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

Research Highlights

FAA Technical Center photographer Robert Michael leans into an apparently blazing aircraft, but the fire is on the other side of the fuselage and a fire-blocking curtain.

The Tech Center is testing various fire-blocking materials to determine the feasibility of using curtains to block radiant heat from entering the cabin interior during a fuel fire outside the aircraft.

The work was suggested by the Airline Pilots Association after the issue was raised in the final report of the Special Aviation Fire and Explosion Reduction (SAFER) committee. The center had been testing blocking curtains on a one-fourth scale for about two years. Recent tests seemed to warrant full-scale testing.

According to Dr. Thor Eklund, supervisory aerospace engineer in the Fire Safety Branch, "Materials like polybenzimidazole (PBI) have shown the capability of remaining intact for several minutes while exposed to fuel fires 20 feet by 20 feet."

"FAA's mission is to promote the safe and efficient use of the nation's airspace, facilities and the vehicles that travel the airways, To achieve this objective, we should control but not constrain aviation; we should regulate but not interfere with free enterprise of competitive purpose; and we should recognize that most air travelers do so by means of scheduled air carriers. We have a responsibility to consider their priority but not to the extent that it excludes the single individual from enjoying man's greatest achievement—solo flight. Above all, we must remember that the airspace belongs to the users and not the FAA."

—J. Lynn Helms

The cover: A frangible tower for medium-intensity approach lights for Beckley, W. Va., blends unobtrusively into a winter scene. Photo by James White
Engineer
Pittsburgh, Pa., Sector

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The AT Director's

. . . the system is safe . . . we are working to correct problems . . . we are steadily returning the system to its former capacity.

Q As we turn the corner into 1983, could you give us some personal observations that would give the readers a feeling for how the air traffic control system is working?

A My personal observations may be a little one-sided, but I'm very encouraged and optimistic by the progress we have made in rebuilding the system over the past year. We're now back to handling more than 90 percent of the prestrike traffic. It's not problem-free, but the system is working very well.

Gut feeling is one thing, but I'm basing this opinion on a lot of effort by many people in examining and evaluating the system. During the past year, several blue-ribbon groups outside the government—the National Transportation Safety Board, the Flight Safety Foundation and the Airline Pilots Association, for example—have dissected our operation. My Evaluation Staff has visited 156 facilities since the strike and, as did the outside groups, has identified both our problems and our progress in meeting facility training needs.

What's important is that all do agree the system is safe, that we are working to correct problems and that we are steadily returning the system to its former capacity. In fact, in some respects, it's already working better. There is very little airborne holding. Traffic is being metered into the system to ensure an orderly flow of traffic. Delays are occurring on the ground 97 percent of the time, compared to 45 percent before the strike, saving millions of gallons of fuel.

Overall, I think we're doing fine.

Q You had indicated that the cornerstone of the ATC recovery effort would be the restructuring of the work force. Please explain.

A Previously, newly hired air traffic personnel assigned to a center or a tower with a radar approach control could advance to full performance level without competition. It was automatic upon meeting time-in-grade and training requirements. This led to many facilities having more full performance level personnel than they needed.

To correct this, a structured staffing approach will establish three working levels, The first level is a non-2152 position called the flight data processor, which has already been permanently assigned in many facilities. The second and third levels will be the nonradar and radar controllers. Competition will be required to advance into the radar level. Arrangements for this staffing process are being wrapped up now.

Perspective

Raymond Van Vuren Looks at the System and Its Work Force

Q On the other side of the staffing coin, how do you envision the new role of the supervisor in the air traffic system of the future?

A The first-level supervisors have always held an essential position within the agency. After the strike, they were critical in holding the system together and proved to all skeptics that, in addition to being part of management, they certainly had retained their abilities to move irplanes.

Their role now? They are the nucleus of the system, and their operational and supervisory talents are directly needed to provide leadership in the rebuilding and the maintenance of the system.

In turn, FAA must provide them additional training in both human relations and management skills to enable them to continue to perform effectively in maintaining the integrity of the system.

Q On any level of staffing, the key seems to be the human relations factor. What would you say to skeptics who say that nothing substantial will come out of the Jones Report and that the agency will be facing similar labor/management problems not too far down the road?

A I think we've already overtaken that doom and gloom. Our actions since the strike already contradict that prediction.

The Human Relations Committees re not cosmetic devices. Already underway at the Washington, regional and field facility levels, the committees have as their purpose the providing of a channel for direct employee input into realistic improvement in the quality of worklife.

We also established the Facility Advisory Board and the SUPCOM (Supervisory Committee), which are proving to be extremely useful groups working toward the solution of both technical and personnel problems. We are now putting the finishing touches on the terminal, center and flight service station organization orders, which promote these employee avenues for input.

Whether in the private sector or in FAA, program success is dependent on the participation of everyone—from the newest employee to the Administrator—in working with a cooperative, understanding attitude to reach workable solutions.

The Administrator has made his support of these programs very well known. I believe this same positive and participatory attitude should be shared by all. To paraphrase the philosopher, if we've learned from our mistakes and have taken steps to correct them, we won't be doomed to repeat them.

Q Specifically relating to the development of air traffic programs and plans and to the decision-making process, how is the Air Traffic Service increasing controller participation?

A As you know, we have always had vehicles for controller input into the decision-making process—the Facility Air Traffic Technical Advisory Committee (FATTAC) and the Controller's Operational Procedures Committee (COPCOM).

In assessing our recovery plans after the strike, we realized that the functioning of these two groups was seriously impaired by the huge loss of personnel in the terminal and en route options. To revitalize them, it was decided that COPCOM would be eliminated and FATTAC replaced in the terminal and center options. FATTAC remains in the flight service stations.

Our replacement for the two is the Facility Advisory Board (FAB). While the purpose of the former was to obtain controller input on procedural and technical matters, FAB ensures that input from all segments of the facility work force is considered in the development and application of personnel policies and practices in addition to the procedural and technical matters. We believe that we have blended the best of the old programs and added a few new dimensions.

In addition, about two years ago, we formalized a process intended to include field personnel in the developmental and evaluation processes associated with new systems. The process is in motion, and system requirements teams are presently looking at National Airspace System Plan programs.

Q Despite, perhaps, an improving climate, do you think the controllers will form another union?

What are your personal feelings about that if they do?

A Air traffic control is a unique occupation, and the people in it have special needs and concerns. If their perception is one of not having these interests met, they may seek to establish a collective voice to represent them. It is our task to strike a balance between those interests and managing the nation's ATC system. If a union is formed, we are resolved to work within those parameters and will strive to be just as responsive to their collective interests as we would to their individual interests.

Q Nearly a year after the original announcement, what are the current plans for the consolidation of ATC facilities?

A Our plans have not materially changed. Available current technology provides the capability to integrate and consolidate airspaces and to operate in a control environment where the more-efficient use of airspace, equipment and manpower will be prevalent. Ultimately, there will be fewer air traffic control facilities. I wish to add, however, that the locations depicted in the NAS Plan were intended for illustrative purposes only.

All terminal approach control functions are to be consolidated into fewer facilities or into en route centers. The only minor change is that we are now looking at Area Control Facilities rather than terminal hubs. These would control some of the airspace that has traditionally been associated with en route control facilities.

The flight service station system will be consolidated into 61 automated facilities. To date, only a few of the 61 sites have been identified, and none of the center consolidations or Area Control Facility sites have been identified. As each new automated FSS becomes operational, the surrounding FSSs will be consolidated within 12 months of its commissioning.

If we could match staffing more closely with activity, we could greatly increase the capacity of the system.

Q While that happening for the FSSs is still in the future, the number of flight service specialists has decreased markedly in the last few years. Yet the demands for flight services has increased. Why is this so? Are there any plans to increase staffing?

A Actually, the demand for services decreased by 5.8 percent between fiscal year 1979 and fiscal year 1981. During the same period, the number of employees dropped 7.6 percent. Communications technology has exploded, offering new opportunities and lower costs than existed even 10 years ago. As a result, there is no longer the need for the dispersed and manpower-intensive installations that were originally required.

The problem is that many of the people are in the wrong places for us. We had planned to close 32 low-activity FSSs in fiscal 1982 and part-time others that currently operate 24 hours a day, but Congressional re-

strictions prevented us from doing so. Employee productivity at the lower-activity FSSs is only about one-third that of the busier stations, and activity on the mid-shift is near zero at many locations. If we could match staffing more closely with activity, we could greatly increase the capacity of the system and reduce the delays pilots encounter in obtaining briefings. Unfortunately, the Congressional support and approval to accomplish these needed actions have not yet materialized.

Q Continuing on the same track for a final question, is some kind of program being developed to

help the flight service specialists we have make the transition to an automated environment?

A Within the flight service option, there basically will be two major transitions to the automated environment. The first will be the installation of automated equipment in selected stations. The second transition is to the Model 2—which will provide graphics, weather radar and the first direct user access—which is more complex, for it will require the commissioning of new facilities and the consolidation of existing ones.

A joint regional-headquarters Air Traffic team is in the process of developing a national transition plan, which will address automation training, certification, facility staffing, personnel-selection policies and relocation. As soon as a draft plan has been prepared, flight service specialists will be given the opportunity to comment and make recommendations. Once the plan is completed, each specialist will be notified at least 12 months in advance of the planned action.■

Charles Andrasco (left), manager of the Flight Service Automation System Enhancements Project, checks over a computer-generated Aviation Route Forecast (ARF) (see story "Automated Weather Wisdom," FAA WORLD, June 1981) with meteorologist Frank Melewicz, while former USAF navigator Myron Clark prepares input data for another ARF. All members of headquarters' Systems Development Division, they had recently conducted a successful four-week real-time test of 600 pilot briefings.

People

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

Aeronautical Center

■ **Thomas M. Cassidy,** unit chief in the Enroute Section of the Air Traffic Branch, FAA Academy.

■ **James L. Ellis,** chief of the Employment Branch, Personnel Management Division, from the Compensation Branch.

■ **Charlesan R. Neugebauer,** deputy chief of the Air Traffic Branch, FAA Academy, from the Andrews AFB Tower, Camp Springs, Md.

■ **Burton St. John, Jr.,** unit chief in the Special Services Section, Air Traffic Branch, FAA Academy.

Alaskan Region

■ **Leonard J. Canter, Jr.,** team supervisor at the Fairbanks Flight Service Station, from the McGrath FSS.

■ **Peggy L. Smith,** chief of the Program Support Branch, Airway Facilities Division.

■ **Jim C. Walton,** chief of the Employment Branch, Personnel Management Division, from the PMIS Evaluation Staff.

Central Region

■ **Robert G. Aguilar,** chief of the Gardner, Kan., Air Facilities Sector Field Office, Kansas City, Mo., AF Sector.

■ **David M. Convy,** chief of the Dubuque, Iowa, Tower, from the Waterloo, Iowa, Tower.

■ **Bonnie S. Hrabko,** chief of the Spirit of St. Louis Tower in Chesterfield, Mo.

■ **Eugene D. Olsten,** team supervisor at the Lambert St. Louis International Airport Tower.

■ **Michael D. Paul,** team supervisor at the Lambert St. Louis International Airport Tower, from the Spirit of St. Louis Tower.

■ **James A. Todd,** manager of the National Communications Center (NATCOM) AF Sector in Kansas City, Mo., from the Kansas City International Airport Tower AF Sector.

■ **Harold M. Wolters,** team supervisor at the Lambert St. Louis Tower, from the Offutt AFB RAPCON in Bellevue, Neb.

Eastern Region

■ **George A. Dodelin,** team supervisor at the LaGuardia Tower, New York, from the Plans and Programs Branch, Air Traffic Division.

■ **David S. Fosdick,** team supervisor at the Poughkeepsie, N.Y., Flight Service Station.

■ **Charles R. Kelly, Jr.,** team supervisor at the New York ARTCC.

■ **Robert W. Luecht,** unit supervisor at the Allentown, Pa., Airway Facilities Sector Field Office, Philadelphia AF Sector, from the New York TRACON AF Sector.

■ **Maxwell C. Peck, Jr.,** chief of the Niagara Falls, N.Y., Tower, from the Buffalo, N.Y., Tower.

■ **James J. Tierney, Jr.,** assistant manager of the New York ARTCC AF Sector.

Great Lakes Region

■ **Andrew Detroi,** chief of the Minneapolis, Minn., General Aviation District Office, from the Columbus, Ohio, GADO.

■ **William H. Fischer, Jr.,** chief of the Minot, N.D., Flight Service Station, from the Aberdeen, S.D., FSS.

■ **Loren G. Gardner,** chief of the Bloomington, Ill., Tower, from the Champaign, Ill., Tower.

■ **Nicholas Guglielmi,** assistant chief at the Chicago ARTCC.

■ **Wallace F. Krumm,** team supervisor at the Sioux Falls, S.D., Tower, from the Terminal Section, Air Traffic Branch, FAA Academy.

New England Region

■ **Johnny J. Boyce,** evaluation & proficiency development officer at the Boston Logan Tower, from the Plans and Programs Branch, Air Traffic Division.

■ **Ronald G. Cooper,** team supervisor at the Boston Logan Tower, from the Burlington, Vt., Tower.

■ **Richard J. Haldeman,** deputy chief of the Windsor Locks, Conn., Flight Service Station, from the Albany, N.Y., FSS.

■ **Earl C. Morris,** chief of the Hanscom Field Airway Facilities Sector Field Office in Bedford, Mass., Logan Tower AF Sector.

Northwest Mountain Region

■ **John M. Coppinger,** deputy chief of the Seattle-Tacoma, Wash., Tower, from the Operations Branch, Air Traffic Division.

■ **Charles C. Benson, Jr.,** assistant chief of the Casper, Wyo., Flight Service Station, from the Denver, Colo., FSS.

■ **Ray S. Lansbery,** data systems officer at the Denver, Colo., ARTCC.

■ **Alfred J. McAllister,** team supervisor at the Salt Lake City, Utah, ARTCC.

■ **Willard R. Probert,** crew chief in the Electronics Installation Section, Establishment Engineering Branch, Airway Facilities Division.

■ **James D. Vigil,** team supervisor at the Arapahoe County, Colo., Tower.

Southern Region

■ **Victor C. Byrd,** chief of the Tri-City Flight Service Station in Bristol, Tenn., from the Dothan, Ala., FSS.

■ **Michael A. Commander,** assistant chief at the Memphis, Tenn., ARTCC.

■ **James R. Dooly,** unit supervisor in the Atlanta, Ga., Hub Airway Facilities Sector.

■ **Walter M. Ferguson,** unit supervisor in the Atlanta Hub AF Sector.

■ **John W. Hayhurst,** team supervisor at the Melbourne, Fla., Flight Service Station, from the Greenwood, Miss., FSS.

■ **Robert C. Lagen, Jr.,** data systems officer at the Memphis ARTCC.

■ **Robert J. McElhenney,** area officer at the Jacksonville, Fla., ARTCC.

■ **Tilton C. Meuninck,** data systems officer at the Miami, Fla., International Airport Tower.

■ **Richard A. Post,** chief of the Crestview, Fla., FSS, from the Nashville, Tenn., FSS.

■ **John E. Powell,** team supervisor at the Gulfport, Miss., Tower, from the Terminal Systems Branch, Automation Division, headquarters Air Traffic Service.

■ **Donald F. Thomas,** assistant systems engineer in the Atlanta, Ga., ARTCC Airway Facilities Sector.

Southwest Region

■ **Gene M. Barnett,** team supervisor at the Love Field TRACAB in Dallas, Tex., from the Houston, Tex., Intercontinental Tower.

■ **Robert J. Gobel,** chief of the Tyler, Tex., Tower, from the Little Rock, Ark., Tower.

■ **James R. Lynch,** team supervisor at the Monroe, La., Tower.

■ **James R. Nausley,** deputy chief of the Dallas FSS, from the Air Traffic Operations Branch, Air Traffic Div.

■ **Vollie H. Rhoades, Jr.,** team supervisor at the Fort Worth, Tex., FSS, from the Lubbock, Tex., FSS.

■ **Alton D. Scott III,** team supervisor at the Love Field TRACAB in Dallas, from the Terminal Section, Air Traffic Branch, FAA Academy.

Western-Pacific Region

■ **Charles B. Aalfs,** section chief in the Airspace and Procedures Branch, Air Traffic Division, from the Los Angeles Tower.

■ **Dale Z. Brown,** chief of the Modesto, Calif., Tower, from Castle AFB, Merced, Calif.

■ **Michael J. Fitzgerald,** team supervisor at the Reno, Nev., Tower, from the Oakland, Calif., TRACON.

■ **Frank W. Haigler,** chief of the Grand Canyon, Ariz., Tower, from Travis AFB, Fairfield, Calif.

■ **Laurel L. Thompson,** unit supervisor at the Oakland, Calif., ARTCC Airway Facilities Sector.

■ **William G. Wines,** chief of the Telecommunications Staff, Airway Facilities Division, from the Program and Planning Branch.

on the job

The Tech Center M

The aircraft mechanics and inspectors at the FAA Technical Center are part of the second largest aircraft maintenance team in the FAA. One of eight agency maintenance bases, it takes a back seat in size only to the Aeronautical Center's Aircraft Services Base.

The 73-member team is responsible for the inspection, maintenance and equipping of a dozen Tech Center aircraft, plus assisting official transients and any emergencies.

Its first priority is a fleet of five Jet Commanders used by the Flight Inspection Field Office based at the center, which checks navaids and approach aids throughout the Northeast. The team also maintains and equips with special-project avionics the center's "flying laboratories"—seven aircraft used for research, development and testing of new FAA systems. These include two Boeing 727s, two Convair 580s, an Aero Commander and Sikorsky CH–53 and S–76 helicopters.

Says Robert Hubbard, manager of the center's Aviation Facilities Division, "We may be the agency's second largest maintenance base, but our team is FAA No. 1." ■

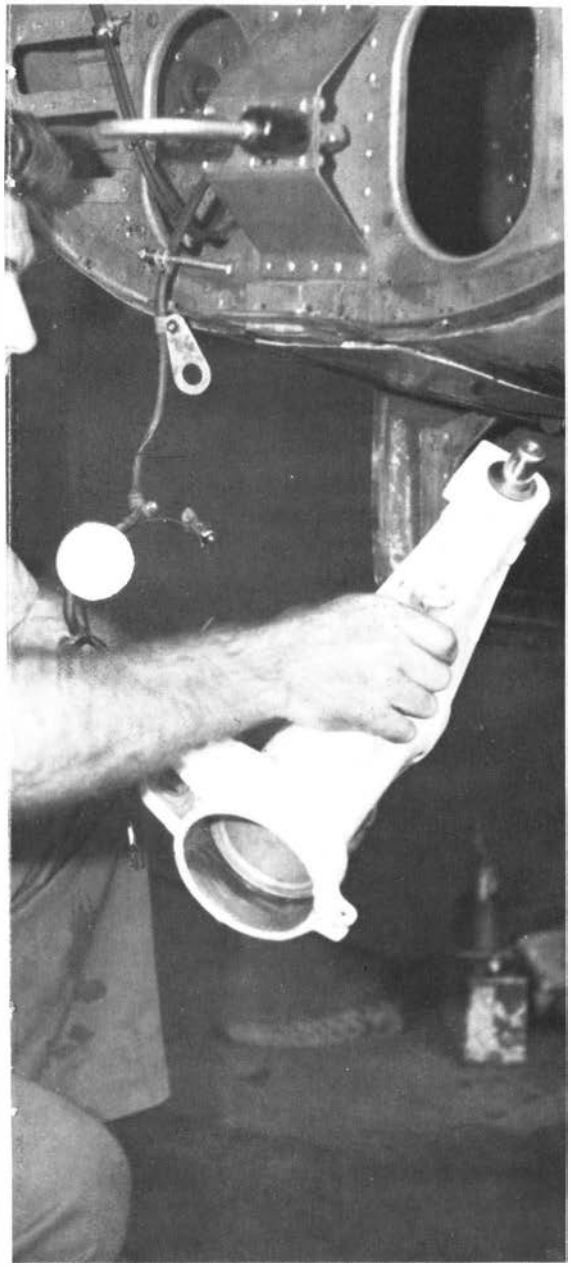
Aircraft mechanic Bill Sheehan (left) and crew chief Lou DeStefano prepare for an engine run on an aircraft they serviced at the Tech Center maintenance base.

The only woman on the maintenance team, Vera Mangold is responsible for volumes of aircraft documentation.

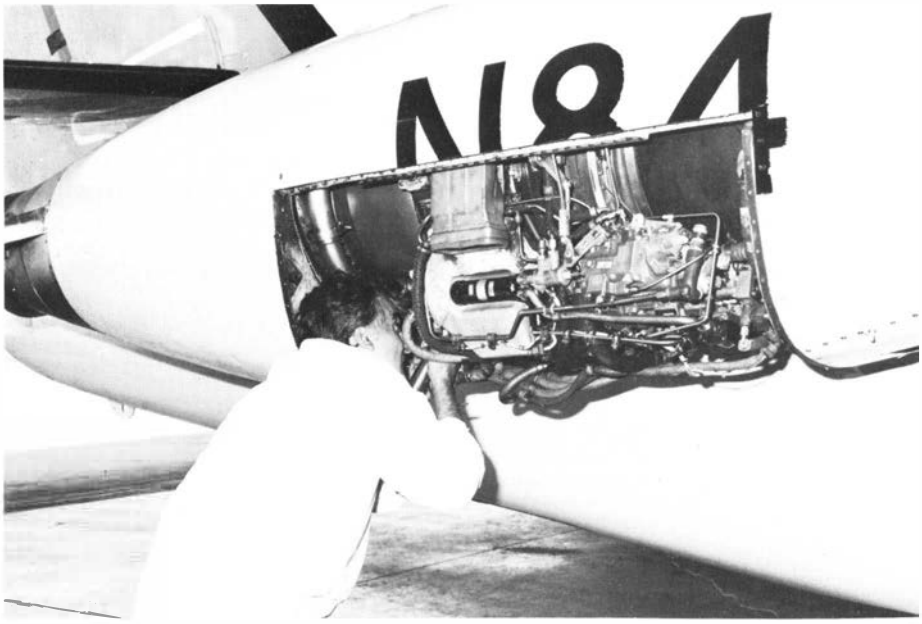
Aircraft mechanic Jerry Lismore replaces a Jet Commander's wheel. He joined the team as a Comprehensive Employment Training Act (CETA) employee and worked his way up to mechanic from tool-and-parts attendant.

Ed Boise, an aircraft mechanic Year for Technical Support Es tools, parts and devices that s

Maintenance Team

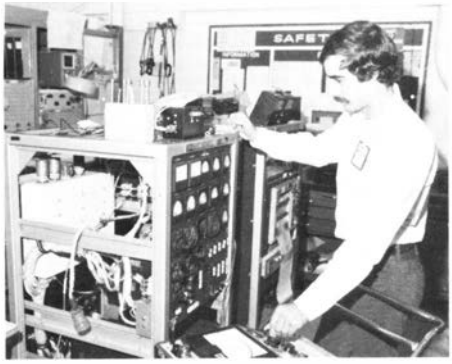


leader, was named Distinguished Employee of the cellence for 1981. He has designed and fabricated ved considerable time and money.



During a field emergency at Westover Air Force Base, Mass., aircraft mechanic Tony Vicari flew up to repair a Jet Commander. Tech Center photo

Louis Fiorelli, an aircraft mechanic in the modification shop, cuts metal to be used for aircraft structural repair.



Avionics technician Paul Michel, who came to the center as a cooperative-education student from nearby, has a science-electronic technology degree.

Photos by Ed Hershberger

By Nick Komons
The Agency Historian, he is the author of "Bonfires to Beacons"—a history of early Federal aviation policy—and other published works.

You Can't Go Home Again . . .

Except By Buying a Ticket

Jose Marti Airport, Havana. 12:30 a.m., Sunday, Nov. 12, 1972—Another miracle was demanded of William R. Haas, captain of a crippled Southern Airways DC–9.

Earlier, his aircraft laden with 29 passengers, a seriously wounded copilot, two flight attendants, three gun-toting hijackers and $2 million in ransom, Haas had taken off from McCoy Air Force Base near Orlando, Fla., after law enforcement officers had shot out all the DC–9's tires in a desperate attempt to keep the plane on the ground. When the aircraft reached the end of the runway, it was barely six feet off the ground and limping along at 115 mph, instead of the normal 167.

It had all started at 7:20 p.m., Friday, in Birmingham, Ala., where the hijackers had slipped through Southern's security system, commandeered the flight and put it through a harrowing, nightmarish 29-hour ordeal, hopscotching to Jackson, Miss.; Cleveland; Toronto, Canada; Lexington, Ky.; Chatanooga, Tenn.; Havana; Key West, Fla.; and Orlando, before shooting the copilot during the last takeoff. And now, Havana, again, the favorite haven of air pirates, where Haas was circling, burning off fuel for a flat-tire landing on a foam-smothered runway.

The Cubans had prepared for the worst: They had ringed the landing area with combat troops, 27 ambulances and seven fire trucks. Fidel Castro, reportedly in a rage, was in the control tower.

At 12:32, Haas touched down. The big jet kicked up sparks as it slid along the runway before coming to a shuddering, heart-throbbing stop. Castro grabbed Haas, lifted him into the air and shouted, "Magnifico! Magnifico!" The hijackers were stuffed into four-by-four cells. A corner was about to be turned in the battle against air piracy.

It had seemed that the corner would never be turned, so stubborn had this problem been in defying solution. "Hijacking is the most perplexing dilemma I have faced during my tenure as [FAA] administrator," said an exasperated John Shaffer in December 1971.

The United States had wrestled with air piracy for 10 frustrating years. Congress had made hijacking a crime punishable by death or imprisonment of not less than 20 years; a large, especially trained armed force of sky marshals flew shotgun on selected flights; a bloc of concerned nations adopted two air piracy conventions; and FAA issued a series of antihijacking rules. Though these measures had cut down the number of successful hijackings, the back of the phenomenon had by no means been broken.

In the summer of 1972, one hapless passenger found himself on hijacked flights twice within a 24-hour period. Some people stopped flying. Gov. Ronald Reagan of California stayed off commercial flights for 10 months. "We felt it was foolhardy . . . to take a chance on the governor's being on a plane that was hijacked," a Reagan spokesman explained.

It was in this kind of exasperating, near-fatalistic atmosphere that the terrifying hijacking of the Southern DC–9 occurred. The incident, passing the limits of public toleration, provided the impetus for the FAA to issue, 10 years ago this month, on Dec. 5, 1972, the crucial emergency rules that finally brought hijacking in the United States under control.

The rule's strength was its indiscriminateness. It treated all passengers as potential hijackers. Previously, air carriers were required to screen only those passengers who fitted a hijacker "profile"—about one percent of the 500,000 passengers boarding airliners daily. Under the December 5 emergency rule, U.S. air carriers were required, beginning on Jan. 5, 1973, to (1) inspect all carry-on baggage for weapons or other dangerous objects and (2) screen each passenger with a metal detector (magnetometer) before boarding or, (3) if a detector was not available, conduct a physical search, or pat down. If a passenger refused to consent to a search, he or she would not be permitted to board.

The rule further required, begin-

ing on Feb. 5, 1973, that the nation's 531 air carrier airports have a law enforcement officer in the boarding area during the screening and boarding process.

The Southern Airways hijacking also provided the impetus—and the cushion of public support—for the Nixon Administration to reach a hijacking agreement with Cuba.

Havana, as mentioned, had been the favorite destination of U.S. hijackers. Between 1961 and 1972, hijackers commandeered 87 U.S.-registered aircraft to Cuba. Castro returned the aircraft, passengers and crews to the United States, but, during the early 1960s, treated the hijackers as if they were political refugees, though few, if any, were politically motivated. Castro was unwilling to return the hijackers to stand trial in the United States while the United States provided a haven for thousands of fleeing Cuban refugees, some of whom, Castro alleged, committed criminal acts while fleeing.

By the late 1960s, however, when the air piracy epidemic was at its peak and the character of the hijackers had changed from Cubans wishing to return to their homeland to extortionists, murderers and other assorted criminals, Castro began clamping them in jail. He also gave signs that he wanted to rid Havana of its reputation as a safe haven for air pirates.

These signs were evident during the Southern Airways incident, when Castro behaved like a man who had lost patience with the whole ugly business. Indeed, the way the Cubans handled the episode gave every indication that they would not be averse to negotiating a hijacking agreement with the United States.

Washington jumped at the opportunity. By November 25—less than two weeks after the incident—through the good offices of the Swiss Embassy in Havana, negotiations began, culminating in a memorandum of understanding between the two nations on Feb. 15, 1973. The pact, which was to run for five years, called for both nations to extradite or punish with "the most severe penalty" any person "who seizes, removes, appropriates or diverts from its normal route or activities an aircraft or vessel" of one country and takes it to the other.

The emergency rule of December 5 and the pact with Cuba ended the hijacking fever. "The news . . . is so good, it's almost incredible," said the Boston *Herald Advertiser* after the

country went five months without a hijacking attempt and iix months without a hijacking. The news remained incredibly good. Over the six years 1973–1978, only one U.S. airliner was successfully hijacked.

Screening all passengers and all carry-on luggage and posting law enforcement officers at boarding areas had kept metal weapons off aircraft. But it didn't provide total security against hijacking or sabotage, nor did it protect U.S. flag carriers, which flew in and out of countries with less-than-adequate security systems.

In December 1975, when a high-intensity bomb exploded in a coin-operated locker at LaGuardia Airport in New York, killing 11 people, it drew attention to a glaring weakness in the security system: the lack of adequate control over checked baggage. A checked bag containing an explosive could be a greater threat to an aircraft than a crazed hijacker. Hence, the explosion prompted the FAA to issue a new rule, effective April 15, 1976, that required airlines to institute an approved program for screening checked baggage.

Other problems were not so easily dealt with. In September 1976, five Croatian separatists hijacked a Chicago-bound TWA flight to Paris, carrying nothing more menacing than fake explosives. The incident posed the further problem of how to spot hijackers with simulated weapons or dangerous nonmetallic materials that could not be detected by a magnetometer.

Flammable liquids, particularly gasoline, posed yet another problem because they can be concealed in innocent-looking containers. They were the favorite weapons of the *Marielistas,* the Cuban refugees who came to the United States in the spring of 1980 on the boatlift from Mariel and then touched off the most recent wave of air piracy.

The wave, which was concentrated in the last half of 1980 and resulted in the successful hijacking of 11 U.S. air carrier aircraft, now appears to have run its course, owing largely to the adoption of special screening measures for flammable liquids and to the cooperation of Cuba, which announced that it would take drastic penal measures against hijackers or return them to the United States.

By Ed Stein, *Rocky Mtn. News*

In fact, two of the these hijackers were returned to the U.S. aboard an FAA aircraft and were prosecuted in accordance with U.S. policy. This was significant because the 1973 pact with Cuba was officially abrogated before the end of its five-year term when Castro blamed the explosion of a Cuban aircraft on the United States. As a result, in 1981, *Marielistas* succeeded in commandeering only one U.S. air carrier aircraft to Cuba.

While the security system put into effect on Dec. 5, 1972, isn't infallible, it nevertheless has been a decide success. In the first nine years of its existence, nearly four billion people were screened and more than five billion pieces of carry-on articles were inspected. This led to the detection and confiscation of more than 23,000 firearms and resulted in more than 9,000 arrests.

At the same time, the incidence of hijacking in the United States has dropped dramatically. In the five years preceding the December 5 rule, an average or 27 hijacking attempts were made annually on U.S. air carrier planes; over the last 10 years, the average dropped to seven.

Not only are attempts down but so are the number of successful hijackings. In the five years preceding the rule, there was an annual average of 16.2 successful hijackings; since the rule, that figure has dropped to 2.1 a year. And no U.S. hijacking in the latter period has come even close to duplicating the harrowing scene of the Southern Airways incident. ■

'Handicap' Only a Point of View

FAA's Handicapped Employee of the Year Is a Doer

Bettina Brown is handicapped, but in competing against her, a lot of people would need to be assigned a handicap like a golfer.

Born with cerebral palsy in El Paso, Tex., from which she suffers involuntary movement and a speech impairment, she has risen far above her affliction.

A word-processing operator in the Western-Pacific Region's Airway Facilities Division, she joined the agency in November 1980. This fall, Brown was named FAA Handicapped Employee of the Year. While on a visit to the West Coast, Administrator Helms presented the award personally.

She holds an AA degree in creative writing, journalism and social sciences and has studied and is fluent in Spanish.

Brown was the co-author of a script for a documentary short feature called "Bettina," which was shown locally on the television program "It Takes All Kinds." This production won two Los Angeles Emmy Awards, and Bettina Brown received personal recognition from the Academy of Television Arts and Sciences as writer of the program.

For her participation in handicapped-awareness films and for forming various groups for the disabled, she has also received personal recognition for outstanding community service.

With her skills and accomplishments, the word "handicap" is perhaps only a point of view. ■

By Marjorie Kriz
A Great Lakes information specialist and former reporter, she has been published in the *Chicago Tribune* and *Chicago History* magazine.

The Good Hands People

The Minneapolis FIFO Shows What Makes It an Award Winner

Aircraft commander Will Koski listens to his copilot go through the Sabreliner checklist before taking off on a flight inspection for the Minneapolis FIFO.

Jim Davis, supervisor of the Minneapolis FIFO's procedures section, assists trainee Dolly Salisbury in computing an approach using a new navaid.

Electronics technician Don Stokes' office during a flight check is a compact, computerized array of avionics at the rear of a Sabreliner flight-inspection plane.

"While the job of controllers is to keep airplanes from hitting airplanes, ours is to keep airplanes from hitting things," says Jim Davis, capsulizing the work of a Flight Inspection Field Office.

Davis is the head of the procedures section of the Minneapolis FIF● and he speaks from the vantage point of a FIFO that won the Flight Standards National Field Office of the Year Award last summer.

A FIFO flight checks civil and military navigational and airport approach aids and designs procedures to be followed in using and checking the aids. On top of that, it's set up to perform maintenance on its aircraft and equipment to minimize downtime. The Minneapolis FIF●, in addition, maintains its leased Beech Baron, a Cessna 337 Skymaster for the U.S. Fish & Wildlife Service and a Rockwell Shrike Commander for the National Weather Service.

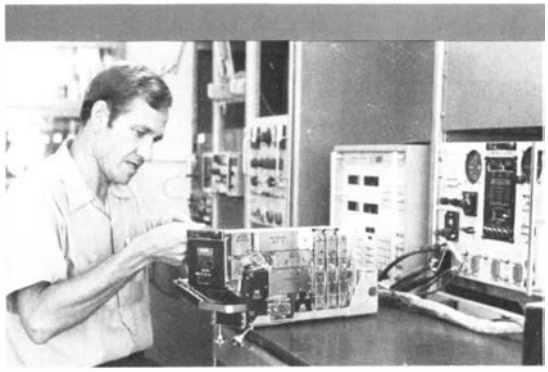
Each FIF● is a team that has to work with Airway Facilities, Air Traffic, Flight Standards and Airports people in their area of responsibility.

"In some respects, we are the catalytic element for the FAA," said Robert L. Goodrich, director of the Aviation Standards National Field Office at the time of the award presentatio. "With our knowledge of the air traffic system, the wide range of our

operational, procedural and safety functions and our activities with other organizations, we often provide the expertise that assures a single FAA footprint image to the user."

Before the first flight check, the first step is setting up approach and landing procedures. "The procedures we develop, which result in an approach plate for the navaid or approach aid, must satisfy Airway Facilities responsibilities, must be clear and free of extraneous clutter for the user and must fit in with the air traffic control system," says Davis.

He gave as an example a state-owned nondirectional beacon (NDB) for Grant Municipal Airport in Nebraska, where a straight-in approach to runway 14 had been requested by the Central Region.



Electronics technician Ted Whitman works on a weather radar unit for a Sabreliner in the Minneapolis FIFO's own maintenance shop.

Jim Duea (left) and Ken McGurty, Minneapolis FIFO procedures specialists, leave the Beech Baron after flight testing some newly designed procedures.

Under Davis' supervision, Dolly Salisbury, an aeronautical information specialist trainee, plotted a TERPs (terminal instrument procedure) designed to be most advantageous to the pilot for altitude minimums but without compromising safety. Rather than the 1:500,000 standard pilot sectional charts, she used a pair of Geological Survey charts—one with a 1:250,000 scale and the other with a 1:24,000 scale—for pinpoint accuracy in her plotting.

For the Grant NDB, it was necessary to determine the transition point from IFR to VFR for the final approach. Because this NDB was offset from the centerline of the runway, the course was plotted to intersect the extended runway centerline 3,000 feet from the runway threshold.

Designing a procedure also includes a site evaluation, talking with the manager and pilots at the airport, checking to see if the airport has a telephone for closing out flight plans and advising the manager that maximum use of the approach would require an on-field altimeter.

With the Beech Baron, procedure specialists made a personal inspection of the approach to check for unregistered obstructions and to ensure that the procedure itself is valid.

The final step was a flight check with one of the FIFO's two Sabreliners. This ensures that the NDB's radio signal is the exact frequency to be shown on the approach plate and in the Airport/Facility Directory.

The FIFO's procedures section has a

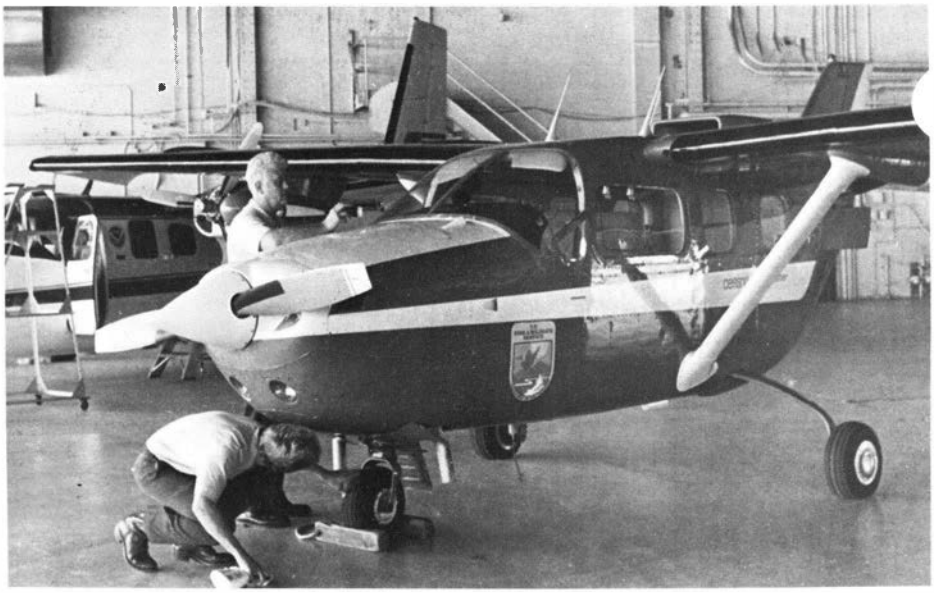
new computer that will help determine new procedures and recheck old ones without lengthy hand work. Called IAPA for Instrument Approach Procedures Automation, the computer will store detailed information about every airport in the country and many abroad, along with the regulations and safety measures needed for plotting a procedure.

One of the reasons the Minneapolis

Pulling an avionics package from the FIFO's large inventory of parts and equipment is supply clerk Larry Ammend.

FIFO received its facility-of-the-year award, according to Clyde Slyman, supervisor of the flight inspection section, was that its scheduling produced more work in less time, resulting in a saving of fuel and a reduction in overtime expenses.

Flight crews on the Sabreliners, which consist of a pair of air-transport-rated pilots and an electron-



Among the maintenance chores for quality control specialist Gary Henning (rear) and electronics technician Jim Olausen is keeping the Fish & Wildlife Service's Cessna in good operating condition.

ics technician, spend a week at a time in the field, checking navigational and approach aids. That period requires careful scheduling to coordinate with Airway Facilities technicians, who must be at each site, and with air traffic facilities to assure an inspection during their least-busy periods.

Careful scheduling also means time for regular attention to the aircraft and their specialized equipment. Dave Willman, who supervises the aircraft mechanics and avionics technicians, maintains a nearly $2 million inventory of spare parts and avionics equipment in the FIFO hangar on the west side of Minneapolis-St. Paul International Airport. Other parts are rapidly available from the Mike Monroney Aeronautical Center.

No-so-regular attention also must be dealt with efficiently. When one of the Sabreliners hit a large bird on takeoff from Fargo, N.D., causing a loss of power in one engine, a call to the Aeronautical Center brought a new engine the next day, strapped to the floor of an FAA Convair. On its way, the Convair stopped long enough at the FIFO hangar to pick up a maintenance crew, which removed the damaged engine and replaced it by 7:30 p.m., in time to return home the same evening.

"It was a fine example of the professionalism and expertise in our line maintenance section," said Bob Marlott, the FIFO's manager, who has since transferred. "In addition to performing our own work that well," he continued, "this FIFO also assisted Atlantic City, Atlanta, Battle Creek, Oklahoma City, Los Angeles and Seattle FIFOs in their work programs."

Even outside the U.S., for which administrative officer Peggy Grossman has to ensure that staff passports are current. Last year, procedures specialists participated in a feasibility study on developing a VOR approach for Northwest Orient Airlines' B-747s into Kimpo International Airport at Seoul, Korea.

Deputy Administrator Mike Fennello had an occasion to praise the Minneapolis FIFO when N-2 required emergency repairs. He ended his letter with "You're in good hands with FIFO." ■

The Last Class

End of an Era With Last Pilot Class in Last DC–3

Old "Gooney Birds" never die, they just fly for someone else. N–34 at the Aeronautical Center is the last of FAA's DC–3s and, despite its 23,215 hours total time, is expected to be sold to fly again.

While still used for flight inspection, the plane ended a two-year stint this past summer providing initial and recurrent flight training of aviation safety inspectors. Its last class of students consisted of Glenn Veal of the Oklahoma City General Aviation District Office and Bryan Carpenter of the San Antonio, Tex., GADO. The FAA Academy instructor was Malcolm (Mac) Furbush. FAAers needing future training in a DC–3 will get it from outside contract schools.

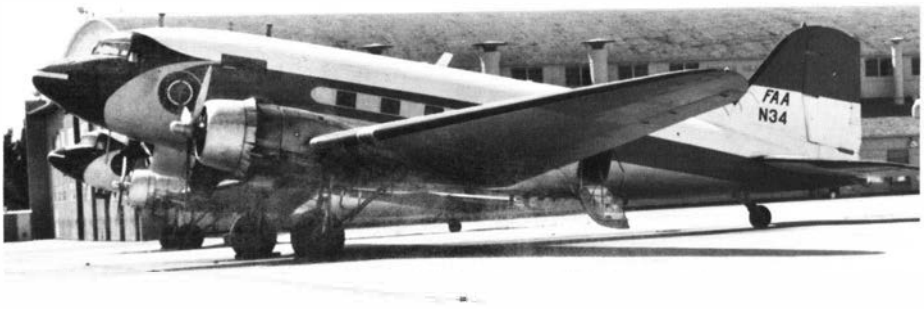
While flight inspections are now handled by jet aircraft, there are 637 DC–3s still carried as active on the FAA Aircraft Registry at the Aeronautical Center, so there will be a continuing need for FAA inspectors current in the twin-engined classic to check pilot proficiency.

N–34 was built at the Douglas Aircraft Company plant at what is now Tinker Air Force Base in Oklahoma City early in 1945. Its first incarnation was as a Navy plane designated as an R4D–6.

It served first at the Naval Air Station at Clinton, Okla. After two years, the aircraft was moved to the Navy air facility at Norfolk, Va., where it was equipped with long-range fuel tanks for a flight to England.

During two years at Hendon, England, the twin-engined plane criss-crossed Europe and the Middle East, making trips to Cairo, Kuwait, Baghdad, Oslo and Stockholm.

The aircraft was returned to Norfolk, where it was based until 1955, when it was put in storage in Arizona for a year and a half.



The agency's last DC–3, photographed when it still had a stable-mate.

The last agency class for DC–3 pilot training was made up of Glenn Veal (left), Oklahoma City GADO, and Bryan Carpenter (right), San Antonio GADO, with their FAA Academy instructor Mac Furbush and N–34.

Its civilian life as a DC–3 and as N–34 began with the Civil Aeronautics Administration in 1957. It became a flight-inspection aircraft stationed in Los Angeles and Oakland, Calif.; Seattle, Wash.; Allentown, Pa.; and other cities. In a quarter of a century of agency service, N–34 put on nearly 18,000 hours.

The first airliner to make passenger traffic pay when it was certificated in 1936, the DC–3 proved its reliability in all-around use before and after World War II as a passenger plane, during the war as a troop and cargo carrier as the C–47 and more recently as a worldwide general utility aircraft.

It's been said you don't start a DC–3, you wake it up—gently. Perhaps that's its secret of longevity. ■

Our generation thinks of the Space Shuttle on a B-747 when piggybacking is mentioned, but the idea dates back to 1916. The most-ambitious program—to provide fighter escort for a bomber's entire mission—was this awesome nine-engine Russian TB-3 that carried two I-5s on the wings, two I-16s under the wings and one I-Z under its fuselage. They played with this idea for the decade of the 30s until it was conceded as impractical and obsolete. NASM photo

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