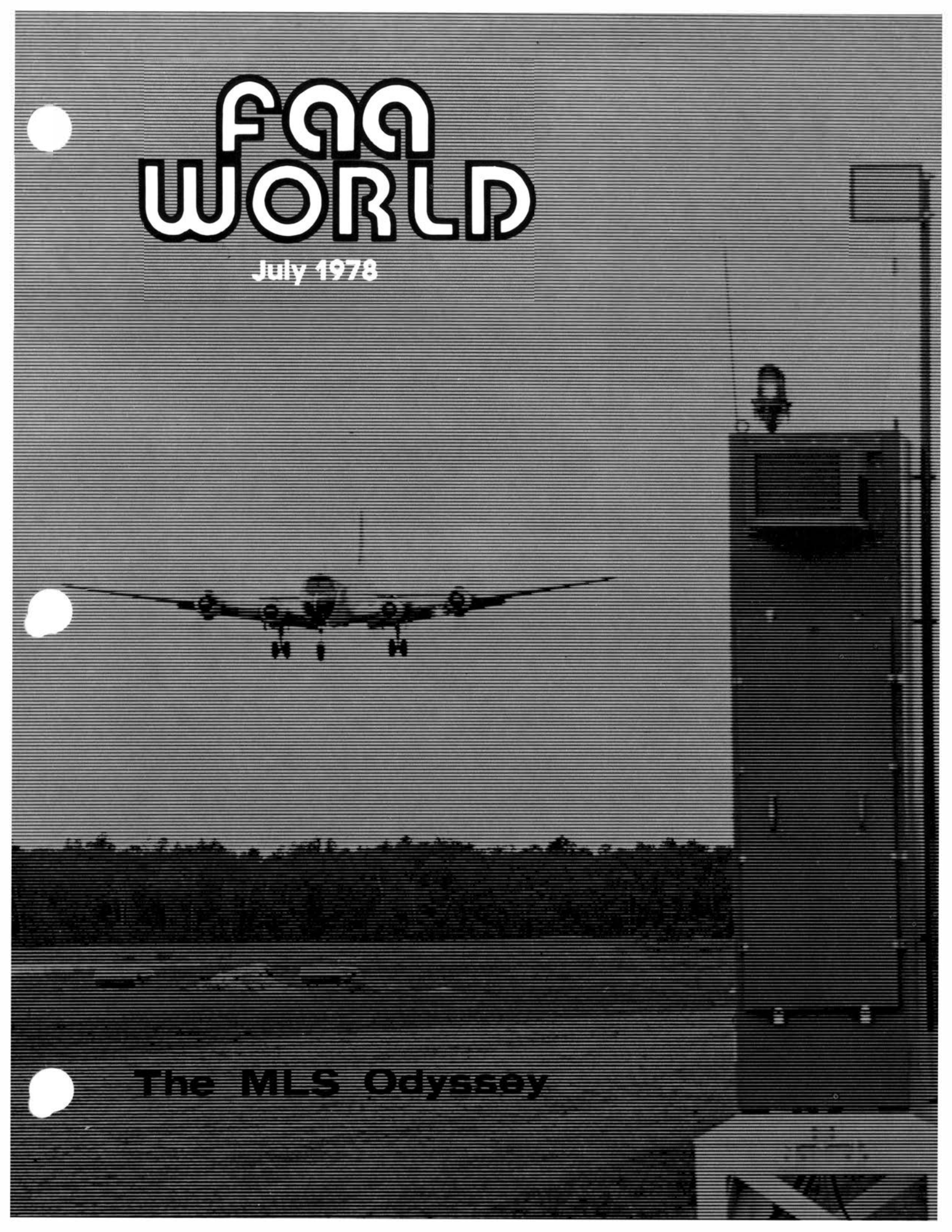
# FAA WORLD

July 1978



## The MLS Odyssey

FAA WORLD

JULY 1978

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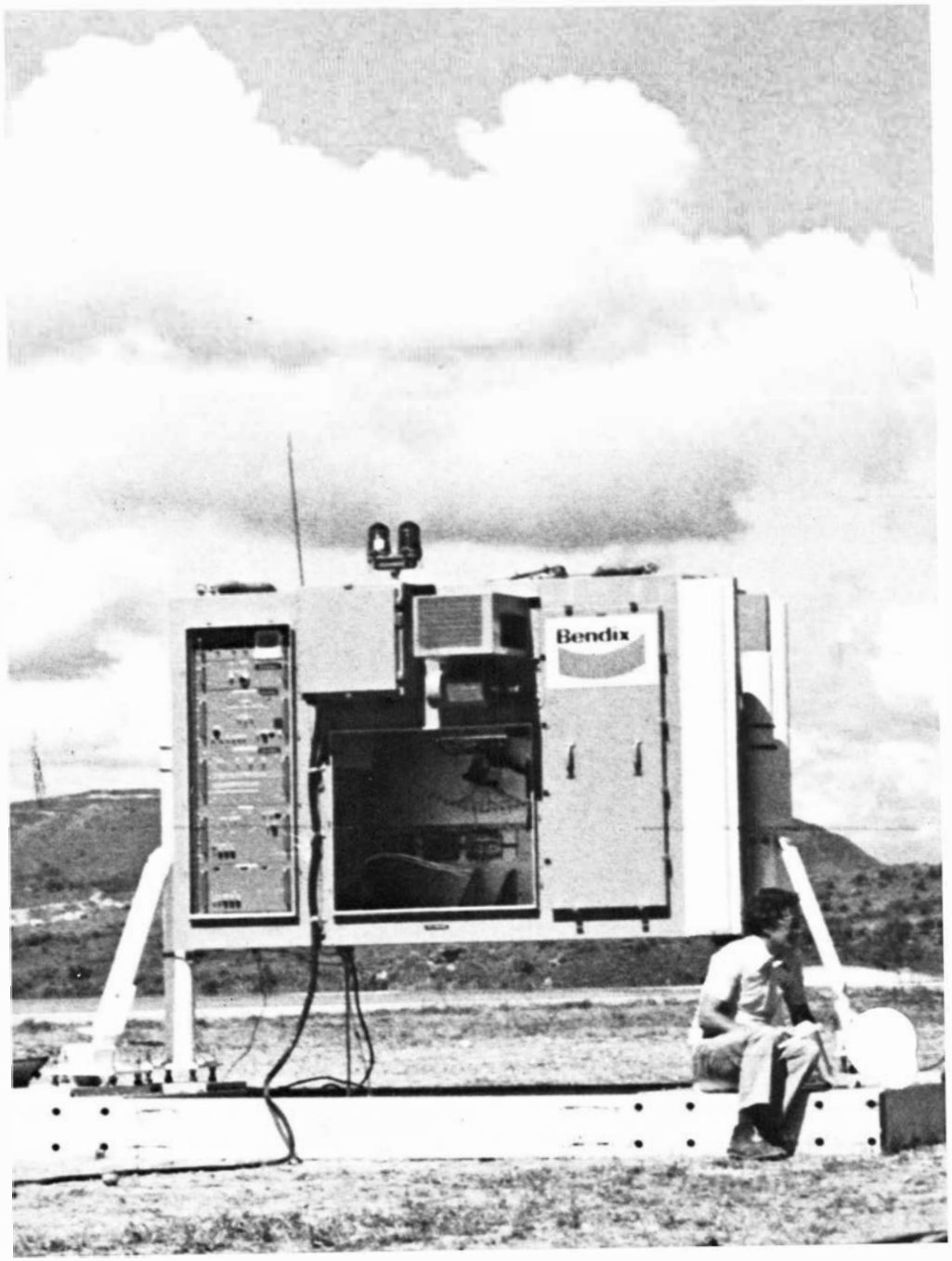
75th ANNIVERSARY OF POWERED FLIGHT * 1903-1978 *

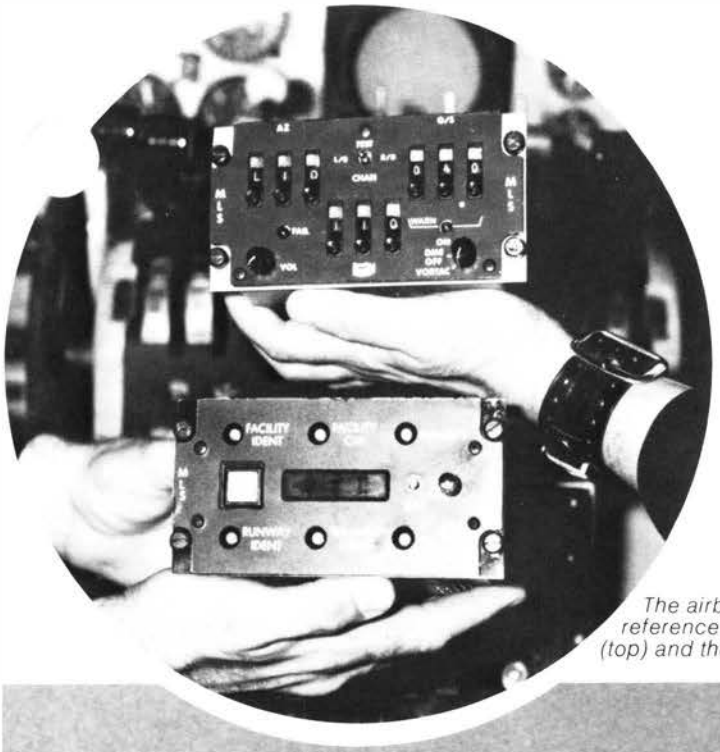
**The cover:** *The first of the real-life demonstrations by NAFEC of the time-reference scanning-beam microwave landing system took place at Cape May, N.J. From there to Montreal on April 19 where the ICAO approved the U.S.-Australian system was a journey of 60,000 miles. The story of the nomads of NAFEC is told at the right.*

## On the Road with MLS

# A Modern Odyssey

*An FAA Convair 580 lands at the airport in Tegucigalpa, Honduras, tuned to the signals of the co-located microwave landing system azimuth (left) and elevation antennas.*






It started October 6, 1977, with the demonstration of the small community version of the U.S.-Australian Time Reference Scanning Beam Microwave Landing System (TRSB-MLS) at Cape May County Airport in the southern tip of New Jersey.

It ended April 19, 1978, in Montreal, when members of the International Civil Aviation Organization voted 39 to 24 in favor of the U.S.-Australian TRSB-MLS as its choice for the next generation, all-weather approach and landing system.

In the intervening six months, 51 employees of FAA's

*The airborne components of the Time-reference scanning-beam MLS are the control unit (top) and the auxiliary data display unit.*


*Glen Adams of Systems Research and Development Service explains the workings of a Small Community MLS azimuth antenna to visitors to the Montreal demonstration.*

National Aviation Facilities Experimental Center were involved in a 60,000-mile odyssey to demonstrate the capabilities of TRSB-MLS in a broad range of airport environments. They flew 300 demonstrations of four TRSB-MLS versions in eight countries on five continents.

In addition, there were numerous test flights made at NAFEC itself, where the systems had been undergoing development since 1974, at Crows Landing, Calif., and at John F. Kennedy International Airport in New York.

The NAFEC test team consisted of seven pilots, three flight engineers, 18 electronics engineers, 14 electronics technicians, five aviation mechanics, two air traffic controllers and two part-time secretaries. Collectively, the group survived poor food and worse lodging, arctic cold and equatorial heat, auto accidents and lightning strikes, jungle animals and bedroom vermin. Yet, it was an experience that none of the participants will ever forget and few, if any, would trade.

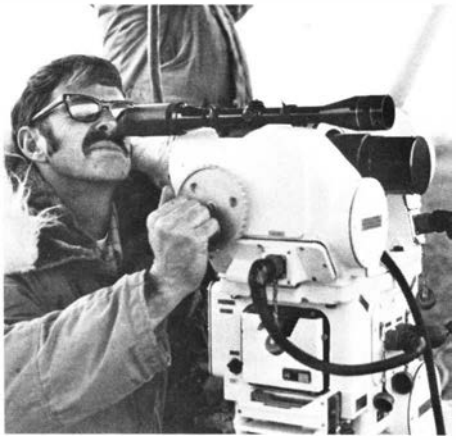
Of all the demonstrations, the first one at Cape May, N.J., presented the least logistical problem. The Small Community Microwave Landing System (SCMLS), used for the test flights, was trucked 30 miles south from NAFEC to Cape May County Airport and installed on Runway 10. An agency DC-6 and a Canadian Department of Transportation DHC-6 Twin Otter then checked out the system, which is the basic, low-cost version of TRSB-MLS.

Despite the dampening effect of a steady drizzle, the October 6 demonstration for the press and public went well. NAFEC Deputy Director Joseph M. Del Balzo, who conducted the press briefing, praised the SCMLS as having "shown itself to be a remarkably precise, efficient and portable, low-cost system." Over the next six months, TRSB-MLS would have to prove itself again and again.

The scene now shifted to Buenos Aires, Argentina, and its Aeroparque Jorge Newbery. A USAF C-5A, the world's largest aircraft, was used to transport the 82,000 pounds of equipment to the Southern Hemisphere. Included were the "Basic Narrow" and "Small Community" MLS versions and ancillary equipment, together with a complete instrumentation and calibration van. Also on board was the equipment needed to support a USAF T-39, a NASA B-737 and an Argentine IA.50 that would fly demonstration runs on the MLS in Buenos Aires.

After the system components were loaded and tied down in the cargo hold, 11 NAFEC electronics engineers and technicians climbed the rear ladder up

NAFEC pilot John Ryan (left) discusses the cockpit view of flying MLS with co-pilot Bob Powell in the office of a Convair 580 over Tegucigalpa's Toncontin Airport.



At Charleroi Airport near Brussels, Belgium, J. J. Collins operates a theodolite under the azimuth antenna to confirm the accuracy of demonstration flights by the agency's Convair 880 and Boeing 727.

NAFEC pilot John Ryan feeds an ancient horse as team member John Morrow surveys the ruins of Persepolis in Iran.

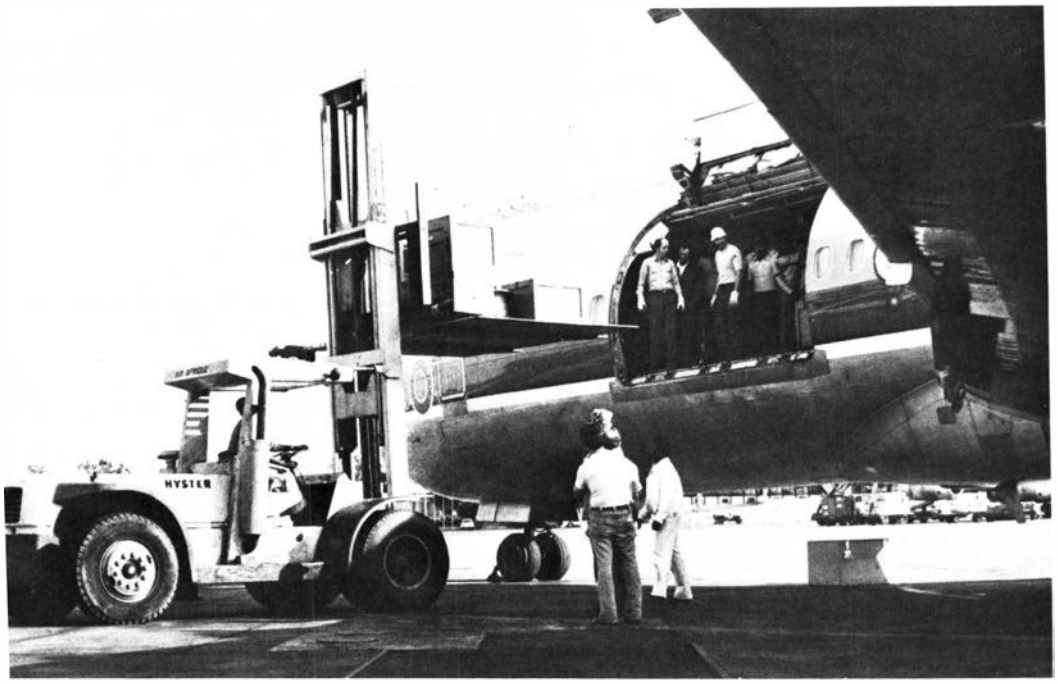
into the troop quarters on the upper deck. Richard Cleary, MLS Program Manager at NAFEC, headed the contingent, which included Glen Adams from the MLS program office in the Approach Landing Division of the Systems Research and Development Service. Jack Edwards, chief of NAFEC's Communications and Guidance Division, flew to Buenos Aires later, where he was to assume his additional role of FAA's TRSB-MLS Demonstration Program Director.

When the C-5A landed at Buenos Aires on October 16, after an overnight stop in Panama, it was "immediately surrounded by Argentine soldiers armed with submachine guns," according to NAFEC technician Fred Wahlquist. Although the troops were there as a protective measure, the NAFEC crew found the experience a bit disquieting, as they did the sight of armed guards on every airport vehicle. "We couldn't decide whether this was reassuring or not," said Ray Harter, another member of the demonstration team.

As events turned out, the biggest threat to their lives during the three weeks they spent in Buenos Aires was the Argentine highway traffic. "Our lives were in peril every time we climbed in the bus that took us to and from the airport," Bill Yost said. "I don't think there was a single stop sign in Buenos Aires."

Despite long hours at their posts at the Aeroparque for the MLS demonstrations, the MLS teams managed to get in some sightseeing and sample the restaurant fare. However, after three weeks in Buenos Aires, the team members couldn't stomach another steak dinner. "Can you believe it? The biggest and best steaks in the world for $2.50 and we just couldn't eat another one," complained

The weather at Kjerik Airport near Kristiansand, Norway, was uncooperative, but the NAFEC crew set up both Basic Narrow and Small Community systems for demonstrations when the snow permitted. Despite the conditions, aviation officials and others visited the equipment shack, the antennas and exhibits at the airport.




*On again and off again was the story for the peripatetic MLS equipment during its six-month tour. Here, a Small Community system is unloaded from the agency's Boeing 727 for a demonstration at Dakar, Senegal, in western Africa.*

team-member John Morrow.

Tegucigalpa, Honduras, was next on the agenda, and again a test of the Small Community MLS was involved. The site was considered ideal for testing MLS capabilities because of the surrounding mountains which precluded the use of conventional instrument landing systems.

NAFEC pilots John Ryan and Robert Powell took off for Tegucigalpa in NAFEC's Convair 580 on November 18 with a small, TRSB-MLS demonstration team headed by Robert Pursel.

The first priority after arriving in Tegucigalpa was a quick trip to Howard AFB in Panama to pick up the Small Community MLS left there by the C-5A on the flight from Buenos Aires. Actually, two trips in the Convair were required to get the equipment to Tegucigalpa's Toncontin Airport.

The demonstration flights began on the 22nd and—despite the pigs, chickens, dogs, and little children crawling under the wire security fence to watch the activities (and urinate on the antennas)—went very well. In fact, Honduran government officials were so pleased with the SCMLS, they offered to purchase it as installed, if the U.S. would guarantee it would meet ICAO specifications.

Following the Christmas-New Year's holidays, the pace of the overseas portion of the demonstration program quickened. On January 14, the Center's Convair 880, with Joseph Bailey and Robert Grace at the controls, departed NAFEC for Brussels. Right behind it was NAFEC's new Boeing 727 piloted by Jesse Terry and John Ryan, headed for Kristiansand, Norway. Two days later, a USAF C-141 cargo jet landed at NAFEC to pick up the Basic Wide "top-of-the-line" MLS for the Brussels demonstration and the Basic Narrow "intermediate airport" system for Kristiansand.

Snow was falling at Kjerik Airport outside Kristiansand when the 727 arrived there on January 15 and landed on the white-carpeted 6,000-foot runway. The Air Force C-141 arrived the following day, and the NAFEC team quickly went to work under Bob Pursel's direction and had both the Basic Narrow and Small Community systems up and operating within four days, despite below-zero temperatures and a wind-chill factor dropping it to between -30 and -40.

In the 12 days the crew spent in Kristiansand, they had about four hours of sunshine and were able to fly only 10 demonstration flights. On January 23, pilot Ryan flew to Oslo to pick up the American ambassador and Norway's director general of civil aviation. But they had to return to Oslo by train, because deteriorating weather forced the airport to shut down.

During the demonstrations at Kjevik, the MLS team stayed at a hotel in Kristiansand about 30 kilometers away. The rooms, which cost $40/night, were clean but small. Team veteran Fred Wahlquist claimed he could adjust the television set with his toes while lying in bed, which was just as well because there weren't any chairs in the room. When NAFEC buddy Bill Yost came in to see him one night, Wahlquist said, he had to turn around in place in order to leave.

*Senegalese dancers put on a poolside show during Sunday buffet at the hotel.*

One member of the MLS team who considered himself lucky to get out of Kjevik alive was NAFEC technician Paul Riley. He totaled a rental car one day on his way back to Kristiansand when he slid off the road and down the side of a mountain. Fortunately, the car got caught in a clump of trees and Riley walked or rather climbed away from it unnerved, bruised, but intact.

Concurrent with the Kristiansand

monstrations, Dick Cleary and his ew had the Basic Wide MLS up and operating on Runway 07L at Brussels' Zaventem International Airport. But the weather was also poor in Brussels and limited the number of data flights that could be made. Nor were the Convair 880 pilots too happy with the high steeple of the Diegem church in front of the runway, which constituted a major hazard on low approaches required on the data-collection flights.

Despite these problems, Cleary said, "They were able to gather enough data to show that the U.S./Australian TRSB-MLS, on both manual and autoland flights, could land aircraft on straight-in and curved approaches at a large European airport with little effect from multipath reflections and meet the full capability requirements of ICAO."

The Brussels effort was expanded following the arrival of the 727 from Kristiansand on January 27. The crew set up the Small Community MLS at Gosselies Airport in Charleroi, about 30 miles south of the capital city. Data acquisition flights by both the 727 and Convair 880 were conducted at that general-aviation airport through February 3.

With the completion of the Brussels demonstration, the Convair 880 and its team returned to NAFEC. But the B-727 with Pursel and his Kristiansand-Charleroi veterans and the Small Community MLS headed for Dakar, Senegal. After two weeks of snow and sub-freezing weather in Kristiansand and two weeks of chilly rain and cloudy skies in Brussels, the B-727 crew touched down at the Rota (Spain) Naval Air Station under sunny skies and warm temperatures only two and one-half hours after leaving Brussels. Three hours after departing Brussels on February 7, they were in their swim trunks on the beach.

"We didn't think we would ever see the sun again," said plane commander Jesse Terry. "I'll tell you one thing, though; four weeks of flying in that messy weather convinced me that our MLS systems worked fine."

The following day, the group left for Dakar, four hours away. While flying over Mauretania, "where they had a little war going," said Terry, "we passed an FAA plane going in the opposite direction." Although cleared by local air traffic control, the crew really had their eyes peeled for French-built interceptors and surface-to-air missiles.

Dakar brought a new set of problems, according to Jack Edmonds of NAFEC and Ray Guerra, FAA Quality Reliability officer at Texas Instruments, who served as advance men for the demonstration team. "We had originally reserved 18 hotel rooms for the guys," said Edmonds, "but because the estimated arrival date kept changing, there were only eight rooms when the group finally got to Dakar, and they had to double up. The guys really didn't start moaning and groaning until they found out that there was another hotel near the airport that had a topless swimming pool and beach," Edmonds said.

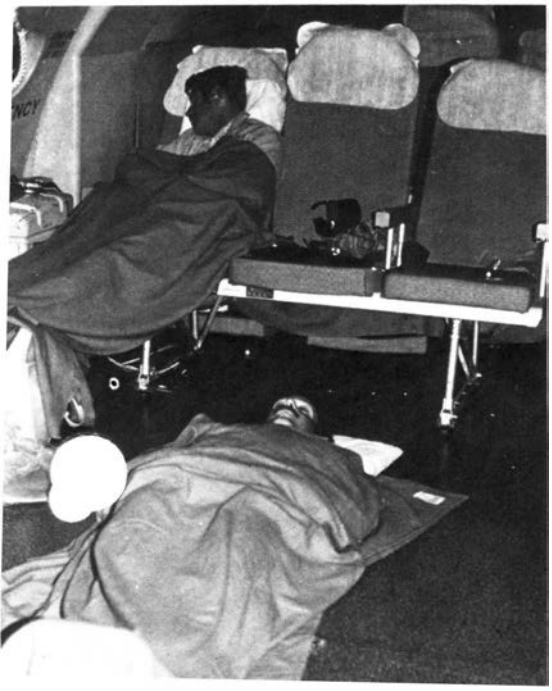
"That's right," agreed Fred Wahlquist, "and farther down the beach, it was bottomless as well!"

While Dakar appears to be well on its way to becoming a watering spa for wealthy Europeans, it left a lot to be desired in the way of sanitation. At the airport, there was an open sewage ditch scenting the hot, desert wind. In Dakar itself, the NAFEC troops were besieged by earless, noseless, stump-ended lepers begging for money and always wanting to touch them. Wahlquist and Yost made the mistake of giving money to a couple of lepers. They were immediately surrounded by "fifty more, who came hobbling over on two-by-fours. We had to run into a bar to get away from the beggars."

Working conditions in Dakar differed greatly from those in Kristiansand. The temperature was usually in the high 80s or above during the day. The humidity was very low, while the desert winds were generally high and hot. The tropical sun forced the ground crew to keep their heads (but very little else) covered, according to balding Bill Yost, who usually manned his tracker attired in hat, undershorts, and shoes.

There were wild monkeys at the Dakar Airport—they were the only ones wearing less than NAFEC's ground crew—who would sit on their haunches watching the MLS technicians work and then mimic their actions. "They were our back-up team," said Tom Logue. "Yes, and they could have substituted for Tom and me the time we played softball for Texaco against the American Embassy, which seemed to have a line-up consisting of only teenage

*It wasn't in the job description, and the NAFEC team at the Nairobi, Kenya, demonstration weren't too happy about checking the ILS outer marker, which sat in a wildlife preserve with lions and other animals*



*But it wasn't all beer and skittles, as evidenced by NAFEC technicians John Collins (top) and Roy Winter, who slept in the cargo compartment of the C-5A, which carried the team and MLS equipment to Buenos Aires, Argentina.*

*John Morrow checks a data recorder aboard an FAA Boeing 727 flying a Small Community MLS demo at Shiraz, Iran.*

Marines," said John Morrow.

Following a week of successful data-collection and demonstration flights, the MLS team packed up and left Dakar for Nairobi, Kenya, on February 17, with a refueling stop at Kinshasa, Zaire. "We almost didn't make it out of Zaire," said Jesse Terry. "We paid for our fuel with a credit card, but they wanted the airport landing fee paid in U.S. dollars. Nothing else was acceptable." After scraping together enough greenbacks to pay the landing fee, they left for Nairobi, arriving about midnight. "We spanned the African continent at almost its widest point in a day," John Ryan pointed out.

Despite the fact that Nairobi is a lot closer to the equator than Dakar, the weather and scenery were much nicer due to its elevation (the airport was 5,327 feet above sea level) and regular rainfall. The temperature was in the 70s during the day with cooling winds, and the scenery was lush. The MLS team considered it the high point of their 60,000-mile odyssey.

They had the Small Community MLS up and operational on February 19, the day following their arrival, but they couldn't start flying on the system until the next day, because one of the cranes got stuck in the mud and the elevation site settled, tilting the antenna back about two degrees. Then the B-727 flew on the system every day through February 24.

Next to the airport in Nairobi was a major wildlife preserve. While this provided great opportunities for picture-taking for the NAFEC technicians, it posed a minor problem for the Kenyan technicians who had to check the ILS outer marker which was located inside the preserve. Often lions liked to sun themselves against the entrance gate to the outer marker. Although repeatedly assured that the lions were perfectly tame, the technicians preferred to have an armed guard along just in case one of the tame lions suddenly got hungry.

Jack Edmonds and Ray Guerra, again riding point for the MLS troops, left Nairobi by commercial airliner for Shiraz, Iran, with intermediate stops and changeovers in Cairo and Teheran. In Cairo, they ran into some more security restrictions arising from Kenya's interception of Egyptian aircraft carrying arms and ammunition through Kenyan air space and Egypt's reciprocal confiscation of Kenyan airliners. This was followed by the return to Cairo of dead and wounded from Egypt's unsuccessful attempt to free hostages from a hijacked airliner on Cyrpus.

"That was only scary," said Edmonds, "but that night, things got downright uncomfortable when Ray, I and an East Indian unknown to either of us were put in the same room at the transient hotel at Cairo's airport. We couldn't find any soap or towels and the toilet didn't work. The food looked familiar but sure didn't taste familiar."

The B-727 left Nairobi on March 1 and arrived in Shiraz the same day. Bob Pursel and his group had the Small Community MLS up and operating in nine and one-half hours. The B-727 pilots started flying on the system March 3 to collect data. They flew demonstrations for visiting dignitaries on March 6, 7 and 8.

The airport at Shiraz was surrounded by 11,000-foot-high mountains. But the weather was so clear, the B-727 crew was able to couple to the SCMLS at 23,000 feet and 60 miles out from the airport. The radio theodolite tracker could pick up the aircraft at 21,000 feet and 55 miles out.

Other than that, the NAFEC MLS team found little to like in this city that reigned as the capital of ancient Persia 2,500 years ago. The Shiraz Inn where they stayed had a beautiful swimming pool filled with everything but bathers. The porter—a fascinating dwarf who looked like a court jester out of the "Arabian Nights"—used the slimy, stagnant water from the pool to mop the lobby. Bill Yost slept on top of his covers for three days, he said, because the cockroaches were sleeping under the covers.

Team leader Bob Pursel, who had been asked to a TRSB-MLS meeting in Moscow following Shiraz, flew home to find he had been evicted from his apartment because he hadn't renewed his lease before beginning this odyssey. On top of that, he then had to be rushed to the hospital, where two toes had to be amputated because of an infection picked up along the way.

The next and final leg of the U.S./Australian TRSB-MLS odyssey began March 22, when Robert McFadden, John Carry, John Collins and Edward Lind flew to Montreal to install the Basic Wide and Small Community MLS for demonstration to ICAO members scheduled to meet there beginning April 4.

All the MLS troops turned out for the Montreal demonstration. In addition to the main contingent from NAFEC, there was a sizable group from FAA headquarters and a small air force made up of planes from NAFEC, NASA, USAF and the Canadian Department of Transportation.

For all practical purposes, the demonstrations ended on April 19, when the ICAO members chose the U.S.-Australian TRSB-MLS as the next generation, all-weather landing system

And all the troops came home tired but happy.

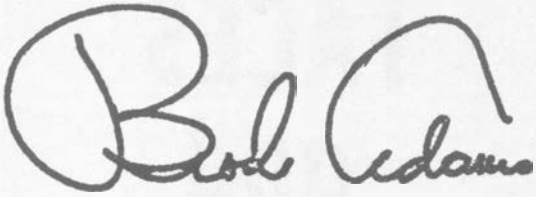
**By M.L. Yaffee**

*Weary but happy and victorious, the demonstration team returns to NAFEC crowing about the ICAO decision in Montreal. From the left are Jim D'Ottavi; Walter Martin, Jr.; Fred Auer and Fred Wahlquist (partly hidden); Jack Edmonds; Joe Bailey; and Jack Edwards, showing the vote.*

In this 75th year of powered flight I would like to salute the employees of the FAA for their part in the unparalleled safety record of U.S. aviation.

There is no more important mission in the Department of Transportation than that of the FAA. Many of its tasks call for split-second decisions, while at the same time the Nation looks to the agency for long-range planning that will accurately predict the safety and environmental needs of the 1980's and 1990's.

The history of flight spans only one lifetime. The FAA itself, as some of you well remember, has come a long way in staffing and sophisticated equipment from its early days. But the spirit that drove the pioneers of flight has been a tradition in this agency since its beginning. Thanks for giving that extra effort.



Brock Adams
Secretary of Transportation

# A Dream Come True

Long in love with going down to the sea in ships and looking aloft at the smooth curve of a full mainsail, Lyle Nelson right now—in July—is on his sixteenth transpacific yacht race, but last year's was *the* trip for him.

Many a blue-water sailor would envy his having been a navigator on eight trips to Honolulu, three to Tahiti and others to Acapulco, Okinawa and the Caribbean. For Nelson, a general engineer in the Maintenance Engineering Branch of Western Region's Airway Facilities Division, however, it always took the edge off it to have to fly home. Last year, he had enough time to sail back from the race, helping bring home the 61-foot sloop "Sorcery" from Honolulu.

With a crew of eight, the yacht sailed to Los Angeles in 14½ days, moving north from Hawaii until clear of the northeast tradewinds at 35 degrees North Latitude. Then, the track turned east.

Normally, there are many squalls in the tradewind belt—between about 30 degrees and the Equator, and the crew wanted to avoid them. While they encountered very few squalls on this trip, and those were not severe, they did have a few anxious moments, recalls Nelson.

"About three days out of Los Angeles, we had been pushed down to 31 degrees of latitude, putting us back into the northeast trades, and a hard beat-up into the wind was necessary to get us to Los Angeles. For two days, we beat into 30-knot winds with gusts to 40 knots," Nelson said.

*Continued on page 13*

*Lyle Nelson at the helm of the sloop "Sorcery."*

# FACES and PLACES

**TALKING UP CAREERS**—*Controller Mary Peters of Boston's Logan International Airport, together with West field, Mass., GADO inspector Ruth Zimmerman and Miriam Rouhow, Airports program officer, discussed aviation careers for women at Daniel Webster College, Nashua, N.H. The symposium was oriented to juniors and seniors in New England high schools.* Photo by Mary Jo Cogar

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**THE BEST IN THE WEST**—*Air Traffic Div. chief Frank Happy (center) presented Western Regional Air Traffic Facility of the Year awards to (from left) Stan Watt, chief of the Deer Valley Tower in Phoenix; Vince Mellone, Oakland Bay TRACON chief; George Gunter, Oakland ARTCC deputy chief; and Wayne Rodriguez, chief of the Sacramento FSS.*

**THE UN** **-**
*Carolyn Mu* *, as*
*Coleman, Chuck S*

**INGENUITY**—*When maintenance technicians from the Aeronautical Center's Aircraft Services Base had to repair a damaged FAA Sabreliner in the winter cold of International Falls, Minn., they found no hangar space available. To fend off the 35-degrees-below-zero chill, they built a hangar around the nose and nosewheel made of wood framing and plastic, equipped it with electricity and heat, and got the repair job done comfortably.*

**SAFETY DRAWS CROWDS**—*The Northwest Region's 1978 Spring Safety Award & Accident Prevention Meeting at the Boeing plant in Seattle drew 1,000 people. Listening to Regional Director Chris Walk, Jr., at the podium are (from left) Robert Sweazey, Air Safety Foundation, Max Karant, former AOPA vice president, and accident-prevention specialist Ralph Carpenter.*

**TP ' 'NG**—*Representatives from the four Great Lakes ray, Chicago ARTCC; Jim Ferguson, Cleveland olis ARTCC; and Jim Cheeseman, Indianapolis workshop this spring to revise en route Phase I t the centers to reflect more standarized procedures.*


**THE SPIRIT IS ALIVE**—*Deputy Administrator Quentin Taylor (left) and Charles Schuck (right), Flight Standards' Technical Assistant for Special Projects, join Bill Meserole, Experimental Aircraft Assn. chapter president, in College Park, Md., in admiring an enlarged photo of EAA's replica of Lindbergh's Ryan, which visited College Park Airport during the Bicentennial. Taylor recently was guest speaker at a chapter meeting.* Photo by Thom Hook

**THANKS**—*For NAFEC's support of a recent National Aerospace Symposium, the president of the Institute of Navigation, Jeff Schmidt, presented a plaque of appreciation to NAFEC's Deputy Director, Joseph M. Del Balzo (right). Del Balzo was chairman of the symposium, which attracted some 250 experts.*

*ion's Toastmasters Club charter was unveiled recently by club president . . the new 20-member club look on: From the left are Billie Walters, Peggy Mary Helen Johnson, Frances Brooks and Lyndell Little.*


**DOUBLE THREAT**—*Paul J. Baker (right) received the Administrator's Superior Achievement Award from Southwest Regional Director Henry L. Newman for simultaneous work as Acting Deputy Regional Director, chief of the Flight Standards Division and in equal employment opportunity programs.*

# Saving Is a Way of Life

During a recent flurry of journalistic interest in air traffic control and system errors, an FAA official asked a reporter, "Why don't you write about all the saves that controllers make?" The reporter replied, "That's what they're paid to do, isn't it?"

True enough, but what he was overlooking was the caring and patience that the FAAers bring to what could be a perfunctory and less-successful aspect of their job. It's this compassion that makes the saves more than just doing the job and causes FAAers to become involved off the job.

So it might surprise the reporter that the controllers he spoke to at JFK International Tower were involved in saving children as well as pilots.

They've been doing it for eight years. Assistant chief William Fedowich, then a controller, was inspired by a newspaper article in 1970 about adopting a family for Christmas. Fedowich thought about his and his fellow controllers adopting a child and contacted the "Save the Children Federation."

On polling the other controllers, he found such great enthusiasm that they started out by sponsoring two children at one time.

For almost all of the eight years, one of the children they have been "saving" is an American Indian girl in Albuquerque, N.M., who has graduated from school and is no longer eligible for this help. The controllers will be selecting a replacement for her.

The three other children they have helped have been Korean. One measure of the benefits of their support has been the loss of their charges. The first was one of three children living with their parents in a mud and thatched hut in a village about 100 miles east of Seoul. After four years, his parents became self-sufficient and no longer needed the help. Two years after sponsoring their second Korean child, his parents, too, improved their economic status.

In 1976, the controllers became the sponsors of Byung Chul Chung, then in the third grade of Imdang primary school. While his parents are farmers, the boy writes his "Dear American Father" that he wants to become a teacher.

The "Dear American Fathers" have undergone some changes. In Bill Fedowich's day, he made the rounds every payday for four years with outstretched hand. When he transferred out, Joseph Johnson took over the program and proposed an original and time-saving approach: Why not take the money out of the controllers' welfare fund, which is made up of profits from cigarette and soda vending machine sales? The controllers agreed.

Robert Conyers has managed the program for the last two years, maintains the contacts with the Save the Children Federation and is the official letter writer to the children.

The effort and money spent on these "saves" has given the controllers a great deal of satisfaction and sense of accomplishment. Although the faces change at JFK, the specialists vote to continue the program year after year. In more ways than one, "saving" is more than just something they get paid to do.

*Byung Chul Chung, one of their current Korean charges, sent the controllers a photo of himself standing in front of his school.*


*Controller Robert Conyers, JFK Tower chief Walter Mitchell and assistant chief William Fedowich (left to right) get together to read a letter from one of their children.*

# WORD SEARCH

*By James W. Hall*
*Instructor, NAFEC*

This month, we have a change of pace—we're deserting aviation. The puzzle is about cars, new and old, foreign and domestic, makes and models. The names read forward, backward, up, down and diagonally, are always in a straight line and never skip letters. The words may overlap, and letters may be used more than once.

Use the word list if you must, but try covering it first. All 52 names can be found. Circle those you do find and cross them off the list. "Mercury" has been circled to get you started. When you give up, the answers may be found on page 19.

R A C O T U A L A N O I T A N R E T N I
E D S E L O U E R M A M G E L T D T B R
K R A L Y K S M E O C P H M O P E L T P
A E U O S I T A L N K A O P C G W V E A
B F U R Y H I N S T K L R E N B Z T M C
E L O D I T N S Y E V A N R I A V R O C
D I U R P A L O R R L L E V L C A I C K
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DE SOTO
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FALCON
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FURY
GRANADA
GREMLIN
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OLDSMOBILE
OPEL
PACER
PACKARD
PLYMOUTH
PONTIAC
RAMBLER
REO
SKYLARK
STUDEBAKER
STUTZ
TORONADO
TRIUMPH
VOLKSWAGEN
VOLVO
WHITE

## DREAM *Continued from page 9*

Although the weather cooperated, the crew found it a wet, rough and uncomfortable trip. As Nelson put it, "The big yacht sailed so fast that she would periodically sail off a big wave and drop with a resounding, jolting crash back onto the sea. With each drop, I wondered if she were going to make it."

Such things one might expect in "men against the sea," but one incident they could have done without.

One afternoon, the "Sorcery" was cruising along at nine knots when the cook yelled "fire." "As smoke began pouring out of the hatches," Nelson recalls, "we rushed to the galley and discovered a fire was burning in the galley. A meat loaf had been cooking, and grease had splashed onto the gas burner.

"The skipper grabbed the galley fire extinguisher but found it wouldn't operate. I tossed him another from the main saloon. To our dismay, it wouldn't work, either. We couldn't understand what happened to them, since all had been checked before sailing.

"By this time, we were becoming alarmed as the black smoke built up. I rushed aft and snatched up the cabin extinguisher and brought it to the galley. It was a relief when I saw a plume of carbon dioxide spurt from the nozzle, dousing the fire."

There were the pleasures, too. One of the traditional pastimes on this run was looking for and retrieving Japanese fishing balls or floats. These glass balls, now partially replaced by plastic ones, ranging from eight to twelve inches in diameter, are used by Japanese fishermen to support their nets.

"We spotted many," reports Nelson, "but we only recovered one glass and one plastic float. It's a good exercise, but with our largely inexperienced crew, we didn't have the flexibility and maneuvering skill to make another try if we missed a float on the first pass."

Another amenity of the slow passage was fishing. As the boat sailed along, some of the crew would usually have a line or two streaming astern. Half a dozen mahi-mahi (dorado in Mexico) were caught before the cook and crew got tired of fish. Then, one afternoon, a five-foot bluefin tuna was wrestled aboard with a 150-pound test line. This filled the deep freeze completely, so no more fishing was allowed.

Nelson came from a small town in Iowa, so in his early days he could only dream of clipper ships and schooners on the open sea. While at the Massachusetts Institute of Technology, however, he began sailing on the Charles River—a small beginning to a big dream that has been realized.

**By Barbara Abels**

# FEDERAL NOTEBOOK

FLEXITIME MOVING
The on-again, off-again proposal to initiate a broad-scale tryout of flexible work schedules in the Federal government is on its way with the House passage of HR 7814 by a five-to-one margin. The legislation would set up a three-year trial under which the Civil Service Commission can select participating agencies which can permit flexible starting and quitting times around a core period or set up four-day workweeks. The bill waives the requirement for daily overtime but not for time worked over 80 hours in a two-week period. Participation is voluntary for agencies and individuals.

NEW AGE-BIAS RULING
A U.S. Court of Appeals has ruled that government employees and job applicants in age-discrimination suits are entitled to full-scale trials in Federal courts, regardless of whether administrative hearings may have been held on their complaints. Full trials already were legal for other discrimination complaints under Title VII of the Civil Rights Act.

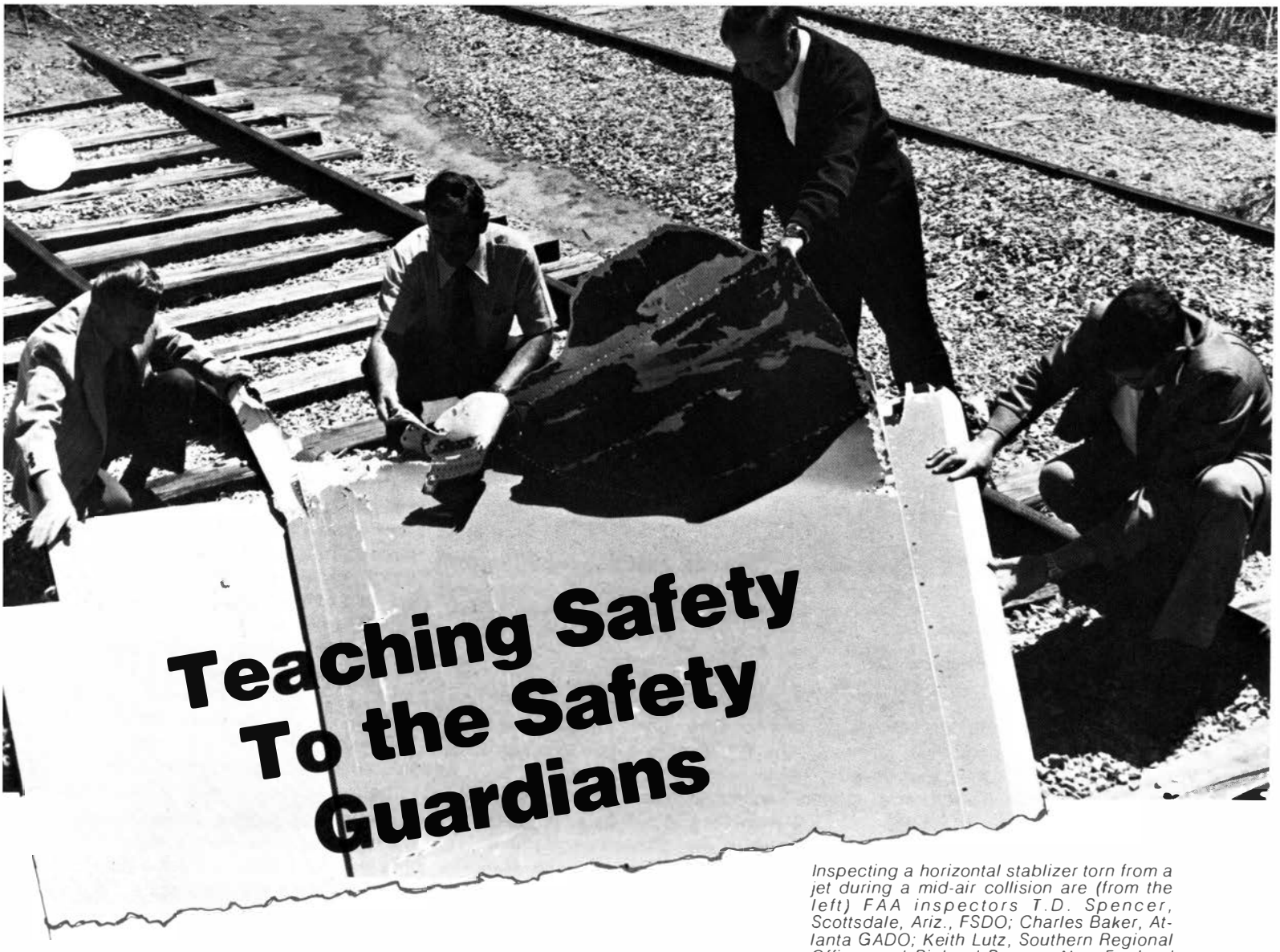
DOWNGRADING PROTECTION GAINS
HR 9279, the bill to provide indefinite and temporary grade retention for employees downgraded in reclassifications and RIFs, respectively, is on the calendar for House action, following its clearance by the House Appropriations Committee. There's hope for the bill before adjournment.

THE ANNUITY SCENE
An interagency committee has begun meeting to plan the study of Federal, state, municipal and private pension systems to rationalize public policy on retirement. It is expected to be succeeded by a presidential pension commission.

■ Three-quarters of the way home is HR 3447, which would restore full annuities to unmarried retirees when their designees for survivor annuities predecease them. Married retirees already have this right. The bill also allows remarried annuitants one year in which to decide on survivor annuities. The bill is on the Senate's legislative calendar, having passed the Governmental Affairs Committee and the full House. ■ In the Senate hearings stage is the House-approved HR 4319, which would reduce from 12 to five years to length of service for Federal employees to carry health and life insurance into retirement.

TO YOUR HEALTH
Passed by both houses was a bill (HR 2931) to waive the minimum health-insurance standards of the states as part of the Federal health-insurance program. This could reduce or at least hold the line on your health-insurance premiums. ■ The Civil Service Commission has tentatively approved a Blue Cross plan to operate a network of health maintenance organizations in the Federal health-insurance program next year.

SF 171 GETS A FACE LIFT
Available August 1 and required by November 1 except for those applications already on file will be a revised SF 171, which deletes potentially discriminatory info, like height and weight, includes "Ms." deletes organization membership and misdemeanor conviction listings and highlights volunteer experience.



# Teaching Safety To the Safety Guardians

*Inspecting a horizontal stablizer torn from a jet during a mid-air collision are (from the left) FAA inspectors T.D. Spencer, Scottsdale, Ariz., FSDO; Charles Baker, Atlanta GADO; Keith Lutz, Southern Regional Office; and Richard Beaver, New England Regional Communications Center.*

We watched the autogyro-type aircraft lunge forward and lift off after a short run down the dirt runway. As soon as it was airborne, we were apprehensive because it banked too steeply to the left and began sliding inevitably back to earth. We watched helplessly as the plane crashed and was momentarily enveloped in a cloud of dust.

Remarkably, the pilot was able to climb from the wreckage and stagger away with help.

At that moment, the lights clicked on in the classroom and Ralph Stokes, Aircraft Accident Investigation program manager at the Transportation Safety Institute in Oklahoma City, said that he was investigating the crash depicted in films, and he wanted to know what the class remembered.

"Now," he said, "which way was the wind blowing?"

Suddenly the 20 or so eager students were looking timidly from one to another. "Do you remember seeing a tetrahedron?" Stokes egged us on.

One arm rose tentatively and then several others clamored for attention.

"It was coming from the right. The tetrahedron was pointed that way," said one.

"All right," Stokes continued, "How strong was the wind?"

Several students leaned forward, but no one came up with the answer. "Think about the crash," Stokes suggested.

"The cloud of dust," one of the students said excitedly. "It was whisked away by the wind. It must have been 10 or 15 knots."

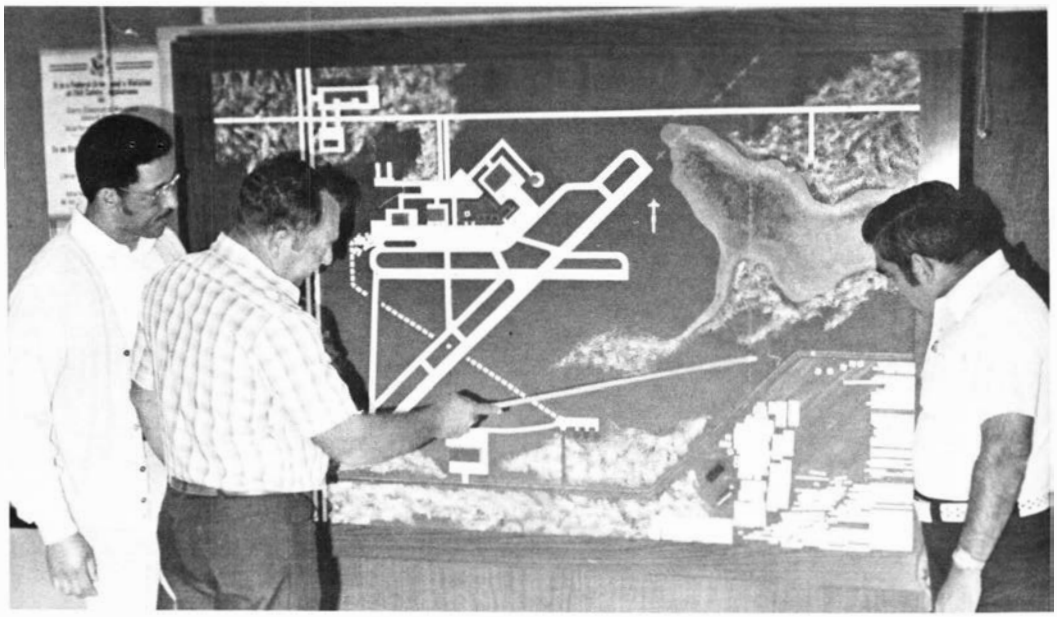
"The man's tie . . ." another said, "the way it was blown over his shoulder . . . at least 15 knots."

"As you can see," Stokes explained, "how I ask the question makes a great deal of difference. A good interrogator can help a witness to remember without leading the witnesses or suggesting answers to them."

Having brought his point home dramatically in a "real world" situation, Stokes dismissed his class for a short break and commented that when his students—the vast majority of whom are Flight Standards inspectors—finish the course, they are ready to go out and take over the management of an accident investigation.

(Although the National Transportation Safety Board (NTSB) is responsible for the investigation of major accidents and for the assignment of probable causes, FAA ends up doing the chores in about 85 percent of the general-aviation accidents.)

They have learned that when investigating an accident, they must first make sure it is an accident, not just an incident, that's being investigated, Stokes explained. When this is established, the investigators begin to



*Law-enforcement officers (from left) William Arrington of Charlottesville, Va.; Joe Whitaker of Mathis Field, San Angelo, Tex.; and Jose Muhlenbruch, Jr., of Laredo, Tex., plan security measures for an airport in a Transportation Safety Institute course.*

look into the items on their checklists, including weather, operational considerations, witnesses, the pilot's background (including certificates and ratings held). weight and balance considerations. powerplant. instruments. controls and so on.

If it's a heavy plane that crashed, the investigator will also be looking for a yellow basketball or an orange box. This is what the flight recorder and cockpit voice recorder look like. These two instruments are particularly important sources of information.

Regardless of what evidence is found, investigators are taught that they cannot be transformed into experts in all fields during a two-week course. Graduates are expected to manage the investigation and to identify suspicious areas. When the trouble is localized, experts are called in to continue the search for the "probable cause."

But the institute's interest in accidents is not confined to the *post mortems.* In the Air Transportation of Hazardous Materials Courses, "preventive medicine" is taught in a positive, practical, realistic manner. Again the accent is on what TSI Director Robert F. Creson characterizes as "teaching from the real world."

In the case of hazardous materials courses, the instruction is designed not just for FAA inspectors but also for the shipper. While the inspector is taught to appropriately enforce the regulations, the shippers—either in Oklahoma City or in field seminars—are taught in detail how to comply with the regs.

According to program manager Art Bensmiller and instructor Gary J. Groman, over 500 key people from major airlines have already received the training.

But let's take a closer look at the course designed for FAA inspectors. During the two-week course, students physically do everything required by the regulations. They first identify and classify the material they are working with. This they do by referring to The Code of Federal Regulations (Parts 100-189), which is the bible for both the inspector and the shipper of hazardous materials.

Say, for instance, that the material at hand is paint. Students find that if the paint has a flash point of over 200 degrees F., they don't have to worry about it because it's not regulated.

But if the flash point is between 100 and 200 degrees F., it is regulated as a combustible liquid. If the flash point is less than 100 degrees F., then it is regulated as a flammable liquid, and only very small quantities—separately packed—are allowed in the cargo hold of a passenger airliner.

Some materials, the student learns—no matter how packaged—are not allowed to be shipped on passenger-carrying planes. These must be clearly marked, "Cargo Only."

After classifying the material and determining how it can be shipped, students are given packaging materials and shipping papers. Then they set about getting the package ready for shipment. They know that it had better be right, because other student inspectors are going to tear it apart if it isn't.

Students also go through the airline responsibilities, which include notifying the plane's pilot-in-command about any hazardous material aboard the aircraft.

On the final day of class, the students find themselves out on the shipping dock with a variety of packages to inspect. These have been prepared by Bensmiller and Groman and, of course, are full of little surprises. One may be leaking, while the apparently appropriate paper for another, upon close examination, may prove to be totally inappropriate. The neatly labeled container may in fact be mislabled. And the box headed for a passenger plane may contain "cargo only" materials.

This is the kind of situation the inspectors are going to come across in the field. That's how the course is designed, and that's how the course in civil-aviation security is designed.

According to Transportation Secretary Brock Adams, one of the reasons for the agency's eminently successful anti-hijacking program is the thoroughness of the training offered at TSI.

As with hazardous materials, the training is not confined to FAA or DOT employees alone. It is also available to those people out in the field working with security problems on a day-to-day basis. The majority of the trainees are local law-enforcement officers, since these are the people most concerned with security.

The course covers three major areas: airline security, airport security and explosive-threat management.

Airline security is concerned specifically with screening passengers and luggage. This was the precaution that ultimately checked the epidemic of airline hijackings rampant in the late 60's and early 70s.

In this segment of the course, students actually set up a screening operation, figuring out the most efficient flow of traffic and installing

etal-detecting equipment and an inspection table at critical locations. Program manager Walter O'Connor and instructor Robert Lower then send other students through the barricades with ingeniously concealed weapons. Although the majority of the clandestinely carried handguns, knives and explosives are discovered, some do get through.

At a critique following the exercise, the instructors show how the undetected weapons were concealed and, even more important, how they could have been ferreted out.

The airport-security course is capped with a realistic exercise. A table-sized map of a typical airport is used as a "playing board." Each student plays a part, such as airport manager, airline manager, security chief and so on, while other students—often law enforcement officers—step out of character and become hijackers.

While the hijackers retreat to their "hideout" to devise insidious plans to pirate an airliner, the airport team embers, with a severely limited dget, make plans to defend their domain. Magnetically backed pieces representing fences, search lights, check points and so on are moved into position on the map board, and the cost of each precaution is carefully noted.

As the game goes on, the manager of an airport factory wants a search light for his parking lot, but the airport manager is not about to give up any of his hard-earned lights.

An argument ensues. The airport manager and security chief are brought into the fracas, and, typically, no one gets everything he wants. There just isn't any more money for search lights. And all this time, the hijackers are casing the lax security setup at the north end of runway 17-35. And so it goes. What the students have learned in class is reviewed out there in the laboratories of real life.

Explosive-threat management is another tantalizing aspect of security. After all, what do you do if someone calls you on the phone to say that there's a bomb in your lavatory or in your air conditioning system or in one of your lockers.

Well, according to the experts, you play it super cool. You act as though bomb threats are an everyday occurrence: "Now, this isn't a good time to telephone. I'm going to miss my bus and that's not very considerate of you."

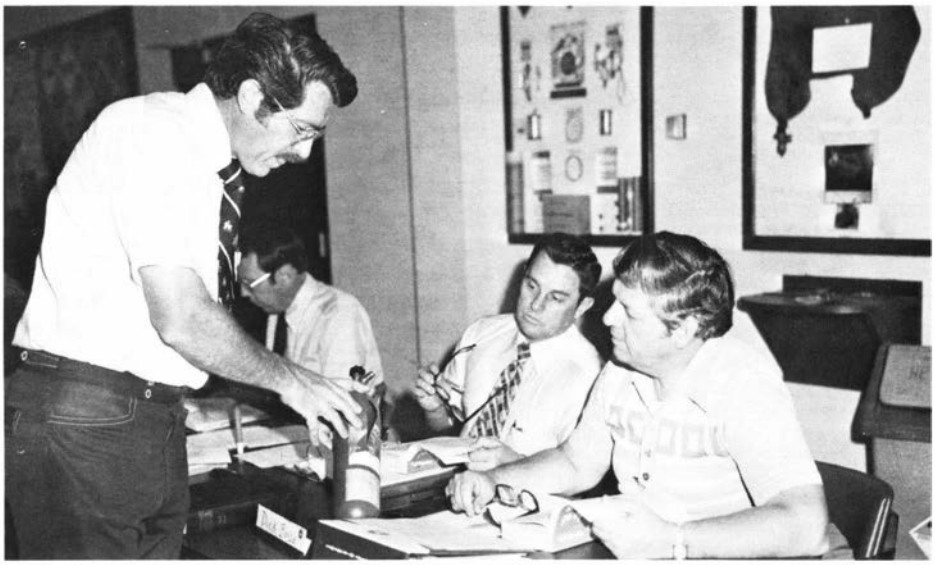
The caller, expecting fear or panic, is taken aback, confused and is then likely to blurt out the truth which, in most instances, is that the call is a hoax.

If the call isn't believed to be a hoax or if the bomb is actually located, then the manager must decide how much of the airport must be evacuated.

This is typical of the kind of education offered at TSI—practical courses that meet the test of effectiveness in the real world. It is because of the results achieved that Creson and five of his program managers have been awarded the DOT Secretary's Award for Superior Achievement.

One of the most remarkable aspects of the institute is that with a full-time teaching staff of only 29, an array of almost 60 courses are offered. Subjects covered range from aviation and urban mass transport safety to pipeline safety and transportation of hazardous materials on all types of carriers, as well as security in all modes of transportation.

But best of all: TSI makes safety rules work out in the transportation world.



*Art Bensmiller, TSI's hazardous materials manager, explains the workings of a gas cylinder valve to students (left to right) Robert Keener of Knoxville, Tenn., and Dick Boyle of Los Angeles.*

*FAA students Richard F. Brandiger (left) of the Rapid City, S.D., GADO and Dominic J. Chemello of the Minneapolis GADO examine the twisted blades of a propeller taken from a wrecked aircraft.*

*Students set up a passenger security gate in their classroom for simulating weapons and explosives screening at airports.*


**By Theodore Maher**

# DIRECT LINE

**The following is a correction to part of the response provided to this query, which appeared in the April issue:**

**Q Travel to and from training assignments for journeymen and new hires is done on government time. However, travel to the Management Training School at Lawton, Okla. for management and supervisory personnel is scheduled for Sunday. I realize that time may be short, and it is necessary to start classes on Monday at 8:00 a.m., but why the difference between supervisory and non-supervisory personnel? Why, at least, can't compensatory time be given for travel on days off?**

A As you stated, it is sometimes necessary to start training at times that result in employees' traveling on their normal nonworkdays. The distinction, however, between supervisory and nonsupervisory personnel is not the basis for deciding whether or not travel is required on employees' own time. The FAA tries to design all its training so that travel can be performed on duty days. Unfortunately, it is not always feasible to schedule courses at MTS so that travel can be performed on duty days. Both supervisory and nonsupervisory employees attend these courses. FLSA-exempt employees cannot be given compensatory time off for traveling on nonduty days because travel to these courses is not considered to be hours of work under Title 5 overtime pay provisions. Under FLSA regulations, travel that is authorized and performed by a nonexempt employee during corresponding hours on a nonworkday is considered hours of work, and the nonexempt employee would be given FLSA overtime pay for such travel time.

**Q What exactly is FAA, DOT and CSC policy on a husband and wife assigned to the same facility? Both are full-performance level at the same grade and step. Neither supervises the other. Neither demands the same shift or days off. Both are aware that possible career-goal restrictions are now there, where they weren't before. Is assignment policy different in various level facilities?**

A Agency regulations on employment of relatives (nepotism) are found in Order PT P 3330.9, Internal Placement Handbook, Para. 201. The directive, which covers all three agency requirements on the subject, should be available to you in your facility or through your personnel office. Check with your supervisor to see if regional or local supplements have been issued that also affect your situation. The national directive states that when a husband and wife work in the same facility, the situation could create a problem if one of them may directly or indirectly supervise, control or influence the work or the employment status of the other or the affairs of the organizational unit in which the spouse is employed. The directive applies equally to all facilities. Supervisors and personnel specialists are responsible for making staffing adjustments when work assignments conflict with the above policy. There is no intent to unreasonably restrict careers in the application of this policy. If you feel that your career is being restricted, your supervisor can discuss the options available to minimize the impact.

**Q I have approximately 39 years of service. Years ago, I wanted to pay in Social Securit... as well as Civil Service retirement. I was vised that this could not be done. I had about ei years in military service that is to be applied to my Civil Service pension when I retire. I had very little Social Security time. I understand that you can either apply this time to your Civil Service retirement or that anyone who was in World War II has his Social Security all paid up. I met someone who said he had very little Social Security coverage, and he retired from a government agency a few years ago and he receives a Civil Service pension and Social Security benefits without having paid in on Social Security. He said that after 1956, your Civil Service time counts for both. I checked with a Social Security office and they said that is true. If that is so, I think the law should be changed, as anyone that was in the service during the war is more entitled to double coverage.**

A Normally, honorable active military service performed on or before Dec. 31, 1956, is credited toward meeting eligibility requirements for Civil Service retirement and in computing the annuity. The Civil Service Commission and the Social Security Administration confirm that such service is used first for computing Civil Service retirement benefits. However, if it would not increase the amount of the Civil Service retirement annuity, it may then be used in computing Social Security bene The service cannot be used for both benefits. To preclu double credit being given for the same service, CSC and

SSA coordinate with each other when making their determinations for benefits. In fact, SSA would require a written statement from CSC that it was not using such service in the annuity computation before it would credit it toward Social Security benefits. Military service performed after Dec. 31, 1956, unless covered by military leave with pay from a civilian position, is first used in computing Social Security benefits and would be excluded from Civil Service retirement benefits if the individual is eligible for monthly old-age benefits under Social Security at the time the annuity computation is made. If the individual is not eligible for Social Security benefits at the time he retires but later becomes eligible, the annuity will be recomputed and the military service then excluded. The exclusion would be effective on the first day of the month in which the individual becomes eligible. The exclusion would take effect whether or not the employee applies for Social Security benefits. The employee has no option in such cases. The only situation t we are aware of where credit can be given under both ems is civilian service where, by the nature of the appointment (i.e.: temporary), the employee was placed under Social Security laws. This service would be credited towards Civil Service retirement benefits only if the employee later becomes subject to the Civil Service Retirement System and makes the necessary deposits to the fund. Crediting the service of retired military employees is more complicated; therefore, employees should contact their servicing Personnel Management Division for assistance in their particular situations. The references for our reply can be found in Federal Personnel Manual Supplement 831-1 and Appendix F, Chapter 83, Title 5, United States Code.

**Q Please define the term "critical facilities" referred to in Handbook 3330.1A, Merit Promotion Program, Para. 42e. Are there any FAA or Civil Service requirements that "critical facilities," as used above, be designated in writing at the regional or local level? I've tried unsuccessfully to get these questions answered by my immediate supervisor or a regional representative.**

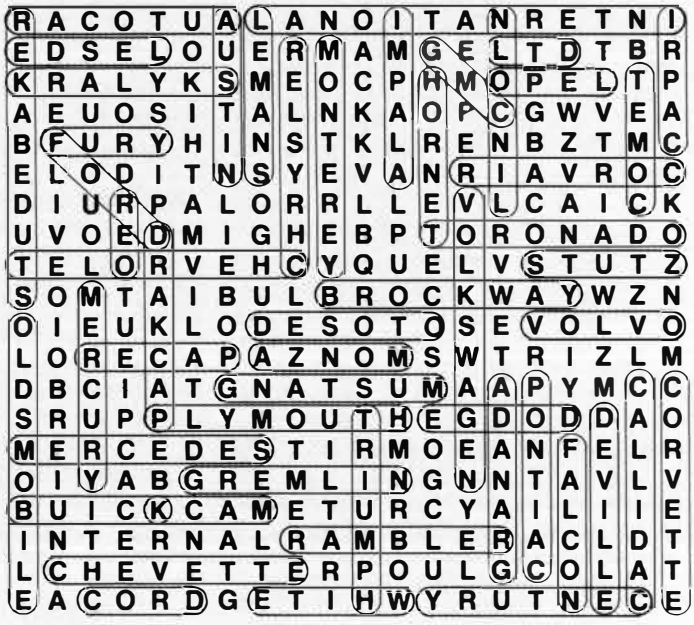
A Your region has no regional document, and, at the present time, there is no national document that defines the term "critical facilities," nor are we aware of any agency or Civil Service Commission requirements this term be defined in writing on a regional or local is. Determinations within your region are made on a facility-by-facility basis, with consideration given to such factors as the facility's authorized staffing level versus staffing needs, the number of vacancies within the facility, and the skill level of the facility, measured in terms of the percentage of full-performance-level specialists relative to the authorized staffing level.

Is there something bugging you? Something you don't understand? Tell it to "Direct Line." We don't want your name unless you want to give it, but we do need to know your region. We want your query, your comment, your idea—with specifics, so that a specific answer can be provided. All will be answered here, in the bulletin-board supplement and/or by mail if you provide an address.

Better two-way communication in "Direct Line" is what it's all about.

## Word Search Answer

Puzzle on page 12



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# Heads Up

## ALASKAN REGION

A new assistant chief at the Anchorage ARTCC is **Frank Jackson, Jr.**

## EASTERN REGION

Now an assistant chief at the Teterboro, N.J., Tower is **William J. Biggio** . . . **Thomas E. Griffith** of the Richmond, Va., Tower has been named an assistant chief at the Griffiss AFB RAPCON . . . Selected for chief of the Teterboro Tower was **Donald W. Schultz** from the Buffalo, N.Y., Tower . . . Moving into the Syracuse, N.Y., Tower as an assistant chief is **Steve P. Simon** from the Aeronautical Center . . . Moving up at the LaGuardia Tower in New York as an assistant chief is **James A. Tuzzolo.**

## GREAT LAKES REGION

TID **Creighton R. Hill** has garnered the field office chief's job at the Moline, Ill., AF Sector . . . Transferring from the West Chicago, Ill., FSS, **Gary G. Elliot** is taking an assistant chief's spot at the South Bend, Ind., FSS . . . Named an assistant chief at the Terre Haute, Ind., FSS was the Aeronautical Center's **Gary L. Henry** . . . Selected as an assistant chief for the Detroit FSS was **Antonio Lopez** from Headquarters . . . Also out of Washington comes **Robert J. Maxson, Jr.,** to the Dayton, Ohio, Tower as its deputy chief.

## NORTHWEST REGION

**Robert G. Schultheis** has transferred to the Spokane, Wash., Tower as its chief from the Boise, Ida., Tower.

## PACIFIC-ASIA REGION

**Dennis H. Wilham** has made a move from Alaska to become the chief of the East Asian International Field Office in Tokyo.

## ROCKY MOUNTAIN REGION

The Sioux Falls, S.D., Tower has a new assistant chief in **John A. Yarman,** who hails from the Chicago-O'Hare Tower.

## SOUTHERN REGION

**Harrison B. Barger** has been promoted to assistant chief at the Crossville, Tenn., FSS . . . The Jackson, Miss., AF Sector has advanced **John B. Doolittle** to field office chief . . . A new assistant chief at the Jacksonville, Fla., ARTCC is its own **David D. Mudd** . . . **Gerard F. Smith** was selected to be chief of the Daytona Beach, Fla., Tower . . . **Mark A. Ogle** of the Atlanta ARTCC god the nod as an assistant chief at the San Juan, Puerto Rico, ARTCC.

## SOUTHWEST REGION

The chief of the Cotulla, Tex., FSS, **George E. Wadkins,** has transferred into the McAllen, Tex., FSS as chief.

## WESTERN REGION

**Charles F. Spelman** of Radio-Luke AFB, Ariz., has been selected as an assistant chief at the Los Angeles ARTCC . . . TID **Ettori P. Milani** of the Oakl' Calif., AF Sector has gotten the jc field office chief at the Concord, Ca. AF Sector.

Since "Heads Up" paints a widely varying picture from month to month of who's who and where, you may be interested to know that the source of this material is the Personnel Management Information System computer, which stores data on all personnel actions on all FAA employees. Where the data in the system is complete enough, "Heads Up" reports on all individuals selected for Air Traffic chiefs, deputy chiefs and assistant chiefs; Flight Standards and Airports office chiefs and assistant chiefs; Airway Facilities sector managers, assistant managers, SFO chiefs and assistant chiefs; and all other office branch chiefs. Just grade promotions are not reported. Once in a while, a temporary promotion sneaks through, and for that, we apologize.