U.S. Department
of Transportation
**Federal Aviation
Administration**

FAA World

August 1992



A Peek at the Future

Major changes are in the works for air traffic control equipment. Currently, hardware and software built for the Initial Sector Suite System are integrated and operating at FAA's Development Demonstration Facility in Gaithersburg, Maryland.

The system, which introduces controller workstations—called common consoles—as well as display subsystem software, is the second major step in the deployment of the Advanced Automation System (AAS). It is the first AAS segment to affect the controller's operating environment, however, so it is undergoing operational assessment in traffic control conditions simulated at the Gaithersburg facility.

The facility represents one-fourth of an air route traffic control center control room. It provides early assessment of hardware, software, and procedures in a simulated environment prior to testing at the FAA Technical Center and ultimately implementation at the en route centers. Air traffic control operations are performed on the common console developed for the AAS, which will replace the "plan view display."

Local or visiting FAAers can see this progress first-hand on tours conducted the first and third Fridays of each month at 9 a.m. and 10 a.m. For reservations and directions for these one-hour tours, call (301) 258-6100.

The travel time between Washington, DC, and the facility is about an hour. Transportation is not provided. ✲

Sexual Harassment

Facts and Myths

FAA managers and supervisors must be able to separate the facts from the myths about the complex issue of sexual harassment.

Here are some facts and myths based on court cases, findings from state and federal investigative agencies, and training of more than 80,000 employees in 170 companies.

Fact: People are sexually harassed because they are perceived as vulnerable or a threat to members in their work group.

Myth: "We're professional people. Our people would never do anything like that."

Fact: Most management personnel and employees don't understand what subtle sexual harassment behaviors are.

Myth: If employers train their employees about sexual harassment they will polarize males and females, create problems where no problems exist, and encourage employees to file false charges.

Fact: Men and women usually agree if a supervisor tells his or her employees to "put out or get out," that behavior is sexual harassment.

However, in most workplaces, men and women generally *don't* agree on how much sexual harassment exists or what types of behavior constitute sexual harassment.

Myth: "We've *not received* any sexual harassment complaints, therefore, we don't have a problem with sexual harassment.

Fact: Sexual harassment is no more of a problem in blue-collar workplaces than white-collar work places. ✲

U.S. Department
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FYI

For our Information . . .

As a reminder: This summer, the personnel office in each of the Department of Transportation modal administrations is asking its permanent employees to verify their race and national origin identifier and disability code.

Verified forms and any corrections must be returned to your personnel office by **Monday, August 31.**

The data is maintained in the automated Consolidated Personnel Management Information System (CPMIS), which provides personnel services for the approximately 70,000 DOT civilian employees. Data verification will assure that accurate information is used to provide reports to management, the Office of Personnel Management, the Congress, and the public.

An **Aviation Weather Research Program Seminar** is scheduled for *Tuesday, August 25,* at 9 a.m. in the FAA Technical Center auditorium. Ken Byram, manager of the Aviation Weather Program in the Research and Development Service, Washington Headquarters, will give a one-hour presentation on the program and will be available for questions.

Topics include:

- Potential aviation applications for improved weather information to controllers, pilots, and other users.
- A "mental model" for understanding how these applications are possible, how weather information flows from observations to forecasts, responsibilities of the Weather Service in relation to FAA, and the private sector's roles.
- The paradigm problem in assessing user weather requirements.
- Specifics on the Aviation Weather Products Generator and the Integrated Terminal Weather System, two research and development programs.

From the mail: A Western-Pacific FAAer writes to *FAA World*, "I personally would like to see the minutes of the **1991 department-wide work force diversity summit** available to all."

In reply, the Work Force Diversity and Special Programs Division, M-14—part of the Secretary of Transportation's Office of Personnel—has videotapes of the meeting. The tape, a synopsis, and more recent information on work force diversity are available from the office. The telephone number is (202) 366-1927.

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U.S. Department of Transportation
Federal Aviation Administration

FAA World

August 1992 *Vol. 22, No. 8*

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'Leading the World's Foremost Aviation Agency'

Richards Declares His Safety Focus, Leadership Style at Public Swearing-In

In his first speech to FAAers across the country, Thomas C. Richards talked about what mattered the most to him as the agency's 12th Administrator. "First and foremost" it is aviation safety, he said.

"Aviation is the safest form of transportation in the world, and last year was the best on record," he noted. "I want to improve that record even further," Richards told viewers of the July 17 ceremony.



FAA Administrator Thomas C. Richards, wife Meredyth Richards, and Secretary of Transportation Andrew H. Card at the July 17 swearing-in ceremony.

Secretary of Transportation Andrew H. Card performed the public swearing-in. A private ceremony had been held in late June.

"During this summer one out of every ten Americans will step aboard a U.S. air carrier," Richards said. These millions of Americans had "faith in the system—that vast air transportation network that we are all part of," he said. "Maintaining that public trust is my most important responsibility," he believes.

The new Administrator also answered people who have asked him how he plans to lead the agency. "They want to know if I will change the organizational framework, or bring in a new management team," he said. "The answer to both questions is 'no'—absolutely not.

"I have been given the great honor," as well as "the great challenge of leading the world's foremost aviation agency," he noted. "The past

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FAA's 12th Administrator

New to FAA's helm is a retired Air Force four-star general with more than 5,000 flight hours. On June 27 Thomas C. Richards of Bryan, Texas, was sworn in as FAA Administrator.

Richards, 62, is married and has six children.

During a speech at the Aero Club, DOT Secretary Andrew H. Card introduced Richards to members of the aviation community. Richards will make sure the FAA continues to be headed by someone who "knows aviation, is committed to safety, and is a proven leader," Card said.

The new Administrator was a member of the presidential panel investigating the 1988 bombing of Pan Am flight 103 over Lockerbie, Scotland. He has 30 years of experience in flying propeller and single- and multiengine jet aircraft. His military career began with the Army infantry in 1948 and included service in the Korean War.

Richards earned his wings in the Air Force, which he joined after graduating from college in 1956. During two tours of duty in Vietnam, he flew 624 combat missions.

Later he played a key role in U.S.-Soviet negotiations on the reduction of intermediate range nuclear forces and served as commandant of the U.S. Air Force Academy.

Before retiring from the military in 1989, Richards was deputy commander-in-chief of the U.S. European Command Headquarters in then West Germany.

He has done consulting and strategic planning for several major corporations.

Born in San Diego, Richards graduated from Hampton High School, Hampton, VA, in 1948. He earned a bachelor of science degree in business administration from Virginia Polytechnic Institute in 1956 and a master's degree in communications from Shippensburg State College in 1973.

He completed Squadron Officer School in 1963 and the Army War College in 1973. ✲

Richards

from page 3

three weeks have shown me that the men and women on the FAA team are not just good players, they're among the very best," he declared.

Leadership as he sees it "is to define the dominant issues, to keep everyone focused on what really matters." Issues he spoke about included:

- ***Maintaining safety.*** A priority is to monitor and maintain momentum on rulemaking and other initiatives that promise higher safety levels, especially for commuter airlines and air taxi operations, the fastest growing segment of aviation.

With its "Back to Basics" program for general aviation, FAA proved that accidents decline when pilots receive intensive training about the cause and prevention of accidents. "The National Transportation Safety Board reports that the accident rate for general aviation in 1991 was the lowest it's been since they started keeping track back in the 1960s," Richards said.

"We need to make training more readily available to commuter and air carrier pilots, and we need to make it easier for flight centers to offer advanced flight simulation training."

- ***Reducing runway incursions.*** Airports can be equipped with improved surface detection systems.
- ***Ensuring airworthiness.*** In cooperation with industry, the safety of the aging transport fleet must be maintained.
- ***Minimizing errors.*** Pilot error and other failures in human performance can be reduced through comprehensive human factors research and training.
- ***Preventing terrorism.*** Air travelers must be protected against terrorism. "We're making headway in developing new systems for explosives and weapons detection," but there are still technological problems we must solve, Richards said.
- ***Advancing technology.*** A better system of air transportation—a global system endorsed by the international aviation community—is in the works. "The potential impact of satellites on navigation, on surveillance, on communications, on all facets of air traffic control may be greater than the introduction of computers in the early 1960s," Richards stated.

The vast, complex projects FAA is undertaking "embody some of the largest software programs ever developed. Most have to be custom-designed for air traffic control use," he said.

- ***Using teamwork.*** Solutions to problems need to come from collaboration, cooperation, and consensus. Richards described himself as "a firm believer in the power of teamwork."

His style is not to micromanage or issue mandates, he said.

- ***Attracting personnel.*** Young people in high schools, technical schools, and colleges will be needed in the aviation industry not only as pilots, but also as aviation mechanics, aeronautical engineers, and in other aviation career fields. "Within the next few years," Richards said, "we'll be looking at a real shortage" of trained personnel in these fields.
- ***Being a 'good neighbor.'*** An open dialogue needs to be maintained among airport operators, civic leaders, and the people who live in communities troubled by airport noise.

"Aviation can be a good neighbor," Richards believes. "We've seen it happen in communities all across the country."

"The FAA is already regarded as the most highly professional government agency. I want us to be known as the most responsive agency" as well, he said.

- ***Fulfilling obligations.*** The agency must provide equal opportunity, fair play, a safe working environment, the best tools and training, and encouragement and help in employees' careers. These are obligations FAA has to its employees, Richards stated.
- ***Valuing differences.*** We also have obligations to each other, Richards said. We must understand, accept, and appreciate our diversity and treat one another with dignity and respect, he believes.

"The years have taught me that leadership demands decisiveness. I will make those decisions—not precipitously, never unilaterally, but ever mindful of the great responsibility that has been entrusted to me," Richards concluded.

The public swearing-in ceremony was broadcast from the FAA Headquarters auditorium throughout the building on closed-circuit TV and to regional offices, air traffic control centers, the Aeronautical Center, and the Technical Center via satellite hookup. ✲

'The FAA is already regarded as the most highly professional government agency. I want us to be known as the most responsive agency.'

Thomas C. Richards
FAA Administrator

Getting Prepared To Serve

An Account of the Prospective Women Managers Seminar

By Nancy P. Carrigan

The "winds of change" were from the northwest as participants of the Secretary of Transportation's Career Strategies Seminar for Prospective Women Managers literally blew into the "Hub of the Universe"—aka Boston, Massachusetts.

The day boasted bountiful sun but felt more like early December than early May. Those who came to enjoy weather characteristic of the season were surprised to find temperatures hovering at the 30 degree mark for the week.

Some brave souls who ventured to the Public Gardens to ride the only swanboats in America had a "fowl" experience attempting to stave off frostbite. Others say they were "forced" into Filene's Basement to see if they could get good buys on sweaters, parkas, or mittens. Since sweaters could be found elsewhere, most opted for other purchases.

Three customers who didn't know each other at the time but were all seminar participants wound up buying identical plaid suits—and two showed up wearing them to class on the same day! When I arrived early for the first session and saw the two dressed alike, I looked down at my own outfit. Had I neglected to read the dress code memo on wearing navy plaid, or worse—could they possibly have handed out uniforms?

On balance I thought it unlikely since the purpose of the program, as originally defined by former Transportation Secretary Elizabeth Dole in 1982, was to sharpen the skills of and make aware to the numerous talented women within the DOT the opportunities for advancement to management positions.

There are nine sessions per year, bringing together women of varied backgrounds and responsibilities. The schedule is demanding, totaling 65 hours for the week, but offers the right blend of films, focus groups, and situational management and task assignments.

Participants in the seminar numbered 30, and they came from the many branches and professions in the department. There were trial attorneys, an accountant, a psychologist, air traffic control specialists, an auditor, a civil aviation security investigator, a physical scientist, budget analysts, a systems analyst, a financial analyst, a management analyst, a computer programmer, human resource specialists, transportation specialists, a personnel officer, a media communications specialist, a plans and procedures specialist, an employee development specialist, program specialists, and an administrative officer. They represented the FAA, the Office of the Inspector General, the Coast Guard, Federal Highway Administration, Federal Transit Administration, National Highway Transportation Safety Administration, and the St. Lawrence Seaway Development Corporation.

The transportation mode of choice was via the airways with participants from as far as Seattle, Washington. Some arrived in the "Hub" via the federal highway system, with the five Boston-area participants traveling from their homes. The heaviest concentration came from the nation's capital. States represented included Ohio, New York, New Jersey, New Hampshire, Virginia, West Virginia, Maryland, and Michigan.

Our residence for the week was the Tremont House, built in 1925 and located in the theatre district.

The seminar began with a reception at which time we donned our

continued on page 11



These are graduates of the most recent DOT seminar in Boston for prospective women managers.
Author Nancy Carrigan is in the middle row, third from the left.

To find out how to sign up for the Secretary of Transportation's Career Strategies Seminar for Prospective Women Managers, talk to the training coordinator of your mode or agency. The nomination process varies.

Annually, there are nine seminars plus an end-of-year follow-up session in September for the approximately 270 total participants. Traditionally the Secretary of Transportation addresses the group at the combined session.

Career Opportunities Overseas

Rewards and Demands

Many exciting career opportunities overseas are currently being advertised as part of FAA's newly established "open season," which **ends September 30.**

FAA is looking for dedicated career professionals to help promote the growth of civil aviation abroad and to foster the development of civil aviation safety and security worldwide.

After the open season ends, applicants will be selected both for specific vacancies and for a pool from which unplanned vacancies that occur during the year will be filled. Most of those selected with specific assignments will transfer to their overseas positions during the summer months.

FAAers are needed in places such as Europe, Asia, Latin America, Africa, and the Middle East to fill many critical roles, including FAA representatives, engineers, program managers, aviation safety inspectors, civil aviation security liaison officers, and civil aviation security inspectors.

Overseas assignments offer excellent opportunities to broaden professional experience and can be rewarding for the entire family. They are not, however, all glamour and no problems.

For example, some may feel "out of the mainstream" and may have difficulty keeping up with organizational changes. Others may feel they were not adequately prepared for their new duties. Some may find that adapting to a new culture, being away from friends and extended family, and being without familiar purchases can be very stressful.

In addition, language barriers may sometimes restrict outside activities and enjoyment of a new assignment, and housing, health care, and education may not meet expectations.

A survey of 80 multinational companies indicates that between five and 20 percent of international assignments fail and require an early return home. The most common reason is the inability of the employee's spouse or family to adjust to a different physical or cultural environment.

FAA employees considering an overseas assignment are urged to consider the self-assessment checklist provided below. Self-screening can help avoid serious family problems and assess "cultural adaptability."

To improve chances for rewarding and successful foreign assignments, FAA is taking steps to meet the technical and cultural training needs of employees stationed overseas. All candidates selected, including those selected for the pool, will receive language, cross-cultural, and technical orientation training.

If you believe you and your family could meet the demands of life in a foreign culture and would benefit from this unique learning experience, a foreign assignment may be for you. Overseas positions can broaden your professional experience, lead to career advancement, and further your understanding of FAA's mission.

To find out more about FAA's many overseas career opportunities, contact your personnel office today. ✲

Self-Assessment Checklist

- ☐ Would a foreign assignment have a disruptive effect on your family, considering, for example, your spouse's career, your children's education, and your relationship with your extended family?
- ☐ Do you have an adventurous spirit and enjoy learning how to function in a new environment?
- ☐ Are you willing to establish contacts and make personal inquiries to help find a satisfactory FAA position on your return to the United States?
- ☐ Are you willing to stay in touch with your parent FAA organization in the United States to keep informed about changes in policy and operations?
- ☐ Would you be comfortable spending a lot of time with people who are different from you in terms of nationality, race, culture, and religion?
- ☐ Can you accept a much slower response time for services such as home repairs?
- ☐ Do you have a genuine interest in learning about other cultures as demonstrated by such activities as reading, watching films, trying foreign cuisines, and learning a second language? ✲

Going the Extra Mile

Controller Bob Means Makes Pilots' Days Brighter, Safer

When air traffic controller Bob Means straps on his headset and plugs it in, he goes the extra mile to make pilots' days brighter.

Means' air traffic mannerisms have caught the attention of people in high places.

A former school teacher and a 32-year veteran of the Indianapolis en route center, Means recently received recognition from Phil Boyer, president of the Aircraft Owners and Pilots Association, the 300,000-member general aviation organization.

In presenting the association's President's Citation award to Means, Boyer said, the controller's "attitude toward his work is beyond our experience in decades of flying. This kind of performance should serve as an example for all controllers working air traffic today."

The award was no surprise to Means' coworkers who say his natural, friendly warmth shines through on the job.

An Indianapolis controller put it this way: "Not only in times of crisis, but every day, with his every transmission, Bob willingly puts out that extra effort. He goes that extra mile, genuinely striving—indicative of the way he lives his life—to make the day of each and every person with whom he comes in contact perhaps a little brighter."

Boyer cited the controller for "embodying everything any general aviation pilot could hope for" after Means worked a portion of Boyer's flight from Phoenix to Frederick, Maryland, the association's headquarters.



Above, Indianapolis controller Bob Means accepts president's citation from AOPA's Phil Boyer. Below, Tom Ellis presents Means with a plaque from friends and coworkers at ZID.



The controller cheerfully engaged aircraft with unsolicited offers of assistance, routing data, suggestions, and weather reports.

"We realized in the air we had, by chance, been dealing with someone really special, and in the name of the great controllers out there, we want Bob Means to accept this honor for a job well done," Boyer said during the presentation before 400 pilots attending an Indiana Aviation Council dinner.

The audience, which included Means' family and coworkers, were also treated to a split-screen video of controllers at their positions and a voice-over of the actual audiotape of Means in action that day.

That sparked a standing ovation as Means received the award from Boyer, who said it was a pleasure to meet "such a caring and gracious professional."

But that wasn't the end of the accolades.

Tom Ellis, another Indianapolis controller, presented Means with another honor—a large plaque with his old headset and operating initials "MS" mounted on it with a plate bearing this inscription: "Presented to Bob Means from his friends at ZID." ZID is the Indianapolis center's identifier.

"From all of us who work with you every day," Ellis told a surprised and emotional Means, "this is just for being Bob Means." ✲

Thanks to John M. Strauser for this information. Strauser is an air traffic control specialist, Indianapolis center.

FAA's Toxicology Lab Rebuilt

New Staff, Latest Equipment

By Bobbie Mardis

No one gets through the main security door without permission that comes through a two-way speaker. Once inside, the door to each laboratory has its own security code, so it is quickly apparent that work conducted in this area must be protected to ensure its integrity.

Behind these locked doors, the Civil Aeromedical Institute (CAMI) Toxicology and Accident Research Laboratory in Oklahoma City provides crucial information that affects the safety of the nation's air transportation system.

CAMI had closed its toxicology lab in 1987 but started to rebuild it after the National Transportation Safety Board (NTSB), needing a full-service lab to support its investigations, asked the FAA to reopen the facility. The board is responsible for determining the causes of accidents, and mandated post-accident toxicological testing helps determine if drug use by operators of aircraft or other public transportation equipment might be a factor in accidents and incidents.

Dr. Dennis Canfield, then the director of forensic science at the University of Southern Mississippi in Hattiesburg, was picked to head up the lab. He accepted the challenge and arrived in Oklahoma City in August 1989.

Canfield, who has also taught forensic toxicology and drug identification, had for five years been senior forensic chemist with the New Jersey State Police crime lab. A former police officer who has also served with the U.S. Army Medical Corps, Canfield received his M.S. in forensic science from New York City University, John Jay College of Criminal Justice. His Ph.D. is from Northeastern University in Boston.

Another significant attribute—the doctor is a computer expert who has updated older pieces of lab equipment by hooking them to a computer and writing software to run the functions.

Rebuilt lab

At the beginning, "the lab looked like technicians had just walked out and left in the middle of their research," Canfield recalls. The doctor immediately began to hire staff and buy equipment. Much of the equipment that had been left in the labs was over 20 years old, too old to perform tests required to meet even the most minimal standards. Some pieces were refurbished, but the lab needed state-of-the-art computerized machines for the work required.

New staff

By January 1990, most of the staff was onboard, and by April all authorized equipment and personnel were in place. Dr. William E. Collins, the newly appointed director of CAMI, and Dr. Jerry Hordinsky, manager of CAMI's Aeromedical Research Division, had helped expedite budgeting for essential equipment and installation of a security system. "Our plan was to hire the best lab manager and best staff and then work with them to develop a world-class facility," Collins explained. "Dr. Hordinsky's dedicated efforts in recruitment and programming put us in a position to accomplish those goals."

Besides Canfield, the first staff included two medical technologists who came from local hospitals, and two chemists. One of the chemists had worked in a police crime lab, and the other taught biochemistry at the University of Oklahoma. Two more employees have since been added to the group due to an increased workload.

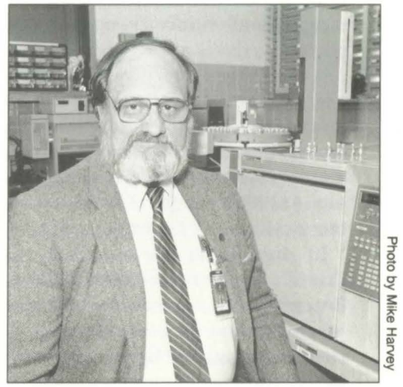


Photo by Mike Harvey

Toxicology lab manager, Dr. Dennis Canfield, is shown with the facility's mass spectrometer, which is used to identify marijuana in blood.

The new staff's first order of business was to develop procedures and write manuals. "We virtually started from scratch," says Canfield. At the same time, they received extensive training, including cross-training with staffs from Utah's Center for Human Toxicology and the Armed Forces Institute of Pathology in Washington, DC.

Screening for drugs

By October 1, 1990, some 13 months after Dr. Canfield's appointment, CAMI opened the full-service lab and notified the NTSB that it now had the screening capability for legal and illegal drugs. The screening entails "the use of thin layer chromatography, fluorescence polarization immunoassay, color tests, gas chromatography, and spectrophotometry," explains Canfield. The confirmation techniques include gas chromatography-mass spectrometry and gas chromatography-FTIR.

The CAMI lab handled about 600 cases in 1991, many that involved analyses not possible in most other labs. For example, regarding the highly publicized Los Angeles runway incursion in which a commercial B-737 overran a smaller commuter plane, the CAMI lab found the presence of phenobarbital in the B-737 pilot's specimen. This had not been detected in analyses done by other toxicologists.

Customer services

The toxicology lab has several responsibilities. "First, we provide state-of-the-art analyses to NTSB and FAA investigators," Canfield says. The lab receives 400 to 600 specimens a year from victims of almost all U.S. aviation accidents. It also does about four analyses a month on nonaviation accidents for which the NTSB requests help, usually for accidents in which the public has great interest.

For a thorough analysis, the lab needs tissue, urine, and blood samples from accident victims. In tests involving nonfatal accidents, they use only blood and urine samples.

The CAMI lab provides kits containing the supplies and instructions for local medical examiners or pathologists to collect, preserve, and ship specimens to the lab. Included are chain-of-custody instructions and security tape to ensure their integrity. Accident investigation teams carry kits, and some are placed at locations with high aviation activity.

To guarantee accuracy, every batch of specimens going into the labs has at least two controls. All positive tests are confirmed by another method and another specimen.

Toxicology research

"Our second responsibility is research," Canfield continues. "If we see a lot of one type drug identified in many specimens, we might conduct research to determine if this drug can actually affect the performance of a pilot." An example is a drug that acts as a tranquilizer, such as benzodiazepine—trade name Valium—which the lab finds in an increasing number of specimens.

FAA regulations state that a pilot cannot operate an airplane under the influence of a drug. "We need to know what drugs have influence and what human functions are influenced by various drugs," says Canfield.

Expert witness

The scientists' third responsibility is giving legal testimony in court. Many of the cases involve revocation of pilot certificates based on lab test results. Primarily, they involve testimony in blood-alcohol tests, some of which have not been performed at the CAMI lab, and the courts want expert opinions on the procedures, processes, and equipment a lab uses to test for the presence of alcohol or drugs.

Dr. Canfield illustrates some of the complications of this testimony. For example, the human body can produce alcohol after death, he explains. In most cases it is difficult to tell the difference between postmortem induced alcohol and ingested alcohol. Although differentiation can be made using urine and vitreous samples, such samples are seldom available after an aircraft accident. The inability of labs to distinguish between ingested and postmortem alcohol affects lawsuits concerning liability.

In January 1992 the CAMI toxicology lab began a three-year project to test a method that will help determine the difference between the two types of alcohol. "This is the first time such a method has been tried, and it is well worth the effort," Canfield believes.

Quality control

The CAMI lab also participates in a program to test its proficiency in three relevant areas. The College of American Pathologists sends specimens to about 250 participating labs, then grades results of their analyses.

In the first, forensic urine drug testing—an examination for abused drugs—CAMI has scored 98 percent or better. In blood alcohol analysis, CAMI has always scored very high, with less than one standard deviation from the mean for all labs tested. For the toxicology test, which analyzes blood and urine samples to detect drugs of abuse or therapeutic drugs, only the CAMI lab and one other identified the parent marijuana that was present in a blood specimen.

The lab currently is seeking certification by the College of American Pathologists and expects to receive it later this year. Although certification is not legally required, it provides quality control and gives the user added confidence in the lab.

CAMI's toxicology lab is periodically examined by inspectors certified by the National Institute of Drug Abuse and has always met the institution's criteria. The lab also exceeds guidelines for a forensic toxicology laboratory set down by the Society of Forensic Toxicologists, Inc., and the American Academy of Forensic Sciences.

Cutting-edge technology

The CAMI lab's staff keeps attuned to and leads new developments in their field. For example, they presented a research paper on the infrared spectrophotometer at the American Academy of Forensic Sciences this past February. "We are on the cutting edge of our technology," Canfield remarks, and "we aim to be leaders in the field."

The CAMI lab, which has been reborn, is gaining hard-won respect based on superior work in a challenging field. ✲

Bobbie Mardis is a former Aeronautical Center public affairs specialist who now works as a freelance writer in Norman, Oklahoma.

Fast Forward to 2015

A Ride through the Air Traffic Control System of the Future

How about trying this: change a tire while a car is cruising down the highway.

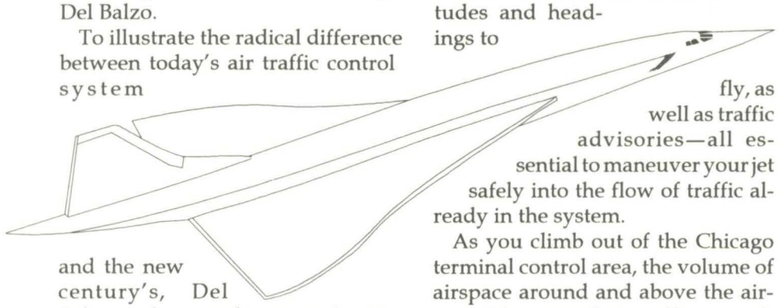
Sounds like an impossible task, but that's exactly the kind of challenge facing the FAA as it puts high-tech air traffic control systems on line in the years ahead.

Executive Director for System Operations Joe Del Balzo says the most difficult problems facing air traffic management designers is one of integrating new technologies into current operations.

Each addition, he says, "has to work," and it has to "work the first time" because the FAA can't shut the system down.

"Making the transition has been likened to changing a tire on a car travelling 80 miles an hour," says Del Balzo.

To illustrate the radical difference between today's air traffic control system and the new century's, Del Balzo took an audience at the National Air and Space Museum in Washington, DC, on two flights of fantasy.



In both, his listeners imagined they were pilots in 1992 and the year 2015.

Today's airborne trip • You are in command of a corporate jet, based at Chicago's Midway Airport. Before flying the company chief executive officer to the nation's capital, you first get a preflight briefing by phoning a specialist at an FAA flight service station. The briefing contains all the pertinent surface, airborne, and en route weather and aeronautical information currently available.

Because of limited visibility, it will be necessary to operate your jet according to FAA-issued Instrument Flight Rules—procedures that pilots certified to fly in all weather conditions must use.

Next you file a flight plan with the FAA. This plan provides the agency with the information necessary to fit your flight into the national airspace system at a time when thousands of other aircraft are vying for equal time.

As you start the engines and leave the boarding area, you are in communication with "ground control" in the air traffic control tower. Your every move before takeoff will be directed by this controller.

Your aircraft taxis toward the active runway, queuing up behind another jet in line to depart. As you lift off, another controller issues the altitudes and headings to fly, as well as traffic advisories—all essential to maneuver your jet safely into the flow of traffic already in the system.

As you climb out of the Chicago terminal control area, the volume of airspace around and above the airport, "departure" air traffic controllers take over. Located in the Terminal Radar Approach Control, or TRACON, at the airport, they guide your aircraft away from Midway to its destination.

Your plane passes a designated point in the sky, which marks the beginning of the defined air route you will fly. The aircraft has entered a large volume of airspace under the watch of controllers at the Chicago Air Route Traffic Control Center—one of 23 large facilities that control en route airspace.

As you continue across the country, your jet is handed off from one center to another as it passes through sector after sector. Ninety minutes after leaving Chicago—before entering Washington terminal airspace—you contact the arrival control facility located at National Airport.

Once again you receive traffic and weather advisories, as well as speed and altitude instructions—this time from the Washington TRACON—to ease your jet into the stream of arriving traffic. At this point, you speak with a local tower controller, who gives you final approach instructions, runway wind and surface conditions, and clearance to land.

Your wheels touch down, and ground control directs you away from the active runway, giving advisories along the way as to the intentions of other moving traffic. You taxi to a stop and shut down your engines.

Into the next century • Now fast forward to the year 2015. You're an older pilot in a newer jet. Your preflight process consists of activating the onboard computer and logging onto the air traffic control system. This begins a dialogue between the two computers that will continue during the course of the flight—an exchange of information conducted via digital data channels.

You identify your aircraft and destination, and within moments Air Traffic generates departure time and route alternatives. Once the route is established, the data is transferred directly into the aircraft's flight management system to lock in your anticipated trajectory.

There's no need for a weather briefing. The air traffic control computer has already factored all significant weather phenomena into its route-generation routine. A touch of a button provides a readout of weather conditions along your route, automatically updated if significant changes occur. The aircraft will continually self-correct its course in flight to avoid adverse weather.

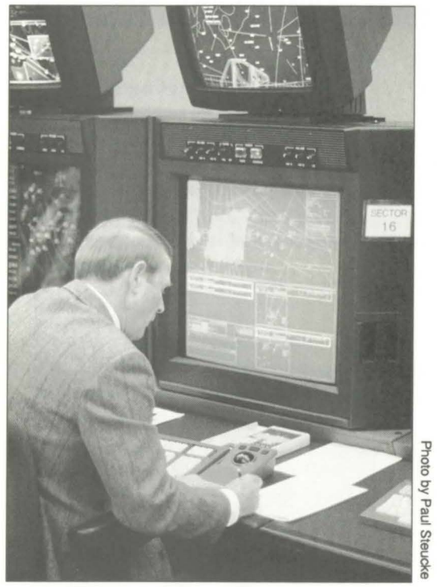


Photo by Paul Steucke

The future in air traffic control equipment.

Airport surface maps reside in the data base of your aircraft's computer, enabling you to call up Midway on your cockpit screen. If your onboard system did not have a map on Midway in its data base, air traffic control would download one on request.

Air traffic control and onboard computers, communicating via datalink, integrate controller instructions and data regarding other traffic onto the surface map display. Your taxi instructions automatically appear on the cockpit screen. Because of the accuracy of the satellite and ground-based surveillance systems, you are confident of your exact position relative to every vehicle on the airport, even in the worst possible visibility.

Because the departure of all traffic has been choreographed by the air traffic control computer to within seconds, there is no need to wait in a queue. Your takeoff clearance appears on the cockpit display. As you lift off, your flight management computer immediately takes over navigation, with the aircraft's autopilot responding to the data entered by the air traffic control computer all the way to Washington.

Air traffic computers continually evaluate the current situation in the air, providing controllers the information necessary to issue instructions to en route aircraft. The computers have the ability to look 15 to 20 minutes ahead of the aircraft and predict potential conflicts before they can occur. The perfection of airborne collision avoidance equipment serves as an additional safeguard to airborne conflict.

About 200 miles out of Washington, an air traffic control computer notifies you of the exact point your jet will begin its descent and the exact time of your arrival at National Airport.

Still on autopilot, your aircraft follows a predetermined descent path toward the turn to final approach. Once on the surface, the taxi map appears on the cockpit display, and you are home free.

Technology ready • "How close are we to this 2015 scenario?" Del Balzo asks. "Closer than you might think. The major challenge in designing tomorrow's system is not technology. The technology of the future is here today," he relates.

"The real test is our ability to totally rethink today's system to take advantage of the new capabilities these technologies offer," Del Balzo says. ✲

Seminar

continued from page 5

nametags and met the other participants. A working dinner followed the reception. It was there that each of us was formally introduced to the group.

We met Karen Whitney, the program coordinator. This was her last seminar as she has moved on to a job at Federal Highway. Whitney's replacement, Lisa Williams of the Office of the Secretary, was also introduced to the group. Final introductions were to the seminar leaders, Dr. Carolyn Hines and Dr. Wesley Wilson, both of C&W Associates, Inc. They have developed and conducted the dynamic training for the Secretary since its beginning.

Having met the other participants and learned the functions they perform in the department, I realized that this gathering represented a truly select group of employees. Those who rely on our nation's railways, highways, waterways, and airways to maintain a high quality of life can rest assured that DOT has a reservoir of employees with select qualities and aptitudes necessary for managing the responsibilities.

The seminar handbook made clear the purpose of the training: "The seminar is designed to discuss modern and classical theories of management, to offer practice in simulated application of those theories, to describe several of the more important functions that managers must perform, and to further develop the perception of yourself as a manager.

"The curriculum is not designed to make you managers. It is designed to help one make important decisions about pursuing management."

I know that I gained much from the seminar, not leaving it the same person as when I arrived. I gained motivation and certainly a focus.

Also, our group had formed a strong network, one that could help ease the transition from our current status to future positions and further opportunities to serve our country. ✲

Nancy P. Carrigan is an air traffic control specialist at Cape Approach, Otis Air Force Base, Massachusetts.

Evacuating the Vehicle

40 Flight Attendants, Instructors Participate in Cabin Safety Workshop

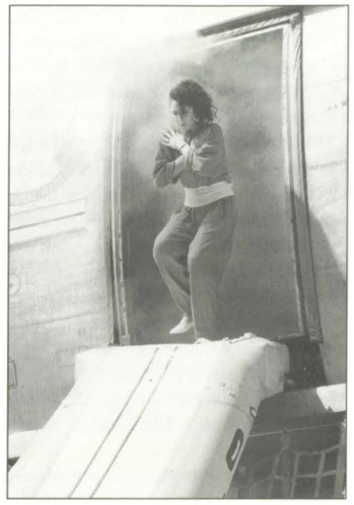
Photos by Mike Harvey
Report by John Clabes

Captured in action are participants in a recent cabin safety workshop. Held four times a year by CAMI's Aeromedical Research Division, the sessions teach aviation safety techniques to flight attendants and safety instructors from major airlines around the world. They also showcase research being done under the Civil Aeromedical Institute's cabin safety program.

The four-day exercise involves detailed briefings, including visits to CAMI's evacuation vehicle and later two evacuation demonstrations—with and without smoke. Instructors give participants information on the latest changes in regulations formulated through CAMI research, for instance floor lights leading to evacuation doors.

Mark George, a human factors specialist and coordinator of the cabin safety workshops, recently hosted this session for 40 flight attendant training instructors and emergency procedures personnel from nine carriers representing the United States, Austria, Canada, Holland, England, and Italy.

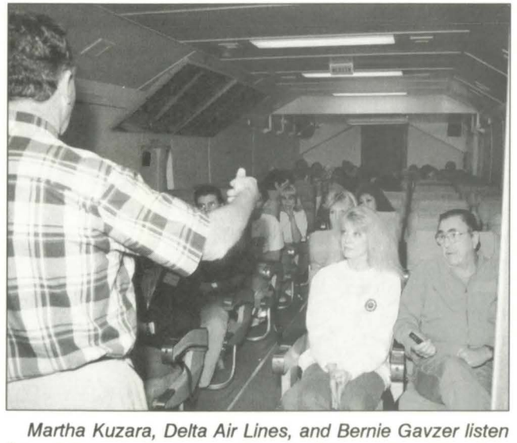
Bernie Gavzer, contributing editor to *Parade Magazine*, a national publication with a circulation of 35 million, joined the group as part of his background research for an article that appeared June 14. ✲



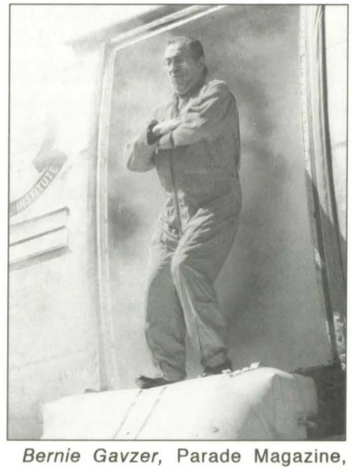
Rachel Borrelli, Time Air, Canada, crosses arms, jumps on slide as she participates in cabin safety workshop.



Michelle Riffel, Comair, starts down slide as Ralph Williams, Wayfarer Ketch, walks away after completing maneuver.



Martha Kuzara, Delta Air Lines, and Bernie Gavzer listen intently from the front row as Charlie Chittum, left, cabin safety research specialist, explains evacuation procedures to group of flight attendants and safety instructors.



Bernie Gavzer, Parade Magazine, prepares to hit the slide.

Information in the "People" section is extracted from the Consolidated Personnel Management Information System.

Space permitting, actions of a change of position and/or facility at the first supervisory level and to division manager in offices are published.

Aeronautical Center

Bobby L. Easley, unit supervisor, Aircraft Maintenance Section, Aircraft & Avionics Maintenance Branch, Aircraft Maintenance & Engineering Div. ... **Laurence E. Estes,** manager, Maintenance Support Branch, Regulatory Support Div. ... **Wanda L. Gaines,** supervisor, General Ledger Section, General Accounting Branch, Accounting Div., promotion made permanent ... **Russell D. Jones,** supervisor, Instrument Flight Procedures Development Section A, National Flight Procedures Development Branch, Flight Procedures & Inspection Div., from Southwest Region... **Linda L. Krause,** manager, Management & Evaluation Branch, Management Programs Staff, promotion made permanent ... **Stephen J. Siebs,** manager, Flight Inspection Operations Branch, Flight Procedures & Inspection Div., promotion made permanent ... **Donald D. Snow,** manager, Aircraft Program Div. ... **William E. Traylor,** asst. manager, Aircraft Program Div.

Alaskan Region

Bradley R. Butzlaff, section supervisor, Civil Aviation Security Div. ... **Carol Hugh,** unit supervisor, Staffing & Compensation Branch, Human Resources Management Div., from Washington Headquarters ... **Gerald C. Paterson,** section supervisor, Anchorage Flight Standards District Office... **Shirley J. Rohl,** area supervisor, Anchorage ARTCC AFS, promotion made permanent ... **Kenney D. Smith,** unit supervisor, Resource Management Branch, Flight Standards Div., promotion made permanent ... **Glen A. Starr,** section supervisor, Anchorage Civil Aviation Security Field Office ... **Michael A. Tarr,** manager, Kenai AFSS, promotion made permanent ... **John L. Turner,** asst. manager for automation, Anchorage ARTCC.

Central Region

James W. Brunskill, manager, Safety & Standards Branch, Airports Div. ... **Philip M. Duffy,** unit supervisor, Olathe, KS, AFS ... **William E. Jennen,** unit supervisor, Programs Section--SGF Training Center, Resources & Planning Branch, Airway Facilities Div. ... **Lewis R. Kuhns,** manager, Grand Island, NE, AFS, promotion made permanent ... **Leroy J. Stockemer,** manager, Hutchinson, KS, AFSFO, Wichita, KS, AFS ... **Laurrel E. Toothaker,** group supervisor, Airway Facilities Sector, Olathe, KS, promotion made permanent ... **John H. Williams,** manager, St. Louis AFS, from Hapeville, GA, AFSFO.

Eastern Region

Barbara E. Bryan, area supervisor, Newport News, VA, ATCT, from Norfolk ATCT ... **William L. Conley,** manager, Charleston FSS, from Huntington, WV, FSS ... **Robert B. Farquhar,** asst. manager, plans & procedures, Andrews ATCT, Camp Springs, MD, from Boston ATCT ... **Thomas G. Jones,** asst. manager for training, Baltimore ATCT ... **Robert J. Payette,** group supervisor, Internal Security Branch, Civil Aviation Security Div. ... **James R. Robinson,** manager, Newport News, ATCT, from Richmond ATCT ... **Robert M. Tobin,** area supervisor, Washington ARTCC, from Washington Headquarters ... **Armand Tom,** area supervisor, Washington ARTCC, from Salt Lake City ARTCC ... **Stephen E. Vuocolo,** asst. manager, plans & procedures, Baltimore ATCT.

Great Lakes Region

Richard M. Barzyk, asst. manager, traffic management, Cleveland ARTCC ... **David J. Brunell,** area supervisor, Pontiac, MI, ATCT ... **Richard J. Butas,** manager, Columbus—Ohio State University ATCT, from Columbus Port ATCT ... **Henry E. Champen,** unit supervisor, Aurora, IL, AFS ... **Donald Devine,** section supervisor, Schiller Park, IL, FSDO ... **Mark E. Evans,** asst. manager, traffic management, Cleveland, OH, ARTCC ... **Ralph D. Forrest,** AF watch supervisor, Chicago AFS ... **Douglas E. Fralick,** area manager, Chicago O'Hare ATCT ... **Kevin W. Fry,** area supervisor, Fort Wayne, IN, ATCT, promotion made permanent ... **Arnold Gottlieb,** section supervisor, Schiller Park, IL, FSDO ... **Barton Holtz,** asst. manager, Chicago AFS, from regional headquarters ... **Albert J. Hoss,** unit supervisor, Aurora, IL, AFS ... **John R. Jones,** unit supervisor, Schiller Park, IL, FSDO ... **James M. Lundy,** unit supervisor, Aurora, IL, AFS ... **Lawrence P. Miller,** unit supervisor, Dakota AFS, Bismarck ... **Joseph L. Newton,** systems operations manager, Oberlin, OH, AFS ... **Richard L. Noer,** security specialist, Minneapolis CASFO, from San Francisco CASFO ... **Andrea M. Orr,** asst. manager for program support, Minnesota AFS, Minneapolis, promotion made permanent ... **Donald E. Powell,** unit supervisor, Aurora, IL, AFS ... **Robert L. Sage,** asst. manager for program support, Dakota AFS, Bismarck, ND ... **Gregory M. Sanchez,** project manager, Farmington, MN, AFS ... **Michael A. Vanboekel,** project manager, Aurora, IL, AFS ... **Milton S. Washington,** asst. manager, Schiller Park, IL, FSDO ... **Ronald K. Woodburn,** unit supervisor, Michigan AFS, Belleville, promotion made permanent.

New England Region

Paul B. Bermingham, manager, Bedford, MA, FSDO, from regional headquarters ... **Judge R. Coles,** area manager, Boston ARTCC, Nashua, NH ... **John W. Iberg,** equal employment manager, Civil Rights Staff, from Aeronautical Center ... **John J. Ingaharro,** area supervisor, Boston ATCT ... **Francis A. MacDonald,** area supervisor, Cape TRACON, Otis Air Force Base, MA, promotion made permanent ... **Bradford P. Weeks,** area supervisor, Brainard ATCT, Hartford, CT, from Bradley ATCT, Windsor Locks, CT ... **John R. Ybarra,** asst. manager, plans & programs, Boston TRACON, promotion made permanent.

Northwest Mountain Region

Phillip J. Brown, manager, Parker, CO, AFSFO, Denver AFS, promotion made permanent ... **Gregory J. Cenac,** unit supervisor, Nav/Com Installation Engineering Sec, Establishment Branch, Airway Facilities Div. ... **Hugh D. Ford,** unit supervisor, Portland CASFU ... **John R. Gonzales,** unit supervisor, Salt Lake City ARTCC AFS, promotion made permanent ...

Marvin R. Hart, asst. manager for automation, Denver ARTCC, Longmont, CO ... **John M. Hubbard,** unit supervisor, Seattle FSDO ... **Cynthia A. Lockwood,** traffic management unit supervisor, Denver ARTCC, Longmont, CO ... **Ronald F. May,** section supervisor, Seattle Aircraft Certification Office, promotion made permanent ... **Julie I. Panick,** unit supervisor, Airway Facilities Div. ... **Steven E. Purcell,** asst. manager, programs, Portland ATCT, promotion made permanent ... **Walter J. Ramsey,** manager, Rock Springs, WY, AFSFO, Salt Lake City AFS, from North Truro, MA ... **John D. Stevenson,** unit supervisor, Denver FSDO ... **Ronald L. Tucker,** manager, Cortez, CO, AFSFO, Denver AFS, promotion made permanent ... **Betty R. Whitney,** unit supervisor, Salt Lake City ARTCC AFS, promotion made permanent.

Southern Region

Rafael F. Arroyo, asst. manager for automation, San Juan CERAP, promotion made permanent ... **William A. Brinkley,** manager, Hawkins ATCT, Jackson,MS, from Meridian, MS, ATCT ... **John C. Culpepper,** unit supervisor, Hampton, GA, AFSFO, Atlanta ARTCC AFS ... **Felix J. Enriquez,** unit supervisor, Miami AFSFO, Miami ARTCC AFS ... **Edward J. Goodwin,** area supervisor, Hilliard, FL, ARTCC, promotion made permanent ... **John T. Griner,** unit supervisor, Hampton, GA, AFSFO, Atlanta ARTCC AFS ... **Sherman A. Harvey,** area supervisor, Greensboro,NC, ATCT, promotion made permanent ... **Patrick N. Hillesheim,** asst. manager for automation, Hampton, GA, ARTCC, promotion made permanent ... **Randal D. Mayfield,** asst. manager for program support, Tampa AFS ... **Robert W. McAlister,** manager, College Park, GA, Technical Inspection Field Office, from regional headquarters ... **William E. Miller,** aviation safety inspector, North Florida FSDO, Orlando ... **Steve D. Plemons,** unit supervisor, Hilliard, FL, AFSFO, Jacksonville ARTCC AFS ... **Harold C. Smith,** unit supervisor, Field Support Unit, Systems Maintenance Engineering Branch, Airway Facilities Div. ... **Anthony Zitney,** asst. manager, Raleigh, NC, ATCT, from Charlotte ATCT.

Southwest Region

George W. Baskerville, unit supervisor, Enroute Electronics Engineering Section, Establishment Engineering Branch, Airway Facilities Div. ... **Eric D. Bries,** staff chief, Rotorcraft Standards Staff, Rotorcraft Directorate ... **Bruce E. Cook,** unit supervisor, Albuquerque ARTCC AFS ... **Numa L. Courreges,** manager, El Paso AFSFO, El Paso AFS, promotion made permanent ... **Donald R. Czarnecki,** unit supervisor, Ft. Worth ARTCC AFS ... **Allen W. Ivy,** area supervisor, Houston Hobby ATCT, from Houston Intercontinental ATCT ... **James E. Lytle,** group supervisor, Houston FSDO, from FAA Academy ... **Mary Jo Neal,** area supervisor, San Angelo, TX, AFSS ... **Ronald F. Petersen,** manager, Ft. Worth AFSFO, Ft. Worth ARTCC AFS ... **Dennis L. Rice,** asst. manager for technical support, Bethany AFS, from Midwest City, OK, AFSFO ... **Elvia I. Rivera,** unit supervisor, Maintenance Engineering, Albuquerque ARTCC AFS, promotion made permanent ... **William M. Robertson,** unit supervisor, Ft. Worth ARTCC AFS ... **Agapito Rodriguez,** asst. manager for technical support, San Antonio AFS, from Harlingen, TX ... **Jay D. Rollmann,** unit supervisor, Midwest City, OK, AFSFO, Bethany, AFS ... **Donald G. Saenz,** unit supervisor, Jonesboro, AR, AFSFO, Little Rock AFS, from Tyler, TX ... **Patrick C. Serda,** manager, systems operations, Albuquerque ARTCC AFS, from El Paso AFS ... **Linda Brown Shaughnessy,** supervisor, Terminal Section, Facility Operations Branch, Air Traffic Div. ... **Robert L. W. Turner,** area supervisor, Albuquerque ATCT, promotion made permanent.

Technical Center

Barbara K. Cassada, technical program manager, Airborne Collision Avoidance & Data Systems Branch, Concepts Analysis Div., from Denver ARTCC ... **Martin Holtz,** director, Engineering Integration & Operational Evaluations Service ... **Patricia A. Mabis,** deputy manager, Requirements Analysis & Integration Div., from FAA Logistics Center ... **William E. Reilly,** director, Office of Research & Technology Applications.

Washington Headquarters

Henri P. Branting, manager, Technical Analysis Branch, Aircraft Engineering Div., Aircraft Certification Service ... **Deborah Anne Conway,** supervisory personnel management specialist, Senior Executive Resource Staff, promotion made permanent ... **Sharon K. Darnell,** manager, Terminal Automation Arts III Associate Program, Automation Engineering Div., Program Director for Automation ... **Barbara A. Edwards,** deputy staff chief, Special Projects Office, Office of Information Technology ... **C. R. Friesenhahn,** manager, Systems Technology Div., Research & Development Service ... **Joan C. Gariazzo,** program manager for Interfacility Communications, Program Director for Communications ... **John H. Graham,** team leader, Resource Management Branch, Contracts Div., Office of Acquisition Support ... **Axel R. Granholm,** technical program manager, Program & Resource Management Staff, NAS Transition and Implementation Service ... **Joann Kansier,** program manager for Voice Switching & Recording, Program Director for Communications ... **William R. Kansier,** manager, F & E Branch, Resource Staff, Associate Administrator for Airway Facilities ... **Judith Leach,** staff chief, Recommendation & Quality Assurrance Div., Office of Accident Investigation, promotion made permanent ... **Marlene G. Livack,** unit supervisor, Technical Standards Branch, Field Programs Div., Flight Standards Service ... **Joseph M. Morelli,** manager, Voice Switching & Control System Implementation Branch, Voice Switching & Control System Div., Program Manager for Advanced Automation, promotion made permanent ... **Michael E. O'Neill,** staff chief, Program Management Staff, Office of International Aviation, promotion made permanent ... **Arthur D. Salomon,** branch manager, Program Director for Terminal Automation ARTS II ... **John T. Staples,** air traffic manager, ACT/MCF Implementation & AT Plans Branch, Advanced Systems & Facilities Div., Air Traffic Plans and Requirements Service, promotion made permanent ... **Phyllis L. Vallario,** manager, Administrative & Management Analysis Branch, Management Staff, Associate Administrator for Airway Facilities.

Western-Pacific Region

Tommy E. Barclay, asst. manager, Los Angeles TRACON, from regional headquarters ... **Michael F. Brown,** area supervisor, Santa Barbara ATCT, promotion made permanent ... **William E. Carter,** unit supervisor, F&E Program Section, Resource & Planning Branch, Airway Facilities Div., from Inyokern, CA, AFSFO ... **Jon E. Flippen,** asst. manager for training, Los Angeles TRACON ... **Allen L. Haeggquist,** unit supervisor, Phoenix FSDO, Scottsdale, promotion made permanent ... **Siri N. Hanuman,** unit supervisor, Environmental Engineering Section, Systems Maintenance Engineering Branch, Airway Facilities Div. ... **William E. Hunt,** manager, Reno AFSFO, Sierra Nevada, CA, AFS, promotion made permanent ... **Jennifer K. Nakazawa,** manager, Kauai, HI, AFSFO, Hawaii-Pacific (Honolulu) AFS, promotion made permanent ... **Ronald S. Rakoski,** area supervisor, Los Angeles ARTCC, Palmdale, promotion made permanent ... **William E. Sullins,** asst. manager, Flight Standards Div. ... **Stanley Thomas,** manager, Phoenix Certificate Management Office, Flight Standards Div., from Phoenix FSDO.

Retirees

Aeronautical Center

Victor H. Casey
Charles B. Glasgow
Joyce F. Hayes
Lawrence P. Musser
Bruce E. Packard
William A. Pope
Susan L. Spaulding
James G. Wilson

Alaska Region

Philip C. Freitag
George R. Govan
Jerry M. Wylie

Central Region

D. Elaine Clayton
Richard A. Deboer
Samuel L. Goodyear
Angel F. Madayag
Marietta Spor

Eastern Region

Howard W. Auger
Jacob L. Bennett
Nicholas Dammacco
Ervin Daniels
David L. Dixon

Great Lakes Region

Harold N. Beeler
William J. Brabant
Gerald H. Jagow
Arthur C. Nuottila
H. Binney Rowland
William E. Sabre
Alfred L. Stout
James T. Wolf

New England Region

Donald F. Cronk
Richard A. Meade

Northwest Mountain Region

Roger J. Anderson
Joseph G. Conner
Robert U. James
Gerald F. Johnson
Richard N. Klepac
Harvey D. Myers
Peter K. Nelson
Ronald C. Nusbaum

Southern Region

Mary S. Ball
John E. Buchman
Susan A. Colwell
Philip H. Crawford
Charles A. Gallon
Joseph W. Greenwell
Charles L. McKenzie
Donald L. Morgan
Gene S. Murphy
Jack G. Parton
C. Warner Pate
Robert C. Payne
Bobby R. Pickens
Joseph C. Ray
Clark D. Sharpe
Helen W. Sharpe
Ronald A. Steuart
Kenneth W. Wallach
John J. Yacalavitch

Southwest Region

Harold E. Deislinger
James A. Durda
Donald E. French
William V. Hansen
Robert A. Hughes
Melvin G. Johnston
Donald F. Leech
Michael W. Reider
Robert G. Saal
Faye D. Sanders
Cecil D. Schroeder
Ronald C. Stanley
Robert C. Thomson

Technical Center

Thomas M. Guastavino
Richard L. Ziebart

Washington Headquarters

Nancy A. Greenfelder
William H. Johnston
Gail D. Meltzer

Western-Pacific Region

Philip B. Crosby
James L. Gerard
Charles H. Hawes
Richard R. Merriman
William M. Molesworth
Edward A. Rein
Alan H. Roundy
Frank B. Wilcoxen