems Branch, Automation Software Div., Air Traffic Plans and Requirements Service, from Cleveland, OH, ARTCC . . . **Stephen W. Hopkins,** manager, Statistical Analysis Branch, Management Standards & Statistics Div., Office of Management Systems, promotion made permanent . . . **Max Hupfer,** asst. manager, Position & Pay Policy Div., Office of Personnel . . . **Donald A. Kimball,** manager, Career Management Branch, Air Traffic Operations Service . . . **Richard J. Lay,** technical program manager, 3-D Radar Program, Surveillance, Flight Services & Weather Sensors Div., Associate Administrator for NAS Development . . . **Nancy D. Lobue,** manager, Acquisition & Hearings Branch, Procurement Legal Div., Office of the Chief Counsel . . . **Robert E. Mason,** manager, Information Management Program, Maintenance Operations Div., Systems Maintenance Service . . . **Major Myles,** section supervisor, Telecommunications Center, Office of the Deputy Administrator . . . **Everett W. Pittman,** chief, Brussels, Belgium, Aircraft Certification Staff, Aircraft Certification Service . . . **David S. Potter,** asst. manager, Air Transportation Div., Flight Standards Service . . . **Naomi L. Saunders,** branch manager (Rome, Italy), Civil Aviation Security Staff, Brussels, Belgium, Office of Civil Aviation Security . . . **Raymond K. Smith,** chief, Administrative Systems & Overseas Support Staff, Associate Administrator for Policy, Planning and International Aviation . . . **Michael James Upton,** manager, Resource Management Staff, Associate Administrator for Airway Facilities.

Western-Pacific Region

Mary L. Adams, manager, Hayward, CA, ATCT, from Oakland ATCT . . . **Duane R. Amann,** manager, Lihue, HI, ATCT, from Sacramento ATCT . . . **John E. Berggren,** area supervisor, Santa Barbara ATCT, from Oakland ATCT . . . **Daniel J. Blythe,** manager, Reid-Hillview Airport ATCT, San Jose, CA, from regional headquarters . . . **Ronald G. Breckler,** asst. manager, Phoenix, AZ, TRACON, from Flint, MI, ATCT . . . **Robert F. Bruns,** manager, San Francisco, CA, AFSFO, Golden Gate AFS, from Mill Valley, CA, AFSFO . . . **Elmer R. Byrd,** manager, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **William J. Callahan,** area supervisor, Oakland, CA, ARTCC, Fremont, CA, promotion made permanent . . . **Donald A. Dunn,** asst. manager for automation, McClellan AFB TRACON, Sacramento, CA . . . **Jose S. Flores,** asst. systems engineer, Oakland, CA, ARTCC AFS, Fremont, CA . . . **David K. Fowler,** asst. manager, plans & procedures, Ontario, CA, TRACON . . . **William F. Guest,** technician in-depth, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **Robert C. Hill,** area supervisor, Scottsdale, AZ, ATCT, promotion made permanent . . . **John L. Hopkins,** Airports Division, airport planning engineer, San Francisco AFSFO, Burlingame, CA . . . **Burt L. Jones,** asst. sector manager, Hawaii-Pacific, HI, AFS, Honolulu, from Los Angeles ARTCC AFS, Palmdale, CA . . . **Francis G. Judd,** manager, Honolulu, HI, FSS from regional headquarters . . . **Robert L. Lawless,** manager, Tonopah, NV, AFSFO, Phoenix, AZ, AFS, promotion made permanent . . . **Henry J. Maag IV,** manager, Edwards Air Force Base, CA, RAPCON, from Oakland, CA, ARTCC, Fremont, CA . . . **Diane M. Mangels,** manager, Hawthorne, CA, ATCT, from Ontario, CA, ATCT . . . **Rose L. Marino,** manager, Torrance, CA, ATCT, from regional headquarters . . . **Loretta J. Martin,** area supervisor, Monterey, CA, ATCT, from San Jose ATCT . . . **Willard J. Mattingly,** section supervisor, San Francisco, CA, CMO, from Riverside, CA, FSDO . . . **Danny R. McGhee,** area supervisor, Stockton, CA, ATCT, promotion made permanent . . . **Leonard A. Mobley,** asst. manager, Los Angeles, CA, ATCT, from regional headquarters . . . **Keith S. Morris,** manager, Guam CERAP, Andersen AFB, from Pago Pago ATCT, American Samoa . . . **Jocelyn A. Nakashima,** asst. manager, operation, Honolulu, HI, ARTCC . . . **Michael J. O'Connell III,** area supervisor, Los Angeles ARTCC, Palmdale, from Washington Headquarters . . . **Christopher J. Overmoe,** asst. manager, Oakland, CA, ATCT, from Livermore, CA, ATCT . . . **Warren B. Paschke,** asst. manager for automation, Phoenix, AZ, TRACON . . . **Kenneth E. Pender,** area manager, Oakland, CA, TRACON, from regional headquarters . . . **Harvey R. Riebel,** section supervisor, Airspace Branch, Air Traffic Div., from Ontario, CA, ATCT . . . **James S. Snavely,** asst. manager, programs, Edwards AFB, CA, RAPCON, from Lancaster, CA, Fox Field ATCT . . . **Glen D. Thompson, Jr.,** area manager, McClellan AFB TRACON, Sacramento . . . **Jeffrey H. Thorstenson,** area manager, Los Angeles, CA, TRACON, from regional headquarters . . . **Phillip T. Vigil,** area supervisor, Fresno, CA, FSS, from Santa Barbara, CA . . . **Wilbert D. Willis,** unit supervisor, Oakland, CA, ARTCC AFS, Fremont, CA . . . **Tommy Ray Wood,** manager, Los Angeles, CA, AFSFO, Van Nuys, CA, promotion made permanent.

The information in this feature is extracted from the Personnel Management Information System (PMIS) computer. Space permitting, all actions of a change of position and/or facility at the first supervisory level and to branch manager in offices are published. Other changes usually cannot be accommodated because there are thousands each month.

Retirees

AERONAUTICAL CENTER
Frederick J. Babiss
Ray D. Crawford
William J. Kane
Delmar G. Vanhuss
Sandra E. Weltner

ALASKAN REGION
John L. Hancock, Jr.

CENTRAL REGION
George C. Carver
Dean M. Coffman
Russell D. Folken
Richard L. Littles
Eleanore J. Miller

EASTERN REGION
Shirley A. Demarco
Afaf Ahmed Dourdour
Robert W. Jones
Milton L. Langley, Jr.
Nancy S. Lepore
Lloyd U. Miller
Thomas F. Morea
David A. Morgan
Charles G. O'Neill
Thornton J. Purdie
Alice R. Robinson
Perry E. Whitebair
Phyllis C. Scott
Vernon L. Ziehart

GREAT LAKES REGION
Richard A. Bouillon
James W. Brown, Jr.
James R. Callahan
Gerald R. Christl
William H. Davis
Freddie E. Kretzer
William J. McIntosh
John Monteviden, Jr.
Dean H. Rickels
Wendell Kindlisbach
Robert H. Schnell

NEW ENGLAND REGION
Orlando A. Conforti
David E. McAllister
John A. Stryydas

NORTHWEST MOUNTAIN REGION
Richard Bachmann
Clarence E. Burgess
Christopher Capaldi
Joyce I. Godard
Robert F. Hall
Henry F. Kleiner
Richard C. Makovsky
Robert F. Moreland
Helen T. Richlin
Leroy R. Skaug
Gavin G. Creel
Donald E. Deberry
Stanley A. Ellis
Theresa M. Ellsberry
Robert W. Glazier
Wade C. Hooper
William L. Moran
Michael R. Norrows
Billy B. O'Neal
Stanley V. Recek, Jr.
Robert E. Richardson
Donald D. Thomas
Donald A. Weeks
Walter H. Wulff

SOUTHERN REGION
Mary R. Bray
Bernice N. Briscoe
Fay Brown, Jr.
William C. Clower

SOUTHWEST REGION
Jack W. Akins, Jr.
Paul Brown
James R. Franklin
Jane Garcia
Burton J. Guinn
Ernest G. Hill
Norman H. Scroggins
Jimmy R. Sentell
Donald G. Siebel
Betty L. Sims
Edward F. Stevens, Jr.
Alvin H. Vogel

TECHNICAL CENTER
Rudolph Barbiero

WASHINGTON HEADQUARTERS
Kenneth E. Drews
John R. Dupree
James A. Hendrickson
Seymour M. Horowitz
Elliott B. Perrett

WESTERN-PACIFIC REGION
Irving W. Creech
Charles M. Denham
Sidney D. Edwards
Carl A. Fasanella
Robert L. Fisher
Shaun Hess
Leonard L. Levandowski
Edward J. Loeffler
Joanna L. Marchand
Lowell H. Ridge
Howard L. Saslique
Derald E. Vanderpool

Illinois

Paul Homman and Maureen Beharelle work in the sector's Peoria field office.

Administrative officer Patricia Edwards is on duty in the sector.

Timothy Swords and Edwin Eyer are at the Champaign field office.

Employees at the Illinois sector's field office in Rockford are, from the left, Frank Zawacki, Lance Elfstrom, Richard Mott, Mark Thien, Richard McCray, Thomas Bonnell, and Steve Kindell.

Raymond Eckard explains maintenance control center operations to Phillip Tolar.

Working at the sector's field office in Kankakee are, left to right, Frank Olivero, Kevin Hinton, George Sapp, Kenn Tindall, and Melver Moore.

Jackie Follis is at the Springfield Terminal Unit.

Representing the sector in Moline are, clockwise from right, Richard DeMint, Patrick Stoneking, James Marchik, Arnold Aune, Garry Reagin, Douglas Knight, Anthony Vallejo, Paul Schurlock, and James Carpa. Technicians not pictured are James Burton, Carmen Marchese, and Anthony Martinez.

Linda White is the sector secretary.

Illinois & Atlanta—1989's Top AF Sectors

The Illinois General National Airspace System (GNAS) and Atlanta Air Route Traffic Control Center (ARTCC) Airway Facilities Sectors won the 1989 National Sector of the Year awards for their outstanding performance and contributions in promoting air safety.

The Illinois GNAS Sector consists of 105 staff and field personnel who maintained 916 commissioned facilities including 11 control towers, five terminal radars, five ARTS IIA's, one long-range radar, one flight service station, one automated flight service station, 18 remote center air/ground communications facilities, 25 VHF omni-ranges (VORs), and 21 instrument landing systems. The Sector's navigational and communications facilities are relied upon for the safe control of air traffic into and out of Chicago O'Hare and St. Louis Lambert Airports.

The Illinois Sector office is located at Capital Airport, Springfield, IL, and field offices are in Champaign, Mt. Vernon, Moline, Hanna City, Peoria, Rockford, and Kankakee. Two area offices and three units are also located at Capital Airport and have detached staffs in Quincy, Alton, and Decatur. The geographical area of the sector is 56,345 square miles, and it services 51 airports—five level III's, three level II's, three Level I's, and 40 smaller airports.

The Atlanta ARTCC Airway Facilities Sector is located in Hampton, GA, a rural community approximately 25 miles south of Atlanta. It was responsible for the maintenance of 104 facilities/services during FY 1989 with a staff of 119 people.

The Atlanta Airway Facilities Sector is unique in that it contains the Atlanta NADIN Sector Field Office (National Airspace Data Interchange Network—one of two such facilities in the nation); the National Emergency Operating Facility (NEOF); and two RCAG's.

The Atlanta ARTCC airspace consists of approximately 103,440 square miles covering portions of six states. It was one of the busiest in the nation in FY 1989, with 1,628,000 air traffic operations.

The Airway Facilities sectors are responsible for the performance and certification of all electronic systems required to keep the national airways safe and efficient for air traffic use. ■

Atlanta

Gene Nobles, systems maintenance, and George Lumsden and John Culpepper, systems engineering, review a performance report.

Electronics technician Hugh Buchanan checks to see that the keys are working correctly.

Donald Thomas, electronics engineer, reviews performance.

Computer operators Betty Cloud and Betty Jones coordinate computer operations.

John Culpepper and Johnny Phillips confer during a certification test.

Unit supervisor Carl Steedman stands by Merrill Cook as he monitors an MMS terminal.

Laura Duffee and Susan Ball prepare to unload a shipment.

Guy Rainwater and Carl Meredith reset the temperature controls.

Flight data processing supervisor A. L. Ross and Phillip Ackerman report for duty.

Linda Nelson receives on-the-job training from electronics technician Paul Jackson.

Nat Riggs is a computer display channel technician on team 7.

Sharlene Thornton is a secretary at the Atlanta facility.

Plan of Action for General Aviation

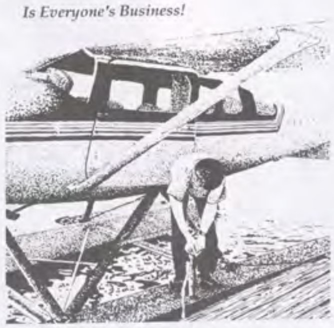
The first step in implementing the recommendations put together under the most recent System Safety and Efficiency Review (SSER) has been taken: FAA Administrator James B. Busey signed an order rescinding the mandatory 60-day suspension for Terminal Control Area (TCA) violations.

Busey made the announcement as part of a new compliance and enforcement program for general aviation. The program's aim is to improve safety and strengthen the FAA/general aviation partnership.

Busey, who was quick to point out that FAA still regards TCA violations as serious, reserves the right to impose grave sanctions when and if warranted.

Aviation Safety . . .

Is Everyone's Business!



Results of this SSER were 34 action plans that will enhance the United States' publically mandated emphasis on aviation safety. Announcing the action plans at a March luncheon hosted by the National Business Aircraft Association (NBAA), Busey spoke to the numerous members of the general aviation community in attendance.

First commissioned last summer at Oshkosh, WI, the SSER has provided a top-to-bottom review of the agency's dealings with general aviation. As part of the review a number of listening sessions were held to solicit the cooperation of every major general aviation organization.

FAA findings from the listening sessions were that past enforcement methods had led to unnecessary mistrust and friction. Aviation user groups and individual pilots had voiced some valid complaints over the issue of FAA's compliance enforcement program.

The FAA's revised program seeks to use the tools of good communicating, training, education and counseling before resorting to enforcement.

Taking into account the feedback from the listening sessions, a remedial training program was developed that empowered FAA inspectors and their managers to gear things more towards rehabilitation, said SSER team leader W. Mike Sacrey.

"We reduced our reliance on punishment as a deterrent." This view applies to airmen and small certificate holders as well, said Sacrey.

"Remedial training is one more tool we are going to give our inspectors to fix airmen violations when in the inspectors' judgment the situation could be corrected through training. It affects mostly general aviation, but the same approach will be used with air carriers," Sacrey stated.

"We still intend to achieve 100% compliance. Nothing less than that is acceptable. What will change is how we react when we find noncompliance. We are going to have a broader range of solutions," was how Sacrey put it. Flight Standards views this new approach as "reenergizing its mission of safety," he added.

"This process will take time," said Busey, "but the results will be worth it. We have cultural changes to make and attitudes to change."

U.S. Department of Transportation

Federal Aviation Administration

800 Independence Ave., S.W.
Washington, D.C. 20591

U.S. Department of Transportation
Federal Aviation Administration

FAA World

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Talking CAPACITY---

By Phillip M. Swatek

PRM Testing in Progress

Wringing the last bit of capacity out of existing airports is on almost everyone's agenda as a way to solve airport congestion and delays that some critics say are slowly beginning to choke the U.S. air transportation system.

There are those who insist that nothing less than building a number of major new airports in the right places will keep the system functioning in the next century. They believe new techniques, new technology to get more productive use of the runways we've got are necessary to buy the time to build new airports—a 10-year proposition at best.

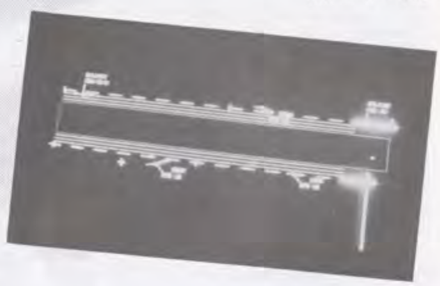
To what extent a crisis is really approaching can be debated, but FAA is proceeding as if the sky is certainly threatening. New thinking and new techniques have already brought some changes and increases in airport capacity, some steps in the right direction. Other projects will require new equipment as well as new thinking. Critical on this list is the Precision Runway Monitor Program in operational test now at Raleigh-Durham (RDU) and Memphis (MEM) airports.

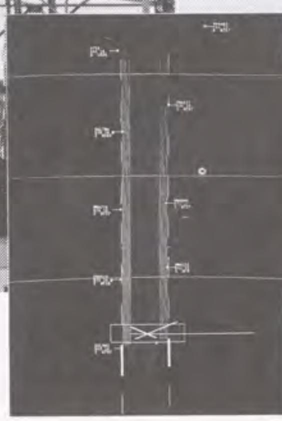
The test objective of the Precision Runway Monitor Program—"PRM"—is to determine the feasibility of permitting simultaneous independent Instrument Flight Rules (IFR) approaches to parallel runways less than 4,300 feet apart, the present standard. If the tests should prove successful—they will be concluded this fall—it won't mean the national airport capacity problem is solved forever, but it will mean a big step in the right direction.

Right now, only dependent IFR approaches to parallel runways closer than 4,300 feet apart are authorized. The aircraft must be staggered: one airplane remains behind another even though they

(Continued on page 2)

This electronic scanner antenna is at Raleigh-Durham, one of the two PRM test sites. It provides target updates to the controllers every second or faster.





A retired FAA official, Phil Swatek was a journalist and a free-lance writer before his government service.

In This Issue

Talking Capacity

from page 1

The test facility at Memphis shows the back-to-back Mode S or secondary radar antenna. The displays are in the trailer where the test exercises are run.

are separated laterally. There must be two miles between them. Obviously, this stretches the landing sequence out for both runways; it reduces the number of flights that can land on the pair in a given hour by nearly 40%.

When the pilots can see each other under Visual Flight Rules (VFR), this restriction doesn't apply. Controllers tell each pilot of the nearby aircraft; the pilots acknowledge seeing "the traffic" and maintain their own safe separation.

In bad weather, the pilots obviously can't do that and must rely on the controllers.

If PRM works—including a successful demonstration of controller and pilot response times—simultaneous IFR approaches could be conducted to runways spaced less than 4,300 feet apart, perhaps to as little as 2,500 feet separation, depending on the tests. That would mean the tight parallel runways at New York's JFK, for example, could handle 49 flights an hour in bad weather, rather than 37. Twelve key airports could benefit from this new standard tomorrow, including JFK, Chicago's O'Hare, Atlanta, Cincinnati, Baltimore and Orlando, as well as Memphis and Raleigh-Durham.

In addition, the new reduced separation standard could make it practical to build new runways at several large existing airports. Five are being planned now.

The critical contribution of PRM is getting more frequent updates to controllers on where the airplanes are as they approach the runways. The information also has to be displayed so the controller can monitor the operations effectively and react quickly should the need arise.

"Instead of telling you where the airplane's been, it tells you where it is," Will Cliatt of the Atlanta tower says of the system he is helping to test at RDU. It's "a whole new window," he believes.

At present, Airport Surveillance Radar (ASR) produces an update of aircraft targets for the controller every five seconds, the time it takes the antenna to make one revolution.

It takes at least two targets, or points, to project a line or course of flight. That's 10 seconds at a minimum. Assuming that an errant aircraft could move toward an aircraft on the adjacent runway at 120 feet per second, in 10 seconds it could be 1,200 feet off course before the controller could spot the deviation—called a "blunder" in the new lexicon.

The controller then has to communicate to the pilot of the blundering airplane, telling the pilot of the course deviation. The pilot must then react and get the airplane back on course.

Two of the PRM test controllers at Memphis: Dan Strawbridge, seated, and Greg Barrett, at right. Tower manager, Ron Liszt, is behind Strawbridge.

To improve on the 4,300-foot standard in place today, it is obvious that a radar update every 5 seconds won't do. The signals have to come in much faster, and they must be displayed in such a way that the controller can spot any blunder at once and communicate first with the blundering pilot, and, if airspace incursion has gone too far, with the other pilot as well. The other pilot might have to make a missed approach.

The test at RDU employs electronic scanning of approaching aircraft. It uses a radar antenna, but the antenna doesn't revolve in the familiar way. This system—which will cost approximately 3 million—updates aircraft positions every second or faster.

"You can almost see the pilot turn his head," said Clint Matheny, another test controller from IAH, Houston.

"E-Scan," as the equipment is called, would be new in the FAA inventory, though the antenna principle has been used in other applications for many years.

The test at MEM uses two garden-variety Mode S or secondary radar antennas mounted back-to-back on top of a basic ASR antenna. The joined antennas don't revolve any faster, but having two back-to-back, each updating the targets of approaching aircraft, the controller gets the picture in half the time—2.4 seconds, not 4.8 seconds.

While the machinery being demonstrated at Memphis doesn't offer the speed that the electronic scanner at Raleigh-Durham does, it would be less expensive, being essentially an addition to the new Mode S ground system. It also will be familiar equipment to the FAA technicians who will be responsible for keeping it going.

"That was our job," said Ron Liszt, manager of the tower at Memphis, "to see whether PRM could work with modified but existing hardware.

"That was the question," he says. "Not whether a fraction of a second is better than 2.4 seconds, but, rather, will 2.4 do the job?"

"E-Scan might well be financially justified in some circumstances," the MEM tower manager agrees. "The 2.4-second update may be right in others. We are not comparing systems."

Two MEM test controllers, Dan Strawbridge and Greg Barrett, agree that a one-second update may have advantages, but they are not sure if it would be necessary for them at Memphis where the parallel runways are 3,400 feet apart.

"It works," says Barrett of the 2.4 presentation with which he has been working. Both expressed some surprise at how much more effective a 2.4 second update is than a 4.8, though it is only twice the speed they normally use.

Target information on approaching aircraft comes to the controllers at the two test sites in different ways and at different speeds, but the data is processed and displayed in exactly the same way.

The electronic scanner antenna for PRM is shown with the Raleigh-Durham tower in the background. Landon Harris (left), radar unit supervisor, is with George Marshbourne (center), a former FAA technician now with MSI, the PRM testing contractor. Roger Lentz, also of the radar unit, is at the right. The electronic scanner has worked flawlessly thus far.

Among the 52 out-of-town controllers participating in the PRM tests were Will Cliatt (left), Atlanta, and Clint Matheny, Houston. They were part of the "E-Scan" tests at Raleigh-Durham.

Controllers monitoring the approaches—one for each runway—have a high-resolution display, 20 inches by 20 inches, in color. The displays will show, identically, the approach airspace for both runways, the runways themselves and the missed approach areas. The space between the parallel runways, which must not be entered—called the "No Transgression Zone" (NTZ)—appears in red.

When an aircraft target—identified with a data block the way they are today in the ARTS system—is projected to be going too far off course, an alarm comes up on the controller's screen. The target pulses in cautionary yellow. The controller tells the pilot of the deviation.

Houston's Clint Matheny finds the yellow numerics particularly arresting, even more than red.

"Maybe it's because of driving," he says. "You know something is going to change."

A second alarm is displayed—the target pulses in red—if the blundering flight pierces the NTZ. At that point, the controller handling the other parallel runway would consider issuing "break out" instructions to any flight abeam the off-course aircraft. Something would have to be clearly wrong on the flight deck of the blunderer. "Break out" would mean turning away from the threatening aircraft, circling and starting the approach over again.

When the tests are completed, 104 controllers will have participated, half from the two test sites, MEM and RDU, and the other half from facilities around the country where parallel ILS approaches are run to runways spaced 4,300 feet or more.

Tests involve a series of scenarios, each reflecting a problem, some minor and some critical—happily simulated. Real airplanes are used on occasion, but more typically, the problems are generated from FAA computers and airline flight simulators.

What everyone wants to find out, with no room for doubt, is how much time it takes for a PRM controller to identify a blunder and notify the pilot, and then how much time it takes for the pilot to correct the deviation. That will ultimately determine how much closer than 4,300 feet the parallel runways can be for safe operations.

Other areas of testing involve false alarms and what their impact may be, should they be frequent. What happens when there are very strong crosswinds or when there is turbulence is being studied. Not overlooked in the tests is the possibility that a pilot, breaking out from the overcast, might head for the wrong runway. Can the controller pick that up quickly enough to set things right?

The PRM system, should the tests continue to go well and the system become part of the National Airspace Plan, will not solve the airport capacity and delay problems by itself. Nor will all the innovations and improvements being worked on now, all put together, solve the problem much beyond the year 2000 without new airports.

But PRM does promise to help get all the capacity possible out of existing runways and airports and to keep the U.S. air transportation system vigorous and growing to meet the extraordinary travel demands of the 21st century. ■

FAA World

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Samuel K. Skinner

FAA Administrator
James B. Busey

Assistant Administrator—Public Affairs
Hugh O'Neill

Manager—Public & Employee Communications Div.
Vacant

Editor
Fraser Jones

Art Director
Eleanor M. Maginnis

Staff Editor
Pat Tomasetti

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John Clabes—Aeronautical Center
Paul Steucke, Sr.—Alaskan Region
Robert Raynesford—Central Region
Kathleen B. Bergen—Eastern Region
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Holly Baker—Technical Center
Barbara Abels—Western-Pacific Region

A Visit to

By Diane Spitaliere

While it is FAA's responsibility to ensure the safety of the flying public, the American Society for the Prevention of Cruelty to Animals operates Animalport at Kennedy Airport, in conjunction with the U.S. Department of Agriculture, Customs Service and Fish and Wildlife Service, to ensure the safety of a different kind of flying public—the four-legged kind.

The ASPCA Animalport, the first and largest facility of its kind in the Western Hemisphere, has been tending to the health and safety needs of animals in transit since 1958. Last year, the professionally trained staff fed, watered, exercised and cared for 11,651 animals from all over the world. Personnel routinely assist owners, shippers and airlines in solving the unusual problems that can occur when living creatures are transported.

Animalport mascot "Stormy" has been at the facility since director Kathi Travers rescued him from abandonment at Flushing Meadow Park several years ago.

Playful kittens are among the many boarded pets enjoying the care of the Animalport staff while their owners are on vacation.

The 24-hour facility has stalls, cages and pens which are used to house animals being boarded as well as those in transit. All Kennedy Airport personnel receive a discount when boarding their pets there. The facility is commonly referred to as "JFK's Hotel for Animals" by the Animalport staff.

Animalport director Kathi Travers with one of the many thoroughbred horses that come through the facility.

The Animalport serves a large variety of animal species. According to Kathi Travers, director of the Animalport and animal-lover extraordinaire, the facility has cared for dogs, cats, rabbits, birds, horses, monkeys, camels, llamas, frogs, snakes, geese, a panda, a hippo and many more.

"We care for everything from canaries to elephants at this facility," said Travers.

One of the functions performed at the facility is ensuring that all animals are properly caged. The crate must be large enough so that the animal can stand up, turn around and lie down. In addition, certain ventilation requirements must be met. If these requirements are not met, the animals will not be released to the airlines until they are recrated.

A major problem with shipping animals is that the airlines sometimes forget they are carrying live cargo. The crates are sometimes left out on the runway for an extended period of time. This can be detrimental to the animals in extremely hot or cold weather.

These parrots were "guests" at the Animalport after being confiscated by the U.S. Fish and Wildlife Service.

"The airlines have to realize that they are dealing with 'precious' cargo, said Travers. "I always tell them—just treat these animals as you would your own pets."

Travers recently became involved in an "Animals in Transit Training Seminar for the Airlines" where she has had the opportunity to address the people most directly responsible for commercial shipment of animals.

"Since these seminars the airlines are much better at caring for animals in transit. It is now safe for any animal to come through Kennedy Airport," said Travers.

The Animalport has had its share of celebrities over the years. Among them have been Ling-Ling, the famous panda lent to the United States by China; Siegfried and Roy's famous white tiger; Dolly and Dennis, parents of Clint Eastwood's orangutan Clyde; and various stars from Ringling Brothers & Barnum and Bailey.

Travers, who has been director of the Animalport for three years, stresses that the humane conditions at the facility are achieved largely through the efforts of her dedicated staff of eight. Jimmy Florio, who she affectionately refers to the "Felix Unger of the Animalport," has been an animal care technician there for 20 years.

"If an animal gets loose in the belly of a plane, Jimmy is the one I send out to rescue it. He can recover an animal in record time," said Travers. ■

Diane Spitaliere is editor of the Eastern Region Intercom.

Al Lupinetti heads up the Tech Center's Office of Research and Technology Applications.

Technology Transfer: Paving the Way for More Innovative Research

by Lisa Aveni

In an effort to maintain U.S. pre-eminence in the world market of technological and economic development, Congress has enacted the Federal Technology Transfer Act.

The act provides the means to improve the transfer of commercially useful technologies from federal laboratories to the private sector. More than $20 billion annually is spent on research and development at more than 700 federal laboratories. While much of the R&D results may be commercially applicable, only about 5 percent of this technology ever reaches the marketplace.

It is in the national interest, however, that federal laboratories collaborate with universities and industry to ensure that scientific knowledge continues to advance and to translate these advances into commercial endeavors.

The 1986 Federal Technology Transfer Act states that "the government shall strive where appropriate to transfer federally owned or originated technology to state and local governments and to the private sector."

The act stimulates technology development through key items, such as economic incentives to individual inventors, cooperation between private corporations and federal laboratories, and channeling the flow of technical and other knowledge among the military, universities, private corporations, and civilian government agencies.

In October 1989, Administrator James Busey signed an FAA order (9550.6) establishing the Technology Transfer program in the FAA.

It adopted as FAA policy the commitment of the federal government to establish federal labs as nuclei for technology development. Part of this commitment encourages federal workers' creativity and productivity by allowing them to obtain patents and to receive royalties for their work. This policy also serves as an incentive to attract and maintain top-notch talent in the FAA.

The Technical Center's Office of Research and Technology Applications, headed by Al Lupinetti, is managing the program for the FAA. Dave Nesterok is the project manager. Each federal laboratory will include a similar office to manage the smooth transfer of technology among government, industry, and universities.

"Technology transfer allows government to reap the maximum benefit from research and development activities through cooperative research and development agreements [CRDAs] with industry, universities, and other government agencies," Lupinetti remarked.

The CRDAs permit company representatives to work side by side with government scientists to maintain a steady flow of information among the parties; stress interpersonal commitments; and allow the commercialization of inventions by employees while in government service.

Nesterok and Lupinetti are excited about the future implications of technology transfer. "CRDAs between the FAA and industry will open doors to many areas of aviation research we couldn't touch in the past," said Lupinetti.

Such agreements will allow the government to provide industry and universities with personnel, services, facilities, equipment, and other resources to conduct research. Non-federal parties also may provide resources for specified research and development efforts that are consistent with the mission of the FAA.

A prime example is the Traffic Alert and Collision Avoidance System program. FAA employees spent years developing specifications for the current TCAS II system. A private corporation was awarded a contract to build a prototype TCAS II. Government scientists at the Technical Center used FAA labs and aircraft to evaluate the prototype and to develop the TCAS specifications into a mature system.

Tony Tech demonstrates his zeal for competitiveness, research, and savings.

"The cooperation of government and industry to achieve mutual benefits from labs, facilities, knowledge, and people resources is what technology transfer is all about," said Tom Grygotis, manager of the Collision Avoidance and Data Systems Branch at the Center.

The increase in joint programs with industry and universities is sure to motivate research and development personnel, and the ability to conduct research jointly with industry without slowing the process through procurement actions will speed up the R&D process. "The Technology Transfer program will allow the Technical Center to make extensive use of technology exchange with various organizations," said Nelson Miller, manager of the Center's Aviation Safety Division. The potential to conduct joint research is therefore enhanced because many of the constraints are eliminated.

What does this program mean to the government employee involved in technology development? "It means huge employee incentives, including patent licensing, royalty sharing, and other job-related incentives," said Lupinetti. "Both the government and the federal employee benefit. Federal technological activity increases through joint research programs, and the employee receives personal incentives from marketable innovative development."

FAA scientists or laboratory managers who develop commercially marketable goods can receive 25 percent of the royalties the government receives from industry for the right to use government-owned inventions.

Prior to the establishment of the Technology Transfer program, government regulations would not permit federal scientists and engineers to exploit inventions created on government time. Employees would spend years designing and developing specifications for avionics equipment, only to have their inventions exploited by the industry with no recognition of their efforts.

In addition to allowing government employees to negotiate licensing agreements for government-owned inventions, the program also offers other incentives, such as an awards program. This could mean monetary rewards for innovative development by FAA employees or organizations.

Each agency that spends more than $50 million annually for R&D in its government-operated laboratories is to establish a cash awards program to reward scientists and engineers for inventions contributing to commercial development, outstanding technical contributions, and technology transfer.

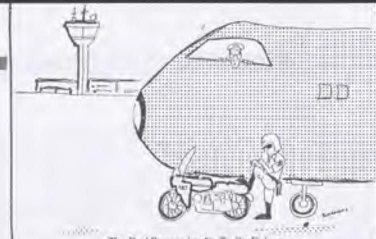
Participation in this technology transfer will benefit not only the FAA, the federal government, private industry, universities, and taxpayers, but also the American economy.

"As we move forward into the 21st century, this partnership will enable us to maintain our world leadership in aviation and meet our goal of a strong and healthy economy for the well-being of all United States citizens," Lupinetti concluded. ■

Lisa Aveni is a public affairs specialist at the FAA Technical Center. She currently is the Center's Intercom *editor.*

FAAer Cartoons Agency Humor

By Kristy Wooley

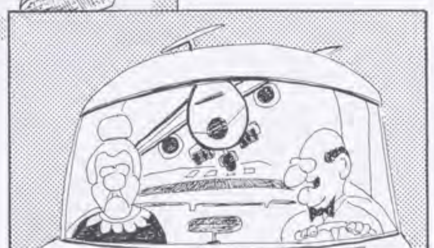


The Real Reason for Air Traffic Delays

Controller Nightmares

Frank, don't move!

Once again, Bob has cheated death and not returned his tray to the up-and-locked position.



Relax, Edna. We're not lost. The terminal is around here somewhere.

The next time you do something funny at work, look out. You may end up as the subject of the newest cartoon for readers throughout the FAA.

Mike Burroughs, an air traffic controller at the Memphis, TN, Air Route Traffic Control Center, uses office snafus as subjects for some of his creative impulses: He draws cartoons, many of which have been published in employee publications and airport newspapers. Cartoons, which were compiled while he worked at the Dallas/Ft. Worth International Airport, were published in the book *Airport Antics*.

It takes only a few minutes for Burroughs to create a cartoon—from funny thought to finished product. "Once something funny happens, I get a picture in my mind, and it's easy. It's harder to sit down and try to think up an idea."

He says the drawing in a cartoon is secondary. "The basis of a good cartoon is a good idea—it displays more of the humor. Some people can draw but can't put a humorous word on paper; other people are very funny and can't draw. The picture really gets the point across."

Before moving to the Memphis center almost two years ago, Burroughs' single-panel cartoons were published in the weekly newspaper, *DFW People*. "Most of them were about the people I worked with," he says.

"When I was drawing cartoons for *DFW People*, I had to come up with a cartoon weekly. Sometimes I'll come up with five or six at a time, then go a week with nothing."

Despite the fact that many of his cartoons have been published, Burroughs calls the drawings a hobby. "It's a release; I do it for fun. I doodle all the time . . . and then show it around. It's more fun to see peoples' reactions than drawing the cartoons," he says.

Burroughs says his favorite cartoonists are Bill Watterson who draws "Calvin and Hobbes" and Gary Larson who draws "The Far Side." "I like their off-beat humor. Watterson has a perfect source of humor with that little boy [Calvin]. I also like Mother Goose and Grim."

Burroughs says that he'll draw anything. "It's an acquired talent, I guess. I've always had a creative type mind. I haven't had any formal art training. Instructors always want you to draw pots and flowers," he says. "People say that all cartoonists are really frustrated artists anyway."

Now Burroughs' cartoons are frequently paired with national stories as editorial cartoons in the Southern Region *Intercom*. ■

A recent graduate of the University of Maryland, Kristy Wooley is a frequent contributor to FAA publications.

Development of Aviation Noise Standards

By Richard W. Danforth

This Gulfstream turboprop is tracked during noise certification.

The issuance of the Part 36 noise standards marked the climax of a unique period in the development of aviation noise law that remains exciting to me even today. Now, 20 years later, I would like to celebrate the context of the process that led to the issuance of federal aircraft noise standards.

The new regulation was the ultimate product of many factors, including far-sighted planning by a few lone "voices in the wilderness" in FAA, the Office of the Secretary of Transportation, other agencies such as the National Aeronautics and Space Administration (NASA), the aviation industry itself, and the airport and consulting communities here and abroad.

Until the late 1960's, the notion of a federal authority to regulate aircraft noise at the source was radical, to say the least. Since the Air Commerce Act of 1926, the history of aircraft design control had been uniformly and exclusively centered on airworthiness. This airworthiness focus had been essential to the growth of aviation in the United States and to the international fabric of a civil aviation based on comprehensive and detailed airworthiness codes. Except for a few isolated studies, such as the Doolittle Report on military aircraft noise in the early 1950's, there were few organized attempts to channel the complex environmental-psychological-technological-economic-political phenomenon called aircraft noise into a basis for framing effective national policy.

But times were changing. A cumulative noise metric had been developed for the Port Authority of New York and New Jersey in 1957, and a monitored noise limit was adopted by the authority in 1958, the year that also saw the introduction of the first commercial jets. This was followed two years later by a noise limit at London and the formation of the National Aircraft Noise Abatement Council, composed of representatives from diverse aviation groups.

Significant legislative interest in jet noise was reflected in the United States in the Harris Committee hearings of 1962 (the year that the Supreme Court resolved a long-standing legal controversy by holding that airport operators bear responsibility for airport noise damages) and, in the United Kingdom, in the 1963 Wilson Report to the Parliament. Meanwhile, land use planning documents were evolving within the FAA and the Air Force and were published in 1964. In 1965, increasing international interest in aircraft noise resulted in adoption of the Perceived Noise Level concept by the International Standards Organization.

Critical Events

This chain of events led, in 1966, to three occurrences of critical importance to the final shaping of Part 36. The first was the creation, under Presidential Directive, of the Program Evaluation and Development Committee, which included representation by NASA, FAA, airport operators, air carriers, acoustical experts, and aircraft manufacturers. The second was the London Noise Conference, which focused a broad international consensus that aircraft should be certificated for noise purposes. The third event was the creation of a new Department of Transportation, whose Secretary had cabinet rank, to grapple with the awesome task of developing a unified national approach to critical transportation issues.

These events were rapidly followed, in 1967, by the transfer of the federal noise abatement program from the Office of Science and Technology to the newly created DOT and by important agreements among the United States, Great Britain, and France concerning proposed noise certification concepts. Work began almost immediately on draft legislation that would bring the noise rules to fruition. This effort succeeded in July 1968 with the adoption of Public Law 90-411 giving the federal government specific authority to regulate aircraft noise. Meanwhile, intensive detailed negotiations on aircraft noise certification were taking place in the International Civil Aviation Organization in Montreal.

Policy Foresight

Even before Public Law 90-411 was enacted, the regulatory drafting process had also begun. The challenge—understood even more clearly today than at that time—was to synthesize a product from previous events that would move the development of aircraft noise standards forward without sacrificing essential aspects. A broad public review process was initiated in which over a thousand comments (a large figure for that time) were received from private citizens, citizens' associations, local governments, and aviation interests.

From this broad input, several key principles emerged, including the concepts that noise documentation and approval should be an integral part of the complex body of airworthiness approval requirements rather than a separate process; that the new rules even should be applied to aircraft already well along in certification; that a noise descriptor based on Perceived Noise Level concepts should be used; that the certification procedure should be uniformly applied to all aircraft and should be in a form that encourages international standardization; that new technologies should be aggressively pursued and applied to noise abatement, consistent with the economic realities of air transportation; and that the public has a right to know the certificated noise levels of aircraft.

A microphone is installed for noise certification under Part 36.

Although these concepts seem such an obvious basis for aircraft noise standardization and are unquestioned today, each involved significant policy foresight 20 years ago. We are in debt to all of those who persisted with such foresight. ■

Richard W. Danforth, manager, Airports/Environmental Law Branch, Office of the Chief Counsel, at FAA, was the legal architect of the Part 36 aircraft noise standards. This article is an adaption of his commentary for the Airport Noise Report.

FAA-approved friction measuring equipment (left to right): Saab Friction Tester, BV-11 Skiddometer, Mu-Meter, and Low Friction Tester.

The BV-11 Skiddometer consists of a three-wheel trailer towed behind a vehicle. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

Technicians are calibrating the Saab Friction Tester, which can give pilots a computerized report on runway friction data analysis.

The Saab Friction Tester incorporates a fifth wheel mounted behind the rear axle of the vehicle. This wheel is driven by a chain transmission connected to the rear axle.

The ML Aviation Mu-Meter performs tests on simulated ice.

Promoting Safety

a High Tech Way

Runway Friction Measurement and Maintenance

Think about this. Each time you fly, you take for granted all of the factors that ensure your safe take-offs and landings. These factors include the roles of the air traffic controllers, the airline maintenance mechanics, and the cockpit personnel in your particular airplane.

The FAA deals with many other factors essential to aviation safety. For instance, the agency issued Advisory Circular (AC) 150/5320-12A, titled "Measurement, Construction and Maintenance of Skid Resistant Airport Pavement Surfaces," dated July 11, 1986.

Basically, this document incorporates FAA standard specifications for skid-resistant pavements, including standards on grooving and texturing, friction measuring equipment, frequency of conducting friction survey, and friction measurement procedures.

The recommendations in the AC provide the basis for a program of periodic friction measurement on airport pavement surfaces, whether conducted by individual airport operators or on a statewide basis.

The potential of poor runway pavement surface conditions of contributing to the loss of aircraft braking action has been recognized by both the FAA and the National Transportation Safety Board (NTSB). As a result, the approximately 650 million square yards of runway pavement surface at our Nation's airports represent an important responsibility.

Vital research at the FAA Technical Center is being done to provide new and improved standards and guidelines for the design, construction, operation, and maintenance of airports.

Satish Agrawal, the Center's manager of the Airport Technology Branch (ACD-110), is heading up several projects to develop data and to provide guidelines for improving safety, decreasing construction cost of airport facilities, increasing capacity, and reducing delays.

Efficient movement of aircraft on the runway surface enhances both airport operational safety and capacity. This efficiency can be determined by optimum use of aerodynamic drag, engine thrust, and aircraft braking.

Generally, aircraft braking action is degraded on runways covered with ice, snow, water and rubber deposits, and under extreme operational and environmental conditions loss of aircraft can result. Therefore, Center engineers are constantly investigating methods for improving snow and ice control, removal of heavy rubber deposits, and efficient drainage of water from under the aircraft tires.

Additionally, at the request of the Air Traffic operations office, the Technical Center has certified specific runways at Chicago O'Hare and Pittsburgh International Airports for a demonstration program titled "Simultaneous Operations on Intersecting Runways under Wet Conditions." The tests required runway surface characteristics to be measured before and after the removal of rubber deposits.

More recent testing has been conducted at Dulles International Airport, Brunswick Naval Air Station in Maine and Bangor, ME, International Airport. The Dulles tests involved high-speed exit evaluation using the FAA B-727.

At the latter two airfields, tests are being conducted to determine the effects of anti-icing chemicals on runway friction characteristics. Runway anti-icing chemicals were applied so that freezing rain could not form a bond between ice and the pavement. The chemicals also simplify the removal of ice/snow by mechanical equipment.

The tests at Brunswick (non-grooved runway) and Bangor (grooved runway) will determine how anti-icing affects slipperiness (the reduction of friction levels) on airport runways.

Four commercially available chemicals are being tested: Union Carbide U-CAR, Chevron ICE-B-GON, Ashland Chemical Urea, and MCA. These chemicals are applied on a dry pavement surface at the application rates specified by manufacturers, and friction measurements are made using a Saab Friction Tester.

The pavement surface is then subjected to various rates of simulated rain, with friction measurements being taken after each rain simulation. Indications are that after a simulated rain equivalent to 0.01" water depth, the friction levels will stabilize. Test results will be used to revise AC 150/5200-30, "Airport Winter Safety and Operations," issued on April 20, 1988.

Additional tests have been conducted by Agrawal's branch during the past few months. In August the American Society for Testing and Materials commissioned tests on a new set of tires proposed for use on runway-friction measuring devices. At the National Aeronautics and Space Administration Wallops Flight Research Facility an eight-person team completed 288 tests daily to check tire consistency, reliability, and performance.

Results showed that the friction-measuring tires occasionally vary by as much as 10 mu numbers between batches, probably because of poor quality control by the tire manufacturer. The test runs were conducted for six days, for a total of 1,649 runs. Still, the new set of tires will be recommended as standard equipment on the friction-measuring devices.

Research organizations around the world have developed various ground vehicles for measuring the coefficient of friction developed between a tire and the runway. Test vehicles are equipped with devices in which a tire is forced to operate with a longitudinal slip or at a slip angle; some of the devices have two tires operating identically.

The following are commonly used ground vehicles used to administer the tests:

The Saab Friction Tester (SFT) incorporates a fifth wheel mounted behind the rear axle of the vehicle (see photo). This wheel is driven by a chain transmission connected to the rear axle. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph. The torque required to drive the wheel is a measure of the coefficient of friction.

The Skiddometer (SKD) consists of a three-wheel trailer towed behind a vehicle; the wheels are connected by means of roller chains and sprockets with differing number of teeth. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph. The torque required to drive the wheels is a measure of the coefficient of friction.

The Mu-Meter consists of a three-wheel trailer behind a vehicle; the two outer wheels are held at a fixed toe-out angle of 7½ degrees from the direction of travel. The side force generated between the wheels, as the vehicle moves, is a measure of the coefficient of friction. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

The Runway Friction Tester (M-6800) incorporates a friction measuring wheel connected to the rear axle by a gear drive producing a constant longitudinal slip of 13%. Equipped with an on-board water delivery system, the tester can be operated at speeds up to 100 mph.

Technical Center engineers have investigated the procedures used in rubber-deposit removal at six major airports in Florida and on various runways at Baltimore-Washington International Airport, Chicago O'Hare International Airport, JFK International Airport, Newark International Airport and Pittsburgh International Airport.

At the request of the Office of Airport Standards, Agrawal, along with program manager Rick Marinelli, have undertaken a study on the accumulation of large rubber deposits on runways to determine if the extent of rubber deposits can be visually inspected.

In the tests, the engineers used a Saab Friction Tester and a Mu-Meter runway friction measuring vehicle. The former is basically a "souped up" Saab vehicle that can give pilots a computerized report on runway friction that's as valuable as the reports they now get on wind speed and runway visibility. While European and military pilots have relied on these friction reports for years, the current goal for using the friction data in the United States is to determine its relationship to the braking action required for various types of aircraft.

The numerous tests were conducted in accordance with procedures in AC 150/5320-12A. Their major conclusions: Visual inspection of rubber deposits cannot identify the true condition of the runway; and although high pressure water cleaning removes the bulk of the rubber deposits, it still leaves microscopic traces attached to the concrete aggregates.

These conclusions have resulted in an increased awareness among the airport operators and runway cleaning contractors with regard to the importance of cleaning and cleaning methods. Methods incorporating rotary cleaning actions, the use of chemical detergents, and the application of very high pressure water (35,000 pounds per square inch) have been proposed by the contractors.

This investigation, to be completed in 1991, will provide an efficient method of cleaning rubber from the runway surfaces. It will also provide the airport management with the information needed to keep the runways clean for safe operations of aircraft. ■

A Philosophy of Management

Remarks by
Admiral James B. Busey, Administrator
Federal Aviation Administration
Before the Embry-Riddle Management Club
Daytona Beach, Florida, April 10, 1990

There are good managers, and there are poor managers. I have some ideas about what makes a good manager, about the approach that he or she brings to the job.

First, a bit of personal background that'll give you an idea about where I developed my management style. I joined the Navy as an enlisted man 38 years ago. A year later, I entered the Navy's aviation cadet program, and a year after that, I got my wings and a commission.

Last year, after 37 years in the Navy, I retired. Two days later I started a second career with the FAA.

Along the way, I earned a B.S. and an M.S. in management at the Naval Postgraduate School out at Monterey, California. I learned a lot there. Certainly, we can all profit from a good formal education.

You'll discover—as I did—that your management style will really be shaped by the trial and error that comes from hands-on experience and by working for all kinds of managers, both good and bad.

By observing your superiors, you can learn very quickly what a good management style is and how it achieves results—and what a poor style is and how it turns people off and fails to get results.

I've watched both good and bad managers in my career, and it taught me a lot. For one thing, I learned the value of an open mind.

You don't pre-judge the organization or the people. You don't come in with a negative view. You don't come in with a pre-set agenda or a lot of flashy ideas about how you're going to change things. Changes, if necessary, come only later, after you've had a chance to study the organization and its people.

The idea is to work from within the organization, slowly, with a great deal of patience. You accept the organization as you find it, and you accept the people as you find them too. You take the time to get to know them, to get to know their gifts and skills, and you don't move them to new jobs or assignments until you really understand what they can do well. Then you can move them, if that's what's needed to utilize their skills better, to make them and the organization more productive.

At the same time, you work to get your people to buy into your ideas. You want them to think of an idea as their idea, because then they'll do almost anything to accomplish the objective.

You can't get them to buy in if you dogmatically insist that your view must be adopted blindly, without thought or discussion. Rather, you lead people by a process of reasoning to the point where they adopt the idea as their own, where they accept it with enthusiasm.

When that happens, there's almost nothing that can keep them from reaching the goal. And when they do reach it, you make sure to give them the credit for doing it.

As far as I'm concerned, this is the real challenge of leadership: To get people to buy into an idea, to think of it as their own, and then, when the goal is reached, to give them full credit.

Only a good manager can do all of that well. It takes patience; it takes skill; and it takes a willingness to let other people get the credit.

Wise old Ben Franklin first discovered the magic of this technique when he was raising money for the country's first public library. He didn't get much when he said it was his idea. But he succeeded when he gave the credit to others, and he used this technique many times in his long career.

Franklin didn't worry about who got the praise. As he said in his biography: "The present little sacrifice of your vanity will afterward be amply repaid."

Once you've set the goal and your people have taken ownership of the idea, then you must give them the authority and the responsibility to do the job. You must get out of the way and let them do it.

You don't tell them how to do it. You tell them what to do, and then you let them do it. It works. Believe me, it works.

I saw it many times in Vietnam. You can't expect a wingman in combat to protect you from some threat that's coming from six o'clock if he doesn't feel like he's a full, participating, voting member of the team.

Now if you want people to feel like they're on your team, you must show your trust in them. You must show them that you respect their ability and that you want them to use their skills in the best way they can. That means you must preserve their initiative, their freedom of action.

I saw a number of instances in Vietnam where senior officers expected their people to become virtual automatons, acting with little freedom and no thought. They'd tell the wingman, "You just stay locked on me. Don't think. Don't do anything else, and when you see the bombs come off my airplane, you get yours off too."

Well, that didn't work. You've got to bring people in, get them on your side, make them full participating members of the team, get them to buy into the whole idea—and then give them freedom of action.

I must say, however, that sometimes we didn't have that full freedom in Vietnam. And that's why many of us who survived Vietnam, and got on up to higher rank, worked to change the rules of engagement.

It really comes down to good management, that's all—which is what I tried to practice when I took over the command of the Naval Air Systems Command.

This organization buys all the aviation-related equipment in the U.S. Navy—from the aircraft to the avionics gear that goes in the aircraft, to the test equipment that maintains the aircraft and the avionics, to the bombs, the guns, the missiles, to all the spare parts, and everything else.

I took over with no pre-set plan of reform, no flashy ideas designed to get a lot of attention. I took my time, learned about my people, and studied the organization and how it operated.

It wasn't very long before I realized I had inherited an over-layered, heavily bureaucratic structure. We had contracts that were running late because there were too many people who could only say "no" and not enough who could say "yes."

There were layers of bureaucrats that were imposed on top of program managers—and everyone in the layer was very quick to tell the program managers, "No, you can't do it that way." There was no one around who would say, "Yes, go ahead."

So our poor program managers were just being stifled and burdened to the point where they couldn't execute their procurement programs the way they should.

I realized that if we wanted the work to flow smoothly and on time, we had to carve away those non-productive bureaucratic layers. We had to get them out of the way, and that's exactly what we did.

Admiral James Busey is the FAA's 11th Administrator.

We changed the structure and streamlined the whole process.

At the same time, we gave the program managers the responsibility and the authority to make decisions. We gave them the freedom to take some risks, the freedom to make mistakes. And we made them accountable for their decisions.

It took a long time to get it all in place, but the guys who succeeded me kept it rolling. It was institutionalized. They didn't see a need to change it, and it rolled right along. Five years after I left, the Naval Air Systems Command got an award as the best performing acquisition organization in the Department of Defense.

I did the same thing in the NATO command in southern Europe. In fact, I've tried to do that all my career; and it's what I'm doing now at the FAA, where we're still in the buy-in phase. It's too early to talk about results, but we'll have them, eventually.

To summarize the seven main principles of my style of management:

- You have no pre-set agenda for change.
- You take the time to get to know the organization and the people.
- You put the people in jobs they can do well.
- You get them to buy into your ideas.
- You give them the authority and responsibility they need to do the job.
- You hold them accountable, but you stand out of the way and let them do it.
- And, finally, you give them credit for reaching the goal.

As you can see, there are no secrets. It's all just common sense.

It's worked for me in my career, and I think it'll work for you, too. ■

People

Aeronautical Center

Thaddeus A. Bookman, unit supervisor, Flight Procedures/Inspection Section, Battle Creek, MI, FIFO, from Frankfurt . . . **Henry K. Boren,** manager, Medical Review Branch, Aeromedical Certification Div. . . . **Raymond L. Bradford,** manager, Academy Maintenance Support Branch, from FAA Depot . . . **Shirley J. Dark,** staff officer, Program Support Staff, Aeromedical Certification Div. . . . **Jack R. Delong,** manager, Quality Control Branch, FAA Depot, promotion made permanent . . . **Elaine A. Downey,** section supervisor, Storage & Transportation Branch, FAA Depot . . . **Patricia L. Garrambone,** instructor, Radar Training Section, Air Traffic Branch, FAA Academy, promotion made permanent . . . **Lindsay A. Helquist, Jr.,** instructor, General Ops & Airspace Systems Section, Aviation Standards Branch, FAA Academy, promotion made permanent . . . **Virginia A. Hicks,** manager, Program Management Staff, CAMI . . . **H. C. Huff,** unit supervisor, Electronic Production Section, Engineering & Production Branch, FAA Depot . . . **Cecelia L. Hunziker,** manager, Management Services Div., from Northwest Mountain Region, promotion made permanent . . . **Marvin L. Julian,** unit supervisor, Storage & Transportation Branch, FAA Depot . . . **Irving A. Long,** supervisor, Line Maintenance Section, Atlanta, GA, FIFO, Flight Procedures & Inspection Div., promotion made permanent . . . **Tona K. Mann,** section supervisor, Airmen Certification Branch, Airmen & Aircraft Registry Div. . . . **Teddy C. McIlwain,** section supervisor, National Flight Procedures Development Branch, Flight Procedures & Inspection Div. . . . **Robert E. Murati,** manager, Anchorage, AK, FIFO, Flight Procedures & Inspection Div. . . . **Harry D. Pelphrey,** instructor, Specialized Training Section, Air Traffic Branch, FAA Academy . . . **Michael J. Rogers,** section supervisor, Purchasing Branch, Acquisition Div., promotion made permanent . . . **Jeannie J. Van Nest,** section supervisor, General Accounting Branch, Accounting Div., promotion made permanent . . . **William R. Voss,** instructor, Revision & Development Section, Air Traffic Branch, FAA Academy, promotion made permanent . . . **Alfred J. Weidner,** instructor, Radar Section, Airway Facilities Branch, FAA Academy . . . **Mike J. Zink,** manager, Systems & Programs Staff, FAA Depot, promotion made permanent.

Alaskan Region

Edgar P. Billiet, manager, Kenai AFSFO, South Alaska AFS . . . **Joseph H. Boswell,** unit supervisor, Anchorage ARTCC AFS . . . **John D. Brister,** supervisor, Installation Section, Establishment Engineering Branch, Airway Facilities Div. . . . **John R. Cline,** systems engineer, Anchorage ARTCC AFS . . . **Charles F. Criswell,** manager, System Management Branch, Air Traffic Div., from Miami ARTCC . . . **Trent S. Cummings,** manager, System Requirements Branch, Air Traffic Div., from Northwest Mountain Region . . . **John R. Hallinan,** chief, Situation Monitor Staff, Flight Standards Div. . . . **Rebecca A. Moore,** manager, Juneau ATCT, from Fairbanks ATCT . . . **David R. Palmer,** asst. manager, plans & procedures, Anchorage ARTCC . . . **Peggy L. Smith,** manager, Resources & Planning Branch, Airway Facilities Div. . . . **Stephen W. Smith,** unit supervisor, Anchorage FSDO . . . **Paul J. Williams,** manager, Fairbanks AFSFO, North Alaska AFS . . . **Michael T. Wise,** supervisor, Electronic Engineering Section, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **Anthony M. Wylie,** area supervisor, Anchorage ARTCC, promotion made permanent.

Central Region

Lloyd W. Adams, section supervisor, Resources & Planning Branch, Airway Facilities Div. . . . **David A. Allgire,** unit supervisor, Maintenance Engineering Branch, Airway Facilities Div. . . . **Warren E. Barlow II,** area supervisor, Olathe, KS, ARTCC . . . **James W. Brunskill,** section supervisor, Planning & Programming Branch, Airports Div. . . . **Lloyd E. Gardner,** area supervisor, Lambert Field ATCT, St. Louis, MO . . . **Larry D. Gray,** manager, Lambert Field ATCT, St. Louis, MO, ATCT-TRACON . . . **Robert D. Long, Jr.,** manager, Grand Island, NE, AFS . . . **Thomas O. Mathison,** asst. manager, plans & procedures, Kansas City International Airport ATCT, from Chesterfield, MO, ATCT . . . **Eugene S. Mitchell, Jr.,** unit supervisor, Olathe, KS, AFS . . . **Peter L. Molsen,** asst. manager, Omaha TRACON, Bellevue, NE, from Grand Island ATCT . . . **Donovan D. Schardt,** manager, System Requirements Branch, Air Traffic Div., from Lubbock, TX, ATCT . . . **Charles W. Seger,** asst. manager, Wichita, KS, AFS, from regional headquarters . . . **Gary S. Thomas,** unit supervisor, Establishment Engineering Branch, Airway Facilities Div.

Eastern Region

William R. Becker, Jr., manager, Harrisburg AFS, from Capital AFS . . . **Glenn L. Broomell,** area manager, Baltimore ATCT . . . **Edgard E. Calderon,** section supervisor, Establishment Engineering Branch, Airway Facilities Div. . . . **William R. Carver,** area supervisor, Baltimore ATCT, from Dulles ATCT . . . **Michael P. Cataruzolo,** section supervisor, Telecommunications & Spectrum Engineering Branch, Airway Facilities Div. . . . **Bruno Codispoti,** manager, Oceana AFSFO, Virginia Beach, Norfolk AFS, from Norfolk, VA, AFSFO . . . **John W. Cuthel,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **David L. Dixon,** area supervisor, Washington ARTCC, Leesburg, VA . . . **Michael J. Fitzgerald,** manager, Norfolk ATCT, from Oakland, CA, TRACON . . . **Edward J. Frawley,** asst. manager, traffic management, Washington ARTCC, Leesburg, VA, promotion made permanent . . . **Renard A. Gaddi,** section supervisor, Establishment Engineering Branch, Airway Facilities Div. . . . **Richard J. Haldeman,** section supervisor, System Management Branch, Air Traffic Div., from Poughkeepsie FSS . . . **Charles W. Hannon, Jr.,** area supervisor, New York TRACON, Garden City, from regional headquarters . . . **Ruey-Long Huang,** unit supervisor, LaGuardia AFSFO, Metro NY AFS, from regional headquarters . . . **Thomas G. Jones,** asst. manager, plans & procedures, Baltimore ATCT, from Washington Headquarters . . . **John F. Kelley,** area supervisor, North Philadelphia ATCT, from Philadelphia ATCT . . . **Edward T. Masterson,** area supervisor, Philadelphia ATCT, from Newark, NJ, ATCT . . . **Jerome L. McCarty,** area supervisor, Washington ARTCC, Leesburg, VA . . . **Stephen Mielnicki,** unit supervisor, Pittsburgh, PA, AFSFO, Pittsburgh AFS, promotion made permanent . . . **Sheldon R. Moskowitz,** unit supervisor, LaGuardia AFSFO, Metro NY AFS, from regional hedquarters . . . **John C. Obey,** area manager, Leesburg, VA, AFSS . . . **Wayne E. Resetar,** area supervisor, Greater Pittsburgh Airport ATCT, promotion made permanent . . . **John G. Rosenwald,** manager, Buffalo AFSFO, Empire AFS, from Syracuse AFSFO . . . **Bruce E. Sarnoff,** manager, Rochester, NY, AFSFO, Empire AFS, from regional headquarters . . . **Edward L. Snyder,** manager, Williamsport, PA, ATCT, from Fairfield, NJ . . . **Louis C. Traini,** asst. manager for program support, Washington ARTCC AFS, Leesburg, VA, promotion made permanent . . . **Joseph M. Wall,** section supervisor, Facility Operations Branch, Air Traffic Div., promotion made permanent . . . **Roger B. Whitney,** area supervisor, Du Bois, PA, FSS, promotion made permanent . . . **Roger N. Wray,** unit supervisor, Clarksburg, WV, AFSFO, Charleston AFS, promotion made permanent.

Great Lakes Region

Harold N. Beeler, asst. manager, airspace and procedures, Cleveland, OH, ARTCC, Oberlin . . . **Dorothy G. Bowden,** manager, Position & Pay Administration Branch, Human Resource Management Div. . . . **Andrew S. Bowman,** supervisory electronics technician, Indianapolis AFS . . . **Gudmund M. Broin,** unit supervisor, Watford City, ND, AFSFO, Bismark, AFS, from Pipestone County, MN . . . **Gary V. Corbett,** asst. manager for training, Cleveland, OH, AFSS . . . **Kevin J. Cramer,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Richard E. Curths,** area manager, Terre Haute, IN, AFSS . . . **Dennis L. DeForest,** area supervisor, Flint, MI, ATCT, from Bismarck, ND, ATCT . . . **Kenneth L. Durham,** area supervisor, Detroit Metro Airport ATCT . . . **Michael J. Eichten,** unit supervisor, Chicago, IL, AFS, from regional headquarters . . . **Robert R. Ethier,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Robert F. Everson,** supervisor, Planning Section, System Requirements Branch, Air Traffic Div. . . . **Jimmy J. Fodrocy,** unit supervisor, St. Joseph County (South Bend) IN, AFSFU, Indiana AFS . . . **Albert E. Gladu,** manager, Romulus, MI, AFSFO, Michigan AFS, Belleville, from regional headquarters . . . **Terry L. Hall,** area supervisor, Chicago O'Hare ATCT . . . **William R. Halleck,** asst. manager, Chicago O'Hare Airport ATCT from Albuquerque, NM, ATCT . . . **Allan M. Hamamey,** asst. manager for training, Chicago O'Hare Airport ATCT, promotion made permanent . . . **Martin K. Hanson,** area supervisor, Indianapolis, IN, ARTCC, promotion made permanent . . . **Paul R. Heitzman,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Barton Holtz,** asst. manager, Systems Maintenance Engineering Branch, Airway Facilities Div., promotion made permanent . . . **Ward E. Huston III,** area manager, Chicago ARTCC, from regional headquarters . . . **Bruce M. Jeckel,** asst. manager, plans & programs, Cleveland, OH, ARTCC, Oberlin, from Cleveland, OH, ATCT . . . **William L. Johnson, Jr.,** asst. manager, programs, Cleveland Hopkins Airport ATCT, from Hebron, KY, ATCT . . . **Curtis L. Kaler,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Peter P. Kitta, Jr.,** area supervisor, Dayton, OH, AFSS . . . **Henry L. Kowal,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Anthony D. Kowalewski,** unit supervisor, Grand Forks, ND, AFSFO, Dakota AFS, Bismark, from Cleveland, OH, AFS . . . **Thomas M. La Fond,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **James L. Lenz,** area supervisor, Rochester, MN, ATCT, promotion made permanent . . . **John D. Lewkowicz,** manager, Ann Arbor, MI, ATCT, from Detroit Metro ATCT . . . **Marchelle A. Linkletter,** area supervisor, Minneapolis, MN, ARTCC, Farmington, MN, promotion made permanent . . . **Georgene A. McDonough,** section supervisor, System Management Branch, Air Traffic Div. . . . **Larry S. Minor,** area supervisor, Ohio State University Airport ATCT, from Port Columbus International Airport . . . **Kenneth A. Myers,** area supervisor, Cleveland, OH, ARTCC, Oberlin, OH, promotion made permanent . . . **Peter T. Phillips,** manager, Flight Procedures Branch, Flight Standards Div., promotion made permanent . . . **Lewis A. Reece,** AF watch supervisor, Romulus, MI, AFSFU, Michigan AFS, Belleville, from Washtenaw County, MI . . . **Robert W. Ritter,** unit supervisor, Springfield, IL, FSDO, promotion made permanent . . . **Douglas L. Romain,** asst. manager, operation, Detroit, MI, Metro Airport ATCT,

(Continued on page 12)

Romulus, MI . . . **Timothy S. Sheridan,** area supervisor, Indianapolis, IN, ARTCC, promotion made permanent . . . **Glynn A. Williams,** unit supervisor, Chicago, IL, AFS, promotion made permanent . . . **Curtis L. Wixon,** unit supervisor, McCook, IL, AFSFO, Chicago AFS, from Finley, ND, AFSFO.

New England Region

David N. Anderson, unit supervisor, Bangor, ME, AFSFO, Bangor AFS, promotion made permanent . . . **Gregg W. Anderson,** area supervisor, Quonset Point, RI, TRACON, promotion made permanent . . . **Henry E. Benson,** manager, Windsor Locks, CT, AFS . . . **James J. Collins, Jr.,** area supervisor, Beverly, MA, ATCT, promotion made permanent . . . **Daniel A. Downing,** manager, Quonset Point, RI, TRACON from Logan Airport, ATCT, Boston . . . **Robert A. Ferreira,** manager, System Management Branch, Air Traffic Div., from Quonset Point, RI, TRACON . . . **Paul F. Funaiole,** unit supervisor, Bangor, ME, AFSFO, Bangor AFS, promotion made permanent . . . **Kenneth A. Jeffery,** asst. manager for program support, Windsor Locks, CT, AFS . . . **Kathleen F. McDonald,** area supervisor, Norwood, MA, ATCT, from Lawrence, MA, ATCT . . . **James F. McGarry,** area supervisor, Logan Airport ATCT, Boston . . . **William G. Morris,** manager, Resource Management Branch, Air Traffic Div., from Washington Headquarters . . . **Kenneth R. Morse,** area supervisor, Quonset Point, RI, TRACON, promotion made permanent . . . **Charles J. Peahl,** asst. manager, programs, Boston ARTCC, Nashua, NH . . . **Michael G. Salisbury,** area supervisor, Otis AFB ATCT, Falmouth, MA, from Los Angeles TRACON . . . **Wojciech S. Wojcicki,** communications specialist, NAS Planning & Program Management Branch, Airway Facilities Div., promotion made permanent.

Northwest Mountain Region

Charles C. Abnet, area manager, Seattle-Tacoma, WA, ATCT . . . **John J. Alex,** manager, Casper, WY, ATCT, from Billings, MT . . . **Lloyd N. Allred,** unit supervisor, Salt Lake City, UT, AFSFO, Salt Lake City AFS, promotion made permanent . . . **Clarence Boren,** unit supervisor, Cedar City, UT, AFSFO, Salt Lake City AFS . . . **Ray H. Brewer,** manager, Cascade, ID, AFSFO, Portland, OR, AFS, from Boise, ID . . . **William T. Butler,** asst. manager, plans & procedures, Seattle-Tacoma, WA, ATCT . . . **James F. Carlson,** unit supervisor, Helena, MT, FSDO, promotion made permanent . . . **Richard V. Freeman,** supervisor, Environmental Engineering Section, Maintenance Branch, Airway Facilities Div. . . . **Raymundo C. Garcia,** unit supervisor, Denver, CO, FSDO . . . **Lonnie D. Jackson,** manager, Dallas, OR, AFSFO, Portland, OR, AFS . . . **Roy K. Kamigaki,** asst. manager, quality assurance, Denver ARTCC, Longmont, CO . . . **David J. Kohn,** chief, Resource Management Branch, Air Traffic Div. . . . **Dale W. Kunkel,** manager, Portland, OR, AFS, from Denver, CO, AFS . . . **John J. Liebig,** manager, Cortez, CO, AFSFO, Denver, CO, AFS, from Billings, MT . . . **Glenn M. Lytle,** manager, Renton, WA, ATCT . . . **Michael D. Manley,** unit supervisor, Eugene, OR, AFSFO, Portland, OR, AFS, promotion made permanent . . . **George D. Olson,** area supervisor, Denver, CO, ATCT, promotion made permanent . . . **Jerry W. Parker,** manager, McMinnville, OR, AFSS, from regional headquarters . . . **David L. Pyle,** area supervisor, Denver, CO, ARTCC, Longmont, CO, from Albuquerque, NM . . . **Gordon B. Stewart,** area supervisor, Boise, ID, ATCT, promotion made permanent . . . **George E. Wagner,** unit supervisor, Redmond, OR, AFSFO, Portland, OR, AFS . . . **John E. Warner,** area supervisor, Seattle ARTCC, Auburn, WA, promotion made permanent . . . **Richard D. Wilder,** manager, Salt Lake City, UT, AFSFO, Salt Lake City AFS, from Seattle, WA, AFS.

Southern Region

Walter R. Cochran, area supervisor, Hampton, GA, ARTCC, promotion made permanent . . . **Gene T. Crabtree,** asst. manager, San Juan, PR, AFS, from Pensacola, FL, AFSFO . . . **Julian Doskow,** unit supervisor, Miami, FL, FSDO . . . **Kenneth O. Duckett,** manager, West Columbia, SC, AFSFO, Columbia, SC, AFS, from San Juan, PR, AFS . . . **Ronald E. Ferguson,** manager, Jackson, MS, FSDO, from Orlando, FL, FSDO . . . **Levon Garden,** manager, Fort Myers, FL, AFSFO, Tampa, AFS . . . **David R. Garrett,** manager, Chattanooga, TN, ATCT, from Nashville ATCT . . . **Jeffrey C. Granier,** group supervisor, Engineering Services Support Staff, Establishment Engineering Branch, Airway Facilities Div., promotion made permanent . . . **Russell R. Hammer,** unit supervisor, Miami, FL, FSDO . . . **William L. Hogan,** area supervisor, Charlotte, NC, ATCT, promotion made permanent . . . **Burnie G. Hughes,** systems engineer, Miami, FL, ARTCC AFS . . . **Bobby W. Hutchins,** manager, Louisville, KY, AFSFO, Covington, KY, AFS, from Miami (Hub) AFS . . . **Brian L. Ingraham,** section supervisor, Fort Lauderdale, FL, FSDO . . . **Anthony F. Kijek,** section supervisor, Miami, FL, FSDO . . . **Brian E. Lentini,** manager, Montgomery, AL, RAPCON, from Pensacola, FL . . . **James H. McCannell,** area manager, Hilliard, FL, ARTCC . . . **Robert J. McGrath, Jr.,** area supervisor, Hampton, GA, ARTCC, from Washington Headquarters . . . **James R. McKenzie,** area manager, Hampton, GA, ARTCC . . . **James A. Miceli,** area manager, Hebron, KY, ATCT . . . **Clifford C. Monteau,** manager, Hilliard, FL, ARTCC . . . **Jesse M. Moton, Jr.,** asst. manager, Hebron, KY, ATCT . . . **Charles T. Oxford,** area supervisor, Hampton, GA, ARTCC, promotion made permanent . . . **James L. Parker, Jr.,** unit supervisor, Charleston, SC, AFSFO, Columbia, SC, AFS . . . **Richard D. Parrottino,** unit supervisor, Memphis, TN, FSDO, Nashville, from Jackson, MS, FSDO . . . **James E. Robinson,** crew chief, Memphis, TN, ARTCC AFS, promotion made permanent . . . **David C. Royal,** area supervisor, Hartsfield International ATCT, Atlanta, GA . . . **Tredgar R. Smiley,** unit supervisor, Atlanta, GA, FSDO, College Park, GA . . . **David G. Smith,** asst. manager for program support, Hub AFS, Jacksonville, FL . . . **Richard C. Smith,** area supervisor, Tampa ATCT, promotion made permanent . . . **Luther J. Spaulding, Jr.,** technical program manager, Safety Analysis & Resource Management Branch, Flight Standards Div. . . . **Fred V. Thornton,** systems engineer, Atlanta, GA, ARTCC AFS, Hampton, GA, promotion made permanent . . . **Ronald J. Tokar,** asst. manager for program support, Columbia, SC, AFS . . . **Charles A. Underwood,** area manager, Raleigh-Durham, NC, International Airport, ATCT . . . **James M. Valentine,** manager, Meridian, MS, RATCF Tower, from Greenville, SC, ATCT . . . **John H. E. Walton,** asst. manager, quality assurance, Atlanta, GA, ARTCC, Hampton . . . **John R. Young,** crew chief, Memphis, TN, ARTCC AFS, promotion made permanent.

Southwest Region

Glenn A. Adams III, manager, Shreveport, LA, RAPCON, Barksdale AFB, from Pittsburgh ATCT . . . **Patricia S. Adams,** asst. manager, Fort Worth, TX, ARTCC . . . **Donald A. Barnes,** asst. manager for program support, Houston, TX, AFS, from Baltimore, MD, AFSFO . . . **Covin C. Bennett,** asst. manager, Resources & Planning Branch, Airway Facilities Div. . . . **James F. Biggs,** area supervisor, Houston, TX, ARTCC, promotion made permanent . . . **John R. Chitwood,** manager, Dallas/Fort Worth, TX, TRACON Tower, from Shreveport, LA, RAPCON . . . **Charles G. Creek,** area supervisor, Fayetteville, AR, ATCT . . . **Robert A. Edwards,** unit supervisor, Little Rock AFSFO II, from Monroe, LA . . . **William D. Fey,** team supervisor, Dallas, TX, FSDO . . . **Lonann R. Fogleman, Jr.,** unit supervisor, Albuquerque, NM, AFS . . . **Raymond B. Foltz,** manager for program support, San Antonio AFS, from Illinois AFS . . . **Freddie Founteno, Jr.,** area supervisor, San Angelo, TX, AFSS . . . **Ronald M. Franklin,** area supervisor, Lubbock, TX, ATCT . . . **Joseph W. Frantz,** team supervisor, San Antonio, TX, FSDO . . . **Herschel Gillins,** area supervisor, Jonesboro, AR, Transition Staff, Facility Operations Branch, Air Traffic Div., from Shreveport, LA, FSS . . . **Paul B. Gray,** security officer, Dallas/Fort Worth, TX, Civil Aviation Security Field Office . . . **John F. Hanna,** unit supervisor, Austin, TX, AFS, from Houston, TX, AFS . . . **Sandra L. Hansen,** security officer, Houston, TX, Civil Aviation Security Field Office . . . **Daniel E. Hedenberg, Jr.,** area supervisor, Oklahoma City, OK, ATCT, from Shreveport, LA, ATCT . . . **Burnis D. Horton,** asst. manager, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **Robert D. Lane,** area supervisor, Houston, TX, ARTCC, promotion made permanent . . . **Henry L. Lewis,** asst. manager, New Orleans, LA, AFS, St. Rose, LA, from Charleston, WV, AFSFO . . . **Herman J. Lyons, Jr.,** manager, Resource Management Branch, Air Traffic Div. . . . **Stanley J. Massett, Jr.,** area supervisor, Baton Rouge, LA, ATCT, from New Orleans, LA, Lakefront Airport ATCT . . . **James M. McMains,** manager, Beaumont, TX, ATCT, from Brownsville, TX . . . **Glen C. Miller,** staff officer, Evaluation Staff, Airway Facilities Div., promotion made permanent . . . **Joyce G. Moody,** manager, Air Security Branch, Civil Aviation Security Div. . . . **Ronald H. Peay,** manager, Investigation and Internal Security Branch, Civil Aviation Security Div. . . . **William A. Phipps,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **Patrick W. Preston,** asst. manager, Establishment Engineering Branch, Airway Facilities Div. . . . **Walter J. Price,** manager, Houston, TX, FSDO, from Frankfurt, West Germany . . . **Mark R. Schilling,** manager, Special Programs Office, Rotorcraft Directorate . . . **James J. Schuman,** area supervisor, Abilene, TX, RAPCON, from Houston Intercontinental Airport ATCT . . . **Jimmy R. Sentell,** area supervisor, Little Rock, AR, FSS . . . **Max E. Shannon,** supervisory engineering technician, Houston, TX, AFS . . . **Michael L. Smith,** area supervisor, Shreveport, LA, RAPCON, from Tulsa, OK, Riverside, ATCT . . . **Steven E. Stephens,** area supervisor, Dallas-Fort Worth ATCT, from Love Field ATCT, Dallas . . . **Boyce W. Tate,** area supervisor, Houston, TX, Intercontinental Airport ATCT, from Houston Hobby ATCT . . . **Comer C. Wolfe, Jr.,** area supervisor, Dallas/Fort Worth ATCT . . . **Lee Y. Wong,** asst. manager, Resources & Planning Branch, Airway Facilities Div.

Technical Center

John J. Dyson, technical program manager, Navigation, Communications & Spectrum Branch, Communications/Navigation/Surveillance Div., from Washington Headquarters . . . **Lloyd Hitchcock, Jr.,** technical program manager, ATC Technology Branch, Concepts Analysis Div. . . . **Wilfred H. Huber,** technical program manager, Surveillance & Weather Systems Branch, Communications/Navigation/Surveillance Div. . . . **Howard E. Kimpton,** supervisor, Environmental Section, Engineering/Environmental Branch, Plant Engineering & Services Div., promotion made permanent . . . **Edward J. Schuman,** deputy division manager, National Automation Engineering Field Support Sector, Maintenance Engineering Div. . . . **Louis M. Spagnuolo,** unit supervisor, Hardware Engineering Branch, Technical Facilities Div. . . . **Ralph J. Yost,** technical program manager, Navigation, Communications & Spectrum Branch, Communications/Navigation/Surveillance Div.

The information in this feature is extracted from the Personnel Management Information System (PMIS) computer. Space permitting, all actions of a change of position and/or facility at the first supervisory level and to branch manager in offices are published. Other changes usually cannot be accommodated because there are thousands each month.

Washington Headquarters

Jeri L. Alles, asst. manager, Field Programs Div., Flight Standards Service . . . **Dean A. Christy,** manager, Special Programs Integration Div., NAS Transition & Implementation Service . . . **Theodore H. Davies,** manager, Terminal Procedures Branch, Procedures Div., Air Traffic Operations Service, from Las Angeles ATCT . . . **Tommy L. Dome,** asst. division manager, Brussels, Belgium, Civil Aviation Security Staff, Office of Civil Aviation Security . . . **Harold W. Donner,** asst. manager, Accident Investigation Div., Office of Accident Investigation . . . **Cecelia G. English,** manager, Evaluation & Analysis Branch, Executive Staff, Flight Standards Service, promotion made permanent . . . **Garrome P. Franklin,** chief, Program Management Staff, Systems Maintenance Service . . . **James L. Hevelone,** manager, Information Systems Branch, Automation Software Div., Air Traffic Plans and Requirements Service, from Cleveland, OH, ARTCC . . . **Stephen W. Hopkins,** manager, Statistical Analysis Branch, Management Standards & Statistics Div., Office of Management Systems, promotion made permanent . . . **Max Hupfer,** asst. manager, Position & Pay Policy Div., Office of Personnel . . . **Donald A. Kimball,** manager, Career Management Branch, Air Traffic Operations Service . . . **Richard J. Lay,** technical program manager, 3-D Radar Program, Surveillance, Flight Services & Weather Sensors Div., Associate Administrator for NAS Development . . . **Nancy D. Lobue,** manager, Acquisition & Hearings Branch, Procurement Legal Div., Office of the Chief Counsel . . . **Robert E. Mason,** manager, Information Management Program, Maintenance Operations Div., Systems Maintenance Service . . . **Major Myles,** section supervisor, Telecommunications Center, Office of the Deputy Administrator . . . **Everett W. Pittman,** chief, Brussels, Belgium, Aircraft Certification Staff, Aircraft Certification Service . . . **David S. Potter,** asst. manager, Air Transportation Div., Flight Standards Service . . . **Naomi L. Saunders,** branch manager (Rome, Italy), Civil Aviation Security Staff, Brussels, Belgium, Office of Civil Aviation Security . . . **Raymond K. Smith,** chief, Administrative Systems & Overseas Support Staff, Associate Administrator for Policy, Planning and International Aviation . . . **Michael James Upton,** manager, Resource Management Staff, Associate Administrator for Airway Facilities.

Western-Pacific Region

Mary L. Adams, manager, Hayward, CA, ATCT, from Oakland ATCT . . . **Duane R. Amann,** manager, Lihue, HI, ATCT, from Sacramento ATCT . . . **John E. Berggren,** area supervisor, Santa Barbara ATCT, from Oakland ATCT . . . **Daniel J. Blythe,** manager, Reid-Hillview Airport ATCT, San Jose, CA, from regional headquarters . . . **Ronald G. Breckler,** asst. manager, Phoenix, AZ, TRACON, from Flint, MI, ATCT . . . **Robert F. Bruns,** manager, San Francisco, CA, AFSFO, Golden Gate AFS, from Mill Valley, CA, AFSFO . . . **Elmer R. Byrd,** manager, Systems Maintenance Engineering Branch, Airway Facilities Div. . . . **William J. Callahan,** area supervisor, Oakland, CA, ARTCC, Fremont, CA, promotion made permanent . . . **Donald A. Dunn,** asst. manager for automation, McClellan AFB TRACON, Sacramento, CA . . . **Jose S. Flores,** asst. systems engineer, Oakland, CA, ARTCC AFS, Fremont, CA . . . **David K. Fowler,** asst. manager, plans & procedures, Ontario, CA, TRACON . . . **William F. Guest,** technician in-depth, Systems Maintenance Engineering Branch, Airway Facilities Div . . . **Robert C. Hill,** area supervisor, Scottsdale, AZ, ATCT, promotion made permanent . . . **John L. Hopkins,** Airports Division, airport planning engineer, San Francisco AFSFO, Burlingame, CA . . . **Burt L. Jones,** asst. sector manager, Hawaii-Pacific, HI, AFS, Honolulu, from Los Angeles ARTCC AFS, Palmdale, CA . . . **Francis G. Judd,** manager, Honolulu, HI, FSS from regional headquarters . . . **Robert L. Lawless,** manager, Tonopah, NV, AFSFO, Phoenix, AZ, AFS, promotion made permanent . . . **Henry J. Maag IV,** manager, Edwards Air Force Base, CA, RAPCON, from Oakland, CA, ARTCC, Fremont, CA . . . **Diane M. Mangels,** manager, Hawthorne, CA, ATCT, from Ontario, CA, ATCT . . . **Rose L. Marino,** manager, Torrance, CA, ATCT, from regional headquarters . . . **Loretta J. Martin,** area supervisor, Monterey, CA, ATCT, from San Jose ATCT . . . **Willard J. Mattingly,** section supervisor, San Francisco, CA, CMO, from Riverside, CA, FSDO . . . **Danny R. McGhee,** area supervisor, Stockton, CA, ATCT, promotion made permanent . . . **Leonard A. Mobley,** asst. manager, Los Angeles, CA, ATCT, from regional headquarters . . . **Keith S. Morris,** manager, Guam CERAP, Andersen AFB, from Pago Pago ATCT, American Samoa . . . **Jocelyn A. Nakashima,** asst. manager, operation, Honolulu, HI, ARTCC . . . **Michael J. O'Connell III,** area supervisor, Los Angeles ARTCC, Palmdale, from Washington Headquarters . . . **Christopher J. Overmoe,** asst. manager, Oakland, CA, ATCT, from Livermore, CA, ATCT . . . **Warren B. Paschke,** asst. manager for automation, Phoenix, AZ, TRACON . . . **Kenneth E. Pender,** area manager, Oakland, CA, TRACON, from regional headquarters . . . **Harvey R. Riebel,** section supervisor, Airspace Branch, Air Traffic Div., from Ontario, CA, ATCT . . . **James S. Snavely,** asst. manager, programs, Edwards AFB, CA, RAPCON, from Lancaster, CA, Fox Field ATCT . . . **Glen D. Thompson, Jr.,** area manager, McClellan AFB TRACON, Sacramento . . . **Jeffrey H. Thorstenson,** area manager, Los Angeles, CA, TRACON, from regional headquarters . . . **Phillip T. Vigil,** area supervisor, Fresno, CA, FSS, from Santa Barbara, CA . . . **Wilbert D. Willis,** unit supervisor, Oakland, CA, ARTCC AFS, Fremont, CA . . . **Tommy Ray Wood,** manager, Los Angeles, CA, AFSFO, Van Nuys, CA, promotion made permanent.

Retirees

AERONAUTICAL CENTER
Frederick J. Babits
Ray D. Crawford
William J. Kane
Delmar G. Vanhuss
Sandra E. Wehmir

ALASKAN REGION
John L. Hancock, Jr.

CENTRAL REGION
George C. Carver
Dean M. Coffman
Russell D. Folken
Richard L. Littles
Eleanore J. Miller

EASTERN REGION
Shirley A. Demarco
Afaf Ahmed Dourdour
Robert W. Jones
Milton L. Langley, Jr.
Nancy S. Lepore
Lloyal U. Miller
Thomas F. Morea
David A. Morgan
Charles G. O'Neill
Thermon J. Purdie
Alice R. Robinson
Perry E. Whitehair

GREAT LAKES REGION
Richard A. Bouillon
James W. Brown, Jr.
James R. Callahan
Gerald R. Christl
William H. Davis
Freddie E. Kretzer
William J. McIntosh
John Montevideo, Jr.
Dean H. Rickels
Wendell Rindlisbach
Robert H. Schnell
Phyllis C. Scott
Vernon E. Ziebart

NEW ENGLAND REGION
Orlando A. Conforti
David E. McAllister
John A. Sirvydas

NORTHWEST MOUNTAIN REGION
Richard Buchmann
Clarence E. Burgess
Christopher Capaldi
Joyce I. Godard
Robert F. Hall
Henry F. Kleiner
Richard C. Makovsky
Robert F. Moreland
Helen T. Richlin
Leroy R. Skaug

SOUTHERN REGION
Mary R. Bray
Bernice N. Briscoe
Fay Brown, Jr.
William C. Clower
Gavin G. Creel
Donald E. Deberry
Stanley A. Ellis
Theresa M. Ellsberry
Robert W. Glazier
Wade C. Hooper
William L. Moran
Michael R. Norcross
Billy B. O'Neal
Stanley V. Reeck, Jr.
Robert E. Richardson
Donald D. Thomas
Donald A. Weeks
Walter H. Wulff

SOUTHWEST REGION
Jack W. Akins, Jr.
Paul Brown
James R. Franklin
Jane Garcia
Burton J. Guinn
Ernest G. Hill
Norman H. Scroggins
Jimmy R. Sentell
Donald G. Siebel
Betty L. Sims
Edward F. Stevens, Jr.
Alvin H. Vogel

TECHNICAL CENTER
Rudolph Barbiere

WASHINGTON HEADQUARTERS
Kenneth E. Drews
John R. Dupree
James A. Hendrickson
Seymour M. Horowitz
Elliott B. Perrett

WESTERN-PACIFIC REGION
Irving W. Creech
Charles M. Denham
Sidney D. Edwards
Cari A. Fasanella
Robert L. Fisher
Shaun Hess
Leonard L. Levandowski
Edward J. Loeffler
Joanna L. Marchand
Lowell H. Ridge
Howard L. Saulque
Derald E. Vanderpool

Illinois

Paul Homman and Maureen Beharelle work in the sector's Peoria field office.

Administrative officer Patricia Edwards is on duty in the sector.

Timothy Swords and Edwin Eyer are at the Champaign field office.

Employees at the Illinois sector's field office in Rockford are, from the left, Frank Zawacki, Lance Elfstrom, Richard Mott, Mark Thien, Richard McCray, Thomas Bonnell, and Steve Kindell.

Raymond Eckard explains maintenance control center operations to Phillip Tolar.

Working at the sector's field office in Kankakee are, left to right, Frank Olivero, Kevin Hinton, George Sapp, Kenn Tindall, and Melver Moore.

Jackie Follis is at the Springfield Terminal Unit.

Representing the sector in Moline are, clockwise from right, Richard DeMint, Patrick Stoneking, James Marchik, Arnold Aune, Garry Reagin, Douglas Knight, Anthony Vallejo, Paul Schurlock, and James Carpa. Technicians not pictured are James Burton, Carmen Marchese, and Anthony Martinez.

Linda White is the sector secretary.

Illinois & Atlanta—1989's Top AF Sectors

The Illinois General National Airspace System (GNAS) and Atlanta Air Route Traffic Control Center (ARTCC) Airway Facilities Sectors won the 1989 National Sector of the Year awards for their outstanding performance and contributions in promoting air safety.

The Illinois GNAS Sector consists of 105 staff and field personnel who maintained 916 commissioned facilities including 11 control towers, five terminal radars, five ARTS IIA's, one long-range radar, one flight service station, one automated flight service station, 18 remote center air/ground communications facilities, 25 VHF omni-ranges (VORs), and 21 instrument landing systems. The Sector's navigational and communications facilities are relied upon for the safe control of air traffic into and out of Chicago O'Hare and St. Louis Lambert Airports.

The Illinois Sector office is located at Capital Airport, Springfield, IL, and field offices are in Champaign, Mt. Vernon, Moline, Hanna City, Peoria, Rockford, and Kankakee. Two area offices and three units are also located at Capital Airport and have detached staffs in Quincy, Alton, and Decatur. The geographical area of the sector is 56,345 square miles, and it services 51 airports—five level III's, three level II's, three Level I's, and 40 smaller airports.

The Atlanta ARTCC Airway Facilities Sector is located in Hampton, GA, a rural community approximately 25 miles south of Atlanta. It was responsible for the maintenance of 104 facilities/services during FY 1989 with a staff of 119 people.

The Atlanta Airway Facilities Sector is unique in that it contains the Atlanta NADIN Sector Field Office (National Airspace Data Interchange Network—one of two such facilities in the nation); the National Emergency Operating Facility (NEOF); and two RCAG's.

The Atlanta ARTCC airspace consists of approximately 103,440 square miles covering portions of six states. It was one of the busiest in the nation in FY 1989, with 1,628,000 air traffic operations.

The Airway Facilities sectors are responsible for the performance and certification of all electronic systems required to keep the national airways safe and efficient for air traffic use. ■

Atlanta

Gene Nobles, systems maintenance, and George Lumsden and John Culpepper, systems engineering, review a performance report.

Electronics technician Hugh Buchanan checks to see that the keys are working correctly.

Donald Thomas, electronics engineer, reviews performance.

Computer operators Betty Cloud and Betty Jones coordinate computer operations.

John Culpepper and Johnny Phillips confer during a certification test.

Unit supervisor Carl Steedman stands by Merrill Cook as he monitors an MMS terminal.

Laura Duffee and Susan Ball prepare to unload a shipment.

Guy Rainwater and Carl Meredith reset the temperature controls.

Flight data processing supervisor A. L. Ross and Phillip Ackerman report for duty.

Linda Nelson receives on-the-job training from electronics technician Paul Jackson.

Nat Riggs is a computer display channel technician on team 7.

Sharlene Thornton is a secretary at the Atlanta facility.

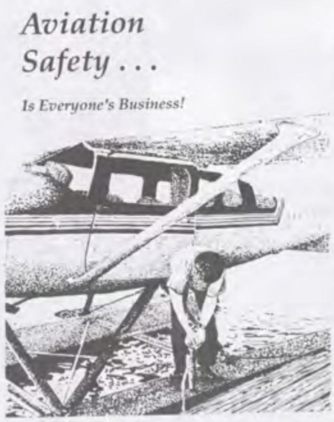
Plan of Action for General Aviation

The first step in implementing the recommendations put together under the most recent System Safety and Efficiency Review (SSER) has been taken: FAA Administrator James B. Busey signed an order rescinding the mandatory 60-day suspension for Terminal Control Area (TCA) violations.

Busey made the announcement as part of a new compliance and enforcement program for general aviation. The program's aim is to improve safety and strengthen the FAA/general aviation partnership.

Busey, who was quick to point out that FAA still regards TCA violations as serious, reserves the right to impose grave sanctions when and if warranted.

Results of this SSER were 34 action plans that will enhance the United States' publically mandated emphasis on aviation safety. Announcing the action plans at a March luncheon hosted by the National Business Aircraft Association (NBAA), Busey spoke to the numerous members of the general aviation community in attendance.



First commissioned last summer at Oshkosh, WI, the SSER has provided a top-to-bottom review of the agency's dealings with general aviation. As part of the review a number of listening sessions were held to solicit the cooperation of every major general aviation organization.

FAA findings from the listening sessions were that past enforcement methods had led to unnecessary mistrust and friction. Aviation user groups and individual pilots had voiced some valid complaints over the issue of FAA's compliance enforcement program.

The FAA's revised program seeks to use the tools of good communicating, training, education and counseling before resorting to enforcement.

Taking into account the feedback from the listening sessions, a remedial training program was developed that empowered FAA inspectors and their managers to gear things more towards rehabilitation, said SSER team leader W. Mike Sacrey.

"We reduced our reliance on punishment as a deterrent." This view applies to airmen and small certificate holders as well, said Sacrey.

"Remedial training is one more tool we are going to give our inspectors to fix airmen violations when in the inspectors' judgment the situation could be corrected through training. It affects mostly general aviation, but the same approach will be used with air carriers," Sacrey stated.

"We still intend to achieve 100% compliance. Nothing less than that is acceptable. What will change is how we react when we find noncompliance. We are going to have a broader range of solutions," was how Sacrey put it. Flight Standards views this new approach as "reenergizing its mission of safety," he added.

"This process will take time," said Busey, "but the results will be worth it. We have cultural changes to make and attitudes to change."