SEASON'S GREETINGS

HORIZONS

Read 'FAA's Invisible Men' Pages 4-5

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Ready for Christmas

Putting finishing touches on a Christmas tree is the 1969 Federal Aviation Club Queen, Catherine L. Klimek of Air Traffic Service.

Handicapped Honors Go to Audit Employee

WASHINGTON—Named for the FAA Outstanding Handicapped Employee Award for 1969 is L. Elizabeth Moore of the Office of Audit. Miss Moore joined the agency in March 1965 and since then has moved up the ladder from a GS-9 to a GS-13 despite the fact that an arthritic condition keeps her on crutches.

Miss Moore will now be considered for selection as the Department of Transportation's nominee for the Outstanding Handicapped Federal Employee of the Year.

The nomination cites Miss Moore as a person whose performance has been "of a high caliber clearly exceeding job requirements in spite of a physical handicap which would reduce the effectiveness of other persons in similar situations. Her extraordinary courage and excellent initiative was recognized quickly by other staff members and agency personnel with whom she conducts agency business."

Miss Moore does not think of herself as handicapped.

"I was fortunate to come to the FAA, because the opportunities are here," she said. "My fellow employees treat me with what I think of as their usual consideration. But what I appreciate most is that people have given me the opportunity to do my job and fulfill myself."

(See photo of presentation on Page 7)

Before coming to the agency Miss Moore earned a Master of Business Administration degree from the University of North Carolina, then went back to graduate school "because it was another challenge." Meeting challenges seems to have been a way of life for her since she was first afflicted at the age of three.

Since coming to the agency, she has received a Letter of Commendation and a Quality Within Grade Increase in addition to her remarkable rise on the career ladder.

FAAers Expressing True Yule Spirit

WASHINGTON—FAA employees across the land are saying "Merry Christmas" in a way most appropriate to the spirit of the season: by giving to others. Needy families, underprivileged children, the aged and the sick this year will, as in years past, benefit from agency employees' expression of the true spirit of Christmas. A complete list of agency Christmas "projects" is not available. However, the following reports from regions and centers reflect a cross-section of the activity through which most agency employees are bringing real meaning to the season.

Western Region

Employees in the Western Region are contributing to a fund to assist the family of Elton Wagenveld, an Oakland controller who died recently. The death of Mr. Wagenveld, a heart transplant patient, left his family with a heavy burden of medical bills far exceeding insurance coverage. Employees in the San Francisco, Seattle and Denver areas are assisting needy families in lieu of exchanging cards or gifts. As in past years, employees in the Salt Lake City Area are taking part in the local newspaper's program to aid needy families.

Southwest Region

This region's Christmas spirit is being shown in donations to charity by many employees of the money they ordinarily spend on Christmas cards. The Fort Worth FSS will play Santa to an underprivileged Navajo Indian boy in Tuba City, Ariz. The FA Club at regional headquarters and Dallas facilities will provide a happy Christmas for children at the Denton State School. Albuquerque Center employees will continue their program of assisting needy families. FAAers in Houston are pooling their funds and efforts to bring a happy Christmas to old people in the Eliza Johnson home. A Christmas tree, gifts and a special party have been planned by employees for residents of the home, often forgotten by others.

Central Region

The Civairettes Club, made up of women employed at Central Region headquarters, plans to "adopt" children from a Kansas City orphanage as their Christmas project. Last year, this group "adopted" three needy families including 17 children and provided them with food, clothing and toys at Christmas time. A number of GADO employees and others in the region have been assisting with the "Wings for Children" holiday program which provides underprivileged children with their first ride in an airplane. More than 160 children have been given rides so far.

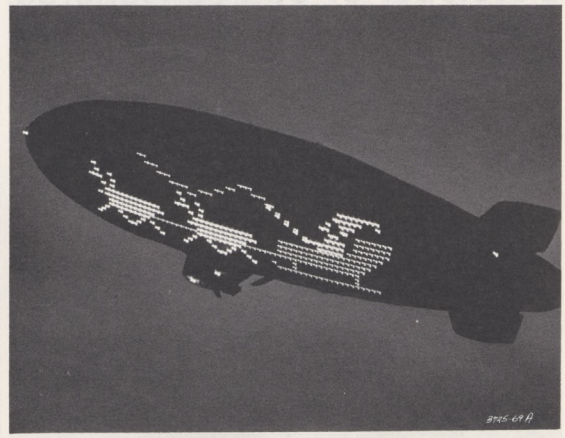
Alaskan Region

The Alaskan Region's Civilair Club is sponsoring "Operation Santa" for the native village of

(Continued on Page 7)

Alaskan Christmas

Chairman of Anchorage's "Operation Santa" project is Wallace Stripling, civil engineer technician of the Airports Division. Committee women Irene Maris (left), clerk-steno of the Air Traffic Division, and Mrs. Floyd D. (Betty) Culmer, Audit Division secretary, decorated these and other containers placed in different buildings to collect gifts from employees to needy Nondalton villagers.



Santa's Airborne

In blazing color and animation (105 feet long and more than 24 feet high), Christmas good wishes are flashed on a recently modified Goodyear blimp. FAA Supervising Inspector Chester L. Swinehart, Cleveland EMDO, recently conducted conformity inspection for the blimp design change; Chuck Arnold of the Eastern Region was flight test pilot and Irving Mancuta from New York Flight Standards insured engine conformity.

Underwater Troubleshooters

At left, FAA Inspector John Tompkins dons SCUBA diving suit to look in on repairs being done to approach light systems at San Diego's Lindbergh Field. At right, Tompkins "takes the plunge" with the two contract divers hired by the agency to replace the cable. Contractors completed the job within a month.

Intrepid FAA Inspector Checks Sea-Bottom Job

SAN DIEGO—Toiling in the murky depths 25 feet below the surface of San Diego Bay, two divers were more than mildly surprised recently by a most unlikely and unexpected visit from an FAA inspector.

Swimming in "just to see how things were going," FAA Program Officer John Tompkins gave the bottom-of-the-bay FAA contract job a thorough once-over.

He found the divers, employees of a San Diego commercial firm, laboriously stripping away thick encrustations of marine life from pilings supporting Lindbergh Field's approach light system.

Clad in SCUBA gear, former SCUBA instructor Tompkins was *really getting his feet wet on the new project.*

A large, friendly school of sand bass frolicked around him as he checked out the job. Later, a family of deadly sting rays darted past after the divers tromped on their muddy home. Fortunately, the dangerous creatures fled from the job site and there were no casualties.

The divers used old military hatchets to chop away two to ten inches of marine deposits on the pilings. Later, they replaced old, deteriorated underwater cable with 800 feet of new cable, stringing it along the newly-cleaned piling. The entire job was completed in a month.

Tompkins, a former professional diver for construction companies, says he can testify from personal observation that the job was done well.

Recently, he began a new job, one that will probably not involve any diving. He's the Western Region's new military liaison officer for the Airway Facilities Division.

Girl for All Seasons

After a stint of summer employment in the Washington Area Office, Joann Tinner decided to work full time for the FAA and became a clerk-typist with the Bureau of National Capital Airports. Hugh Riddle, Special Assistant to the Director, presented her with a Special Achievement Award from the Area Office.

Developer of Course Honored

MARCH AFB, Calif.—For developing a refresher course on flight data equipment printout and presenting the course to technicians at various Los Angeles district sectors, the agency recently conferred special recognition on Electronics Technician Stan Hall. A letter of commendation and a plaque were presented to him.

Hall's refresher course, prepared on short notice, "contributed greatly to the success of the two-week final acceptance test of flight data equipment printout units," said Martin Elliot, National Airspace Coordinator at the Los Angeles Center.

One area has decided to use Hall's course in its training program and others are studying it to determine its adaptability to their computer complexes.

For Refresher

Stan Hall (left), March AFB electronics technician, proudly receives a plaque and letter of commendation from Martin Elliot, National Airspace Coordinator, Los Angeles Center. The recognition went to Hall for developing training material.

State Governors Boost Anti-Accident Program

By Thom Hook

WASHINGTON—The agency's general aviation accident prevention program is producing a number of fringe benefits.

According to Donald Houghton, Chief of Safety Education in Flight Standards, at least two state governers—Winthrop Rockefeller of Arkansas and Frank L. Farrar of South Dakota—are participating personally in the program and have encouraged their aviation officials to join in as well.

"In addition, more than 600 professional pilots are supporting the program as safety counselors in the Central and Southwestern Regions," said Houghton. "And they are doing so at their own expense.

"These counselors, who take their cues from FAA's 29 Accident Prevention Specialists in the two test regions," Houghton explained, "together with state aviation officials conduct their own safety meetings, counselling services and give courtesy flight checks on a voluntary basis to pilots requesting them in their own communities."

During flight checks, the counselors point out to pilots weaknesses in techniques, knowledge and understanding of basic as well as advanced flying techniques that could be corrected.

The program is being considered for implementation on a national basis.

In Little Roek, Ark. Governor Rockefeller recently accepted decals supporting flight safety and pledging safe flight procedures by his pilots. Making the presentation were Buford Staley, FAA Supervising Inspector, and Tommy Hancock, Accident Prevention Specialist of the Little Rock GADO.

Another example of the safety counselling part of the program was the recent seminar in Sioux Falls, S.D., at which 100 pilots requested courtesy flight checks. Twenty flight instructors-counselors volunteered to give the pilots the free check rides.

In Kansas, three state highway patrol trooper pilots were named "Accident Prevention Counselors" and will keep an eye out for careless or reckless general aviation pilots as they monitor highways.

Rather than turn those pilots who appear to be "accidents waiting to occur" in to the FAA, the troopers will contact the pilots and talk to them constructively to help improve their flying habits.

Pilot's Information Manual Changes Announced by FAA

By Don Byers

WASHINGTON—Beginning in January, the FAA will publish the Airman's Information Manual (AIM) in four parts instead of three in order to hold down subscription prices for individual volumes and encourage widest possible distribution.

The new Part Four will contain information presently included in Part Three, such as parachute jumping areas, VOR receiver checkpoints, military low-level IFR training ("oil burner") routes and special area charts. Entitled "Graphic Notices and Supplemental Data," it will be published every six months and cost $1.50 per year.

Information that does not require frequent updating will be moved to Part Four to hold down the size and production costs of Part Three, which is published every 28 days, with a supplement every 14 days. As a result, only a $2 increase in the annual subscription price of Part Three will be required instead of the $9 originally projected. The price has been increased from $18 to $20 a year.

Part Three will continue to include essential and timely operational information about airport facilities, communications frequencies, preferred instrument navigational routes, changes in published charts and special notices to pilots. The title of Part Three will remain the same—"Operational Data and Special Notices."

The changes in the AIM format are based on comments from pilots, airport managers, fixed base operators, aviation trade groups and other users of this publication. Their opinions were solicited by the Flight Services Division of FAA's Air Traffic Service when an increase in the subscription price of Part Three was proposed a year ago.

Prices, format and publication schedules of the other two AIM volumes will not be affected by the changes. Part One ("Basic Flight Manual and ATC Procedures") will be updated quarterly and cost $4 per year. Part Two ("Airport Directory") will be published every six months and cost $4 a year.

FAA FILMS

By Sue Silverman

Even without FAA's regular seasonal exemption, Santa's got no real problem when the RVR is below minimum. All he has to do is follow Rudolph's rotating beacon.

Not that Santa *likes* fog, mind you. Even to Rudolph it's a pain in the antler. So at this very moment the little elves are working round the clock to see if they can't eliminate fog as a serious hazard to flying by Christmas.

FAA isn't exactly skeptical about the magical powers of these little fellows, but agency engineers in their own unusual workshop are taking a more scientific approach to the problem. In a 15-minute film—whose visual effects would make Ingmar Bergman sit up and take notice—FAA has documented the work that is being done to determine the best color, intensity and patterns of airport runway lighting in periods of fog and poor weather.

"A New Look At Fog" is interesting for pilots, for engineers, and in fact, for anyone with a Rube Goldberg bent. How dense blankets of fog are artificially created and controlled in an eerie environment called a "fog chamber" at the University of California is fascinating in itself, but coupled with the way that the engineers ride in moving "cockpits" in the chamber changing actual visibility values as they go makes for a very profitable quarter-hour of movie watching. The film has won a special ward at EXPO '67.

The film is available from the Film Library. Please order it by number: FA-608. Other inquiries should be directed to the Chief, Special Projects Division, PA-30.

For Four Decades

Marking 40 years of service, Edward E. Johnson (left), Chief, Sacramento FSS, receives his Service Emblem from H. E. Aldridge, San Francisco Area Manager. After a stint with the Navy, Johnson went to work for the Bureau of Air Commerce, a predecessor agency, in 1937.

Idea Pays Off

The first Suggester of the Year Honor Award was presented recently to Clinton D. Walker (left), of Logistics Service by Deputy Administrator D. D. Thomas (center). Receiving a perpetual award, to be inscribed and held by the winner's organization for one year, is Facilities Establishment Division Chief Glenn E. Halbert.

Top Suggestion Honors Won by Clinton Walker

WASHINGTON—The first annual Suggester of the Year Honor Award was presented recently to Clinton D. Walker of the Logistics Service.

By spotting a way to cut the agency's electrical power costs in Northern Virginia, Walker earned more money than any other employee for a suggestion. Cash awards paid to a suggester are used as the criterion for the honor because this reflects tangible and intangible benefits of the suggestion.

During award ceremonies, Deputy Administrator D. D. Thomas pointed out that while Walker received $1,750, he saved the government more than $60,000. Thomas also noted that over the past few years Walker has earned more than $2,400 in cash awards for adopted suggestions and for superior performance.

A second plaque was presented to Walker's organization, Logistics Service. The name of that service will be inscribed on this perpetual plaque which will be held for one year, then passed on to the organization which has next year's winner. Accepting the award for the service was Glenn E. Halbert, Chief, Facilities Establishment Division.

First runner-up for the Suggester Award was John P. Bodnar of the Aeronautical Center, whose three suggestions resulted in savings of $25,000 and earned him cash awards totaling $830.

For developing a method to check the accuracy of video mapping, Orval N. Graham of the Los Angeles Center was awarded $810 and was named second runner-up for the honor.

Speaking of the Federal employee suggestion system, President Nixon said recently, "In the last fiscal year more employees than ever before received awards for their superior work and for their constructive suggestions to improve government operations. I am delighted to send a hearty and very personal 'Thank you!' to everyone in government for their contributions to this record."

FAA to Propose Smoke Standards

WASHINGTON—The FAA is planning action to control the emission of smoke from aircraft engines in flight.

"Although aircraft are a very small contributor on a percentage basis to our total air pollution problem," said DOT Secretary John A. Volpe, "we would very much like to see this percentage reduced even further. The airplane must be made compatible with our environment if aviation is to continue to grow and prosper."

FAA Administrator John H. Shaffer said the agency is preparing to issue an Advance Notice of Proposed Rule Making in the near future governing the emission of aircraft smoke while in flight.

Separate Actions Planned

In a speech before the Delaware County Chamber of Commerce in Springfield, Pa., Shaffer noted that a "number of states are contemplating separate actions to prevent aircraft operation involving engine smoke.

"It would be desirable to have some uniform approach to the control of engine emissions in order to provide public relief where appropriate and continue public transportation services.

"Obviously," Shaffer added, "any regulation must be based on both technical and economic feasibility, and the Advance Notice of Rule Making should generate specific information on these aspects of smoke control.

"The agency has authority to protect persons and property 'on the ground through air traffic rules governing the flight of the aircraft and to take other actions for the safe and efficient use of the airspace," Shaffer explained.

"This authority will be used to the extent it can to relieve any untoward effects of engine smoke," he said.

"Aircraft pollution is one environmental problem that's not as bad as it is obvious," Shaffer remarked. "Actually, aircraft account for only about one per cent of the total air pollution in the United States, and while jet exhausts are highly visible, they are almost entirely non-toxic."

Looking to the future, Shaffer said, "A program to eliminate the smoke trails is underway and air pollution from jet engines should be a thing of the past by the mid-1970s or so."

Contest Winner 'Saved'; Expresses His Gratitude

TALLAHASSEE, Fla.—Specialist Lemuel D. Camp of the Tallahassee FSS is credited by Edward L. Keys, a Miami resident and self-admitted "rusty" pilot, with saving him, his wife and their newly-won light aircraft during their recent maiden flight from Atlantic City to their home.

Keys and his wife were overjoyed when they learned that Keys' hastily-scribbled 29-word essay captured first prize in an AOPA contest—a $17,000 airplane. The Keys considered themselves even luckier when they landed their new airplane safely in Miami after becoming lost en route. Keys' recent letter to James Reeder, FSS Chief, tells it all:

"My commendation to the flight service gentleman (Camp) who vectored our aircraft when we called in, lost, southeast of Tallahassee," Keys wrote to the FSS.

"While I can't excuse my stupidity for getting off course, I can certainly express our high regard for Tallahassee radio and FAA operators. It may be routine to you, but your service was of utmost importance to us. When we left Albany, Ga., for Orlando via Gainesville, Fla., I had been a weekend pilot and hadn't taken the trouble to learn either pilotage or Omni since I first soloed in 1937.

"Suddenly, we won a national AOPA contest and became owners of a Cherokee 180. In the excitement of this, I blundered on an Omni procedure. Although I couldn't reach Gainesville Radio, we did remember "Climb, Communicate and Confess" and did so. I know it's old hat to you, but I wanted you to know you have our eternal thanks and gratitude."

Branch Chief Wears Two Hats

HERMOSA BEACH, Calif.—From Barney Dorey's job as Chief of the Support Services Branch of Administrative Services at Western Region headquarters to his home is a short 20-minute drive. When he arrives in Hermosa Beach, he deftly puts on his other hat as the community's Commissioner of Parks and Recreation.

Dorey became interested in Parks and Recreation through his hobby of walking and bicycling along the concrete strand. He is one of seven commissioners serving the city council and city manager to advise on recreation and park projects. He is serving a two-year volunteer term.

Hermosa Beach, population 18,000, is south of the regional office and Los Angeles International Airport. During July and August as many as 150,000 people jam its beaches.

Park Commissioner

Barney Dorey, Chief of the Support Services Branch, Administrative Services Division, Western Region, rests during a typical ride along the Hermosa Beach strand. Dorey is a leisure-time Commissioner of Parks.

NMAC Reporting Program Continued Two More Years

WASHINGTON — The agency has announced a two-year extension of its Near Midair Collision (NMAC) reporting program.

The extension covers the period Jan. 1, 1970, to Dec. 31, 1971. The policy of granting immunity from FAA enforcement actions to pilots and others, including controllers, reporting near-miss incidents will be continued under the extended program.

Also continued will be the policy of granting anonymity to persons reporting near midair collisions. Information contained in their reports also will be privileged.

The program, initiated Jan. 1, 1968, as a special one-year project to deal with the near midair collision hazard, seeks to encourage pilots involved in near midair collisions to submit complete reports on these incidents to the agency.

Last July, a special study team of technical experts assigned to the program from operating services completed their analysis of the 2,230 near midair collision reports received during 1968. The final report, which contains a 20-point program of remedial actions, was published recently.

Extension of the program for two more years will, in the agency's opinion, enable the FAA to measure the effectiveness of corrective actions already initiated and others to be taken in the future.

Love That Boss

Despite the whip he keeps handy on his desk, Alaskan Region's Arthur Stratton recently rated a "most outstanding boss" consensus from employees on "National Boss' Day". Honoring Stratton, Chief of Internal Accounts, Accounting Division, were (left to right): Jean Kerr, Florence Adams, Mary Ballard, Louise Fink, Julia Alfonso, Charles Burnette, Jr., Hazel Pilkinton, Velma Thrasher, Kathryn McLaughlin, June Alyea, Margaret Brannon, Florence Liffick, Aldean Prather and Florence Brown.

New Link System

WASHINGTON — A $1.3 million contract for three radar microwave link (RML) systems for use with airport surveillance radars (ASR) has been awarded to the Collins Radio Co. of Dallas. The RML systems will be used to relay radar and beacon data from ASR transmitter sites for display in terminal radar control rooms (TRACONS).

In most cases, this data is currently carried by cables buried under the surface of airports. Use of radar microwave link systems eliminates the need for costly cable-laying operations aand permits ASRs to be relocated more easily during periods of construction and expansion at airports.

FAA HORIZONS

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E. F. Presnell (right), air traffic specialist, delivers teletyped message reporting a facility outage to Knoxville FSS Chief Arthur Moorhead.

Using a four-wheel-drive carryall on the rugged mountain roads, facilities maintenance technician John Matthews is checked out by Knoxville Sector Chief Herman Williams before inspecting remote navaid.

Sometimes a technician can read a half-dozen meters and flick some switches to put electronic equipment back into operation quickly. Here Herman E. Williams, Knoxville Sector Chief, checks equipment in the Snowbird VOR.

Knoxville Sector Chief shows how the FAA maintenance man logs in work done on this trip to the Snowbird VOR. Thus, the next man to work on call there can brief himself quickly.

Snowbird VOR, perched in its austere setting 4,242 feet high at the northe able on the last leg over a rugged two-mile FAA-constructed road. The Appa

They Back Up Our Controll

FAA'S 'INVIS

By David C

At 3:45 a.m., a sudden alarm buzzes on the Knoxville FSS console signifying that Snowbird VOR—4,242 feet up in the Smoky Mountains—is out of service. The flight service station specialist on duty immediately dials a signal that resets the VOR, but the alarm continues its persistent, steady buzzing. The specialist picks up the telephone and puts in an emergency service call that sends a four-wheel-drive truck speeding out of Knoxville through the snowy night toward the VOR, 80 miles away.

Two-thirds of the way up the mountain, the driver climbs out of the truck and into a SnowCat for the final two miles of steep, twisting, icy road. About dawn, he reaches the mountaintop, parks the Cat and shovels his way to the door of the VOR. A half hour later, the constant alarm signal light at the FSS goes out; Snowbird VOR is back "on the air."

Such situations are almost routine to the men who maintain FAA's nationwide air traffic control system. Their job description—electronics technician—is not glamorous nor is the nature of their work. Electronics technicians spend hundreds of hours a year on rough back-country roads, in all kinds of weather. Airline pilots and their passengers are scarcely aware of the existence of these FAA employees. Yet few jobs in the air traffic system are more important to aviation safety.

13,451 FAA Facilities

Based at 513 airway facilities sectors, some 8,224 technicians maintain 13,451 separate FAA facilities—control towers, radars, communications relays, directions finders and navaids of every description from terminal instrument landing systems to remotely located radio ranges. These technicians must know navaids thoroughly and be able to get to them quickly. Maintenance can take a technician underground or to the top of a swaying hundred-foot mountaintop tower. Equipment that technicians work on may be located in a swamp, a desert, a tropical island or within a volcanic crater. The technician must be a master at handling a truck or a tractor on rugged wilderness roads—day or night—in good weather and bad. Much of the time, electronics technicians must work on their own carrying out inspection procedures methodically and accurately. They must be resourceful enough to deal with unforeseen emergencies, including unfriendly wildlife. Bears have been known to try hibernating in FAA buildings; wasps, snakes, skunks and bobcats, to say nothing of suspicious local citizens, can cause problems.

On 24-Hour Call

Technicians are on 24-hour emergency recall most of the year so that sector chiefs can reach them by phone in an hour and have them back on duty within another hour. Technicians must have the kind of intelligent, inquiring mind that enables them to master the intricacies of modern electronic signalling equipment and keep abreast of increasingly complex technological developments.

The staffing and area of responsibility of an airway facilities sector varies according to locality. A typical sector like that at Knoxville, which is responsible administratively to the Memphis Area Office, has 17 persons, including 12 technicians and a sector chief. The sector is housed at the Knoxville FSS at McGhee-Tyson Airport, 14 miles south of Knoxville. The FSS and the sector work closely.

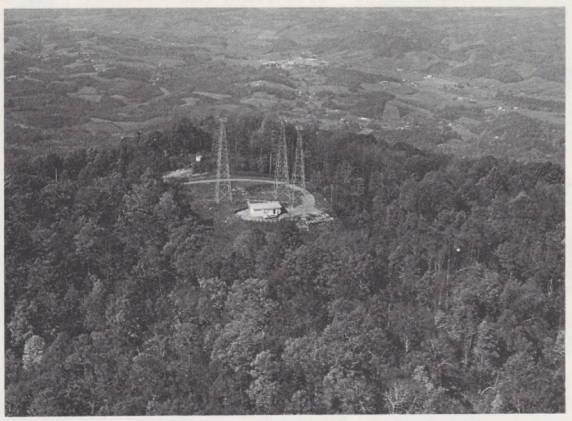
The Knoxville Sector's 12 technicians are split into two specialized units: radar and navaids. Their area of responsibility covers some 200 square miles and includes much of the Great Smoky Mountains, the highest peaks east of the Rockies. They maintain 24 facilities providing communication, navigation, radar and direction finding services to pilots in the middle East Tennessee area. Associated with these facilities are engine generators for emergency power and roads, fences, grounds and supporting towers, all the responsibility of sector technicians. Thus, though he is called an electronics technician, he must also have a grasp of civil, electrical and mechanical engineering skills.

The typical apprentice technician at Knoxville starts as a GS-6 or 7. To qualify, he must have at least three years of experience or specialized schooling related to electronic signalling equipment. As he moves ahead in his facilities maintenance career, his skill and knowledge are continually broadened by advanced resident and correspondence training courses provided by the FAA Academy in Oklahoma City.

The recruit, who starts with months of orientation, correspondence and on-the-job training at the Knoxville Sector, will also take a correspondence course in advanced mathematics. Two hours of his workday are allotted to study and he is expected to spend another two to four hours at night on the course. Next, he will be sent to the FAA Communications School at the Academy. He will then choose a specialty and take an advanced course, equivalent to about 25 college hour credits, on radar, VOR, ILS or TACAN.

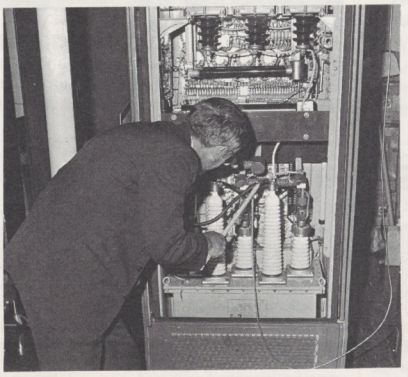
All told, trainees receive about a year of Academy schooling and a year of on-the-job training before becoming full-fledged journeymen. As journeymen, they reach GS-11. Since entering duty at Knoxville, the typical technician has completed 11 courses—five by correspondence and six in residence—totaling some 90 semester hour credits. Training literally never stops.

the northern edge of the Great Smoky Mountain National Park, is reach-
l. The Appalachian Trail is nearby.

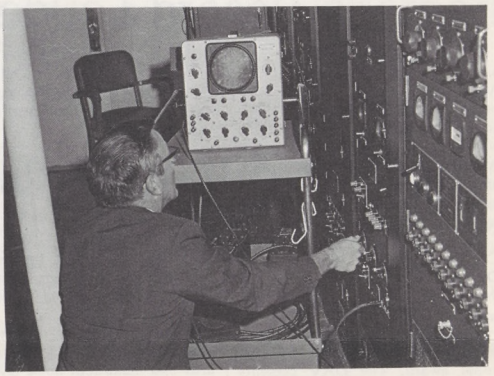


Communications from Atlanta Center are "lifted" over the mountains by this remote control air-to-ground (RCAG) facility on English mountain, 54 miles northeast of Knoxville. With winter here, it's more windblown now.

An FAA maintenance man (electronic technician) must climb tall towers periodically to keep NAVAIDS going properly. This one rises 108 feet above the summit of English Mountain near Knoxville.



Knoxville Sector Chief Herman E. Williams checks equipment which will be operational soon, giving pilots with DME TACAN service from Snowbird VOR.



Using an oscilloscope, Knoxville Sector Chief checks frequencies on Snowbird VOR to correct service outage. Facility has no personnel "aboard" and usually functions automatically..

ntrollers . . .

VISIBLE MEN'

y David Gelfan

Airway facilities maintenance work does not appeal to men who like to do their job seated behind a desk or a panel display. In contrast to the air traffic controller in his tower cab or radar room who shares responsibilities with others on his shift, the FAA technician is a man frequently on the go and usually working alone. Some Knoxville Sector technicians log as many as 2,000 miles a month on the road.

Where remote facilities are difficult to reach, such as the Snowbird Mountain VOR in the Knoxville Sector, the job can be unusually demanding. Although some of the equipment at Snowbird can be remotely tested by dialing signals from a central console in the FSS, the VOR must be visited at least once a week by a technician. When the facility is converted to a VORTAC sometime this year, more frequent visits will be required.

Unscheduled visits must be made whenever a failure occurs or reports indicating an abnormality in the VOR signal are filed, either by FAA flight inspection aircraft or by individual pilots. In a mountainous area such as the Great Smokies, with dozens of peaks higher than 6,000 feet, even a slight signal error can affect aviation safety.

When a report that Snowbird VOR is malfunctioning reaches the Knoxville FSS by automatic alarm signal from the site or by radio or telephone, the facility is shut down automatically and the specialist on duty immediately takes steps to inform all pilots who may be flying over the area of the outage. A Notice to Airmen (NOTAM) is filed by teletype to all adjacent flight service stations, which broadcast the information on their hourly reports to pilots. The Atlanta Center and FAA National Headquarters are also notified.

Diagnosing the trouble and getting the VOR back "on the air" requires an immediate trip to the site. Depending on conditions, the technician sets out in either a government sedan or four-wheel-drive vehicle. He is usually alone. His route from the sector office takes him 70 miles northeast of Knoxville to Pidgeon River Valley, at the northern tip of Smoky Mountains National Park. Here, he turns off the main road and ascends a narrow road through a gap in the hills.

He passes a patchwork of small tobacco and corn farms, typical of this Appalachian Mountain area.

Mountain folk, whose economy is reputedly supported by backwoods industry beyond the pale of the law, note the progress of a government car through their valley with special interest. FAAers have learned that if they keep their eyes and thoughts on the road ahead, they will have no difficulty.

Steep Grade to Top

Where the community road ends, some two miles of FAA-built dirt road with a 32 per cent grade twists to the top of Snowbird Mountain. When weather conditions are bad, technicians switch to the SnowCat garaged here and continue up the mountain at a slow, careful pace. The one-way road borders yawning precipices and, after storms, is often blocked by landslides or fallen trees. The technician is no stranger to the axe and shovel provided to him for clearing the road.

Arriving at the mountaintop VOR, the technician immediately sets to work tracking down the trouble. Working with equipment powered with as high as 24,000 volts, he must be careful as well as thorough—he is alone on the mountain.

Experienced technicians are usually unique in their ability to flick four or five switches, read a half-dozen meters and in minutes diagnose and repair outages on the spot, using the equipment on hand. Sometimes, the trouble is external: massive snow piled around the VOR may result in misaligned signals. Sometimes, helicopters and propeller-driven aircraft operating at precisely 1800 or 2400 rpm can cause maintenance problems.

Back 'On the Air'

Once the problem is solved and the VOR is operating again, the technician notifies Knoxville FSS, which relays appropriate messages through the air traffic system. Snowbird VOR is not the focus of particularly heavy traffic, but it is needed to "fill in" an airspace where communications may easily be broken off because of high terrain.

Pilots flying over the area once again can listen and be guided by the VOR channel and transmit over 122.1 mc to Knoxville FSS, whose receiver is in the VOR building.

The thousands of pilots who fly over the Great Smoky Mountains every year on local flights or en route between the Midwest and south Atlantic Coast may catch only a passing glimpse of the lonely, barren Snowbird VOR site. They rarely see the FAA technician toiling up the mountain road on his maintenance rounds.

To the uninitiated, "air traffic control" means an alert man at the radar scope, microphone or DF, or it signifies a fantastically complex electronic communications system.

To the flying public, *the man behind the controller* who sees to it that his equipment works, is an unsung, unseen hero. There are more than 8,000 such dedicated "invisible men" in airway facilities maintenance.

Handicapped Hired

Chris B. Walk, Jr., (second from left), Deputy Director of the Aeronautical Center, receives the state award for hiring handicapped workers from Paul Freeman, Oklahoma commander, Disabled American Veterans. At left is Jimmie Foster, department employment chairman, and at right is Joe Adair, national DAV service officer.

Center's Record Lauded

OKLAHOMA CITY—The second major award this year to the Aeronautical Center for its active program in hiring physically handicapped personnel came recently when the Oklahoma Disabled American Veterans presented their annual "Employer of the Year" award for employing handicapped workers.

Receiving the award for the Center was Chris B. Walk, Jr., Deputy Director, in a ceremony in the center director's office. The center was notified that the Aeronautical Center was judged runner-up in the nation for the top national award. The DAV presents awards in all 50 states.

Previously, the center had been honored by the Oklahoma City Mayor's Committee on Hiring the Physically Handicapped with an award as the Outstanding Large Employer of Handicapped Personnel in the state.

The Center makes a practice of filling vacancies with handicapped employees whenever it is possible to do so and the success of this activity attracted the attention of the committee set up by the Oklahoma Disabled American Veterans to honor organizations excelling in this field.

Senator Visits

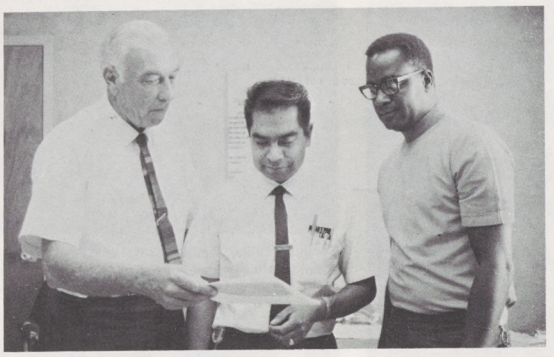
While newsmen record the conversation, Sen. Jacob Javits (right), of New York, sits with controllers John Woessner (left), and Peter Nelson at the New York Common IFR Room to hear their opinion on what action should be taken to improve the air traffic control system. Senator Javits, a staunch advocate of a massive airports-airways modernization program, visited the CIFR Room and Kennedy Tower on a fact-finding mission that he termed very enlightening and rewarding.

Two Cited for Aid in Crash

STOCKTON, Calif.—Two electronics technicians who rushed to the aid of a pilot following a flaming crash landing here received the agency's Special Service Act Award recently.

Manuel Angel and Gerald Goren were checking ILS localizer equipment at the Stockton Airport when they saw the plane strike the runway and burst into flames. They sped to the scene in an FAA vehicle to aid the pilot. Before they reached the crash site, however, the pilot was able to extricate himself and escape without injury.

Angel and Goren were able to control the flames with a fire extinguisher, preventing total destruction of the aircraft.



Cool in Emergency

For going to the aid of a pilot following a flaming crash-landing, Electronics Technicians Manual Angel (center), and Gerald Goren (right), receive FAA's Special Service Act Award from George McCarthy, Chief, Sacramento Airway Facilities Sector.

Airport Noise Levels, Standards Stipulated

By Alex F. Garvis

WASHINGTON — "We have taken the important first step in reversing the escalation of aircraft noise around airports," Secretary of Transportation John A. Volpe said as he announced a new FAA regulation establishing noise standards and maximum noise levels for all new subsonic transport airplane type designs, including some airplanes already under development.

"The new regulation will result in an approximate halving of the noise around airports," the Secretary added.

The noise limits prescribed in the new rule are as much as 10 EPNdB (effective perceived noise decibels) less than those for the noisiest aircraft presently in service—thus the approximate halving of perceived noise when measured on a logarithmic scale.

The new rule establishes the top maximum EPNdB to 93 and 108 EPNdB depending on the type and size of the aircraft. Today's largest aircraft are operating at 110 to 120 EPNdB at comparable measuring positions.

Administrator Cites Standards

Establishment of the noise standards and specific points around airports will, for the first time, provide the local planners with a positive indication of aircraft noise related to land use in the vicinity, Administrator John H. Shaffer said. The standards will help establish a noise exposure forecast which will enable planners to zone areas for compatible land uses.

"With noise certification standards set by regulation," Shaffer said, "the noise exposure forecast contours will be firmly established and no further aviation noise escalation for the area will be permitted under the rule. Land use planners will be able to plan compatible uses around airports with confidence, knowing well that the noise levels will not increase."

As the state-of-art and the understanding of aircraft acoustics increase, Shaffer said, he would like to see further reductions in the established noise levels in the future.

Industry is cooperating and is doing everything technologically possible to bring about this de-escalation of noise levels, he said. The airline orders for future aircraft have asked aircraft manufacturers that the aircraft meet the standards established by this regulation, although some would be exempt from the newly-established noise standards.

The new regulations are the first issued under Public Law 90-411, which gives the agency broad authority in the noise control area, including the authority to withhold certification of aircraft which fail to meet prescribed noise standards.

The new regulation, which became effective in December, recognizes that the aircraft noise levels are related to the type and size of the aircraft. FAA has developed a sliding scale of the maximum noise level in relation to the aircraft gross weight as determined during three important aircraft operational modes. It uses three measuring points — approach, sideline and takeoff — to measure the noise levels.

The noise limits on approach would be 102 EPNdB for aircraft weighing no more than 75,000 pounds (such as Gulfstream IIs, F-27s, Viscounts, etc.). They would range up to 108 EPNdB for aircraft in the 600,000 pound-and-over class. The measurement of approach noise would be made at a point one nautical mile from the threshold on the extended runway centerline.

Noise Levels Compared

Comparative examples of noise levels encountered by people: The 102 to 108 EPNdB range is similar to noise experienced by the operator of a four-cycle engine power mower, and is one-fourth to one-half times quieter than the sounds produced by a typical rock and roll band.

Those aircraft with high bypass ratio engines for which application for a type certificate was made *prior* to Jan. 1, 1967, would be granted additional time to comply with the prescribed noise limits in the rule if necessary. These aircraft —for example, the Boeing 747— were in advanced phases of their design cycle prior to the establishment of definitive certification noise levels. Nevertheless, the manufacturers of these airplanes have developed designs which represent the application of the most advanced acoustic technology available to them. As a consequence, these aircraft will produce noise levels considerably below those of present day aircraft, and may have noise levels that comply in every respect with the requirements of the new regulation.

The new regulation—Part 36 of the FARs—is based on a Notice of Proposed Rule Making (Notice 69-1, Docket No. 9337) issued Jan. 6, 1969.

REPORTS and PAPERS

A list of 114 scientific and technical reports available to the public has been released by the FAA.

The list, available in all FAA libraries, covers the period from March 1969 through September 1969 and updates an earlier list announced April 9, 1969. Subject areas cover aircraft, airports, air traffic, aviation medicine, communications, navigation, weather and miscellaneous reports.

Unless noted otherwise, the source for the reports and papers listed is TAD-484.3.

Simulation Test of the Arcata, Calif., Diamond Runway Centerline, Brown, Guy S. and Richard L. Sulzer. Interim report No. NA-69-9 (RD-69-35), prepared for SRDS. NAFEC, Atlantic City, August 1969.

Analysis of an Advanced Time-Frequency National Airspace System Concept, Weiss, W. J. and others. Final Report No. RD-69-32, Vol. I, "Summary," Vol. II, "Time and Frequency Techniques Survey," and Vol. III, "Systems Analysis," prepared for SRDS by the Autonetics Division of North American Rockwell Corp., Anaheim, Calif., August 1969.

Experimentation and Analysis of Siting Criteria (Radar Beacon), Springler, George F. Final Report No. NA-69-36 (RD-69-43) prepared for SRDS by NAFEC, September 1969.

Retractable Pendant Cable Support System for BAK-9 Emergency Arresting System, Sheuerman, H. P. Final Report No. NA-69-16 (RD-69-24) prepared for SRDS by NAFEC, October 1969.

An Evaluation of the C-141 Category III All-Weather Landing System, Marshall, Lyle B., Lt. Col, USAF. Final Report No. NA-69-18 (RD-69-34) prepared for SRDS by NAFEC, October 1969.

Development and Testing of HF Wire-Grid Lens Antenna, Jones, E. M. T. Final Report (Volume III) No. RD-68-26, prepared for SRDS by TRG, Inc., Division of Control Data Corporation, Menlo Park, Calif., December 1968.

Design and Development of an Isotopic Altimeter Setting Indicator, Sellers, B. and P. Morel. Final Report No. RD-69-38 in two volumes, with Vol. II containing only the appendices. Prepared for SRDS by Panametrics, Inc., Waltham, Mass., June 1969.

Dual Input Transponder, Scewczyk, Zdzislaw I. Final Report No. RD-68-64, prepared by Chain Lakes Research Associates, Inc., Detroit, Dec. 1968.

Friction Effects of Runway Grooves, JFK Airport—Phase II. Final Report No. NA-69-8 (DS-69-3, and AD 692-075). July 1969.

Study of Flame Propagation Through Aircraft Vent Systems. Final Report No. NA-69-32 (DS-68-20 and AD 692-463). Fenwal, Inc., Aug. 1968.

Angle of Attack Presentation in Pilot Training. Report No. DS-69-6 (AD 689-362). Embry Riddle Aeronautical Inst. Mar. 1969.

Flying Qualities of Small General Aviation Airplanes. Part 1. The Influence of Dutch-Roll Frequency, Dutch-Roll Damping and Dihedral Effect. Final Report No. DS-69-8 (AD 690-899). Princeton Univ., Princeton, N.J. June 1969.

DIRECT LINE

This is your direct line to the top! Your questions will get answers! Employees are encouraged to discuss questions with supervisors or their local personnel office, but for those who do not have ready access to a personnel office, this column will provide an opportunity to get questions answered. Send your letter to Acting PT-1, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D. C., 20590. Ground Rules: • All questions must be signed. • This column should not be used to supplant formal grievance and appeals procedures. • Questions should concern personnel and training policies, programs and procedures, not operational or technical matters. What's your question?

Question: Public Law 89-478, enacted in 1966, permits agencies to vary an employee's basic workweek for educational purposes. After reviewing agency policy on this matter in Handbook 3600.3, I decided to take advantage of this provision. My class met during the last two hours of my Monday working day and I requested permission to make up this time by working 8½ hours per day Tuesday through Friday. The idea was rejected by my region. I was informed that I had to make up the time on the same day the class met, on a weekend or take annual leave. I question my region's interpretation.

Answer: Your region was correct in their interpretation. According to law, premium pay may not be paid solely because a special tour of duty has been authorized for educational purposes. Moreover, Civil Service Commission regulations prohibit additional expense for variation of the employee's workweek for educational purposes. None of the three options provided by your region would result in payment of overtime and are, therefore, consistent with the law and regulation. (See Comptroller General Ruling B-160465 dated March 9, 1967.)

Question: I do not have access to a recent Civil Service Supervisory Grade Evaluation Guide and would like to know if a first line supervisor can be assigned a technician's workload. If so, how much and under what circumstances.

Answer: The document to which you refer is limited to instructions as to how supervisory positions not specifically covered in other classification standards shall be graded. Since assignment of duties and organization of work is entirely the responsibility of management, neither this nor other Civil Service documents prescribe the amount or type of individual workload appropriate for a supervisory position. A supervisor can be assigned an operating technician's workload if management determines it is feasible for him to perform both.

Question: Handbook 3400.3A, Chapter 2, Para. 7-C Temporary Certification, reads in part, "Generally, the need for such authority would occur during unusual circumstances when time does not permit use of the normal process." Would the granting of temporary certification credentials to backfill for a fully certified technician in order to grant normal annual leave fall within the framework of the above statement?

Answer: Airway Facilities Maintenance Technical Training Handbook, 3000.10, paragraph 12, provides guidance on the number of certified journeyman technicians required under various types of maintenance coverage. Backfill coverage for annual leave is included. However, in the event of extenuating circumstances, the Sector Chief may request temporary certification credentials, and the Airway Facilities Area Branch Chief can issue such credentials.

A civil service employee elects to retire after 30 years service, five of which consist of active army duty in World War II. He has 20 years of service in the Army Reserve, including the five years of active duty, which appear to be "creditable" for reserve retirement pay. There are no special considerations such as a service-connected disability.

Question: At age 60, will he be eligible for reserve retirement pay?

Answer: The Department of Defense would determine an employee's eligibility for reserve retirement pay; therefore, that office would have to provide the answer to this question.

Question: Are the five years of active military duty creditable for both reserve retirement and U.S. Civil Service retirement?

Answer: This question implies that the employee may be eligible for military reserve retirement as provided by Chapter 67 of Title 10 of the U.S. Code. If this is the case, the answer is yes, the five years of active military duty are creditable toward both reserve retirement and U.S. Civil Service retirement. This is made clear in Subchapter S3 of FPM Supplement 831-1.

Mechanic Safety Prizes Boosted; Deadline Nears

WASHINGTON—With only nine days left to submit entries in the seventh annual National Aviation Mechanics Safety Awards Program sponsored by the FAA, the amount of money and other prizes continues to mount.

The Aircraft Owners and Pilots Association (AOPA) has announced it will participate in the competition for the first time and will donate $300 to the national winner in the general aviation category. The National Aviation Trades Association (NATA) simultaneously announced that it would participate in this year's contest, as it has in previous years, by donating $200 to the national general aviation winner.

Cash prizes are at an all-time high this year with more than $10,000 earmarked for winning air carrier and general aviation mechanics throughout the FAA's eight geographical regions.

Entries will be judged in three categories. The first includes improvements to airframes, engines, or components for reliability. The second covers maintenance or inspection procedures for air safety. The third recognizes the aviation mechanic with the highest level of professionalism.

Christmas

(Continued from Page 1)

Nondalton. FAA employees have donated gifts of food, warm clothing and toys for needy children in the village. A "Santa Claus" flight to a number of remote stations is planned. FAA's Santa will board a plane the day before Christmas—risking being weathered in at a remote station and missing his own Christmas at home—and, with a heavy cargo of toys and goodies, begin a round of stations far out in the "boondocks." Special Christmas programs are planned by FAA personnel at Unalakleet, Cape Yakataga, King Salmon, Nome, Fairbanks and Juneau.

Eastern Region

As in other regions, Eastern Region employees are using Christmas card money to help the needy and underprivileged. An extra Christmas dividend for patients at the Brooklyn Veterans Hospital are the 100,000 savings stamps accumulated over the year from employee purchases for the agency. The stamps are used by the hospital to purchase many articles that make life more pleasant for the patients.

NAFEC

More than 120 needy youngsters of the Child Federation of Atlantic City were given a Christmas party recently by the NAFEC Woman's Club. NAFEC Police are conducting a drive to provide food baskets for needy families.

Southern Region

Again this year, Atlanta Tower personnel plan donations to a charitable organization, adding individual contributions to the proceeds from a soft drink machine. Employees in the Atlanta Airport Airway Facilities Sector will donate their card money to the "Little Red School House," a school for exceptional children. The FAA Employee's Benefit Association, made up of FAAers in various field facilities and the Miami Area Office have donated $100 to the Variety Children's Hospital in Miami and another $100 to Boys' Town. Regional office donations will go to the Oak Hill Children's Home, which provides shelter to children who are the victims of broken homes, poverty, abuse, neglect and illness. This year's contribution is expected to exceed $500. Pensacola RATCC-Tower employees will help make Christmas happier for the Escambia County Association for Retarded Children. Employees of the Aviation Medicine Division in the region plan to make Christmas merry for children recommended by welfare officials.

Pacific Region

Personnel are assisting the needy this Christmas in various ways. Typical are the donations made by Accounting Division employees to the Honolulu Advertiser's Christmas fund for needy families and donations to the Salvation Army by Flight Standards personnel. Honolulu Tower personnel who have "adopted" a four-year-old girl in Hong Kong and have sent a special Christmas gift of cash to the needy family.

Headquarters

Employees at Headquarters, like so many in the field, are donating to various causes which will make Christmas happier for the needy. A typical program is that being conducted by Flight Standards Service personnel who are donating money ordinarily spent on Christmas cards to a charity fund.

Outstanding Employee

Receiving the FAA Headquarters Outstanding Handicapped Employee of the Year Award certificate from Mary E. Healy (left), Manager, Headquarters Operations, is L. Elizabeth Moore of the Office of Audit. Charles H. McKeon, Director, Office of Audit, stands by. (See story on Page 1).

Air Ambulance Flights Receive Priority Status

CINCINNATI—Civil ambulance flights are now officially recognized as priority flights by the agency. The priority status is spelled out in a recent change in the terminal Air Traffic Control Handbook. Also given official sanction is the use of the call sign "Lifeguard" for these flights.

Use of a specific call sign was suggested by George Hessler, Chief of the tower at Greater Cincinnati Airport and Wesley Schafer, Tower Chief at Lunken Airport. Both men saw the need for these changes because civil air ambulances frequently bring patients to Cincinnati, for treatment at the city's well-known Shriner Burn Institute.

Although air ambulances have been given priority, there previously was no official procedure and no specific way for these flights to identify themselves. Now, maximum priority will be given flights identified by the call sign "Lifeguard" or when the pilot requests priority status.

The ATC Terminal Handbook instructs controllers to give civil air ambulance flights maximum priority, expedite handling of patients when requested and give particular consideration to priority handling of such flights in terminal areas.

GreenChristmas Assured at Wake

HONOLULU — Because of a shipping tieup, it looked, for a while, as though it was going to be a tree-less Christmas on barren Wake Island this year.

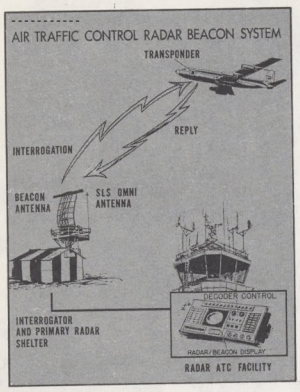
Then, Douglas Kopi of the Materiel and Contract Branch, Airway Facilities Division in the region, heard about Wake Island's Yuletide dilemma. Through commercial channels, Kopi arranged for the airlift of 108 gleaming, green Christmas trees to the island.

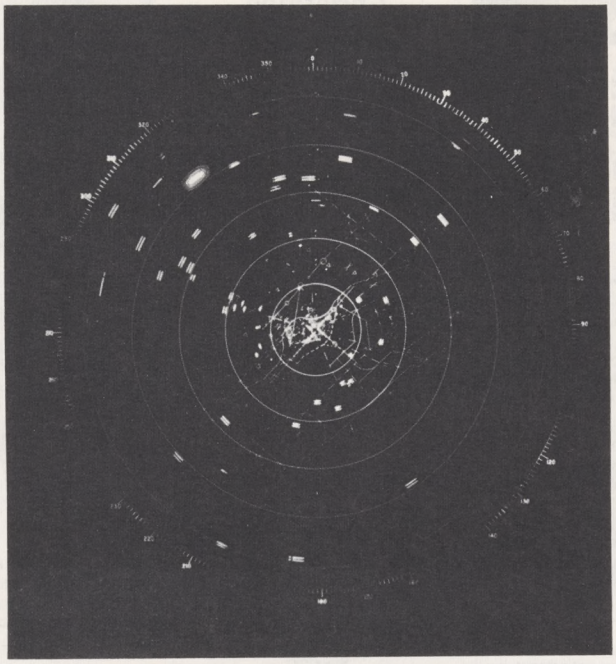
Delivery of the shipment was scheduled to take place well in advance of Christmas. When the trees arrive, they will be placed on sale to all comers.

So, it seems, Wake Island is assured of a "green Christmas" this year. And Kopi reports he was glad to be of help to the islanders "just in the St. Nick of time."

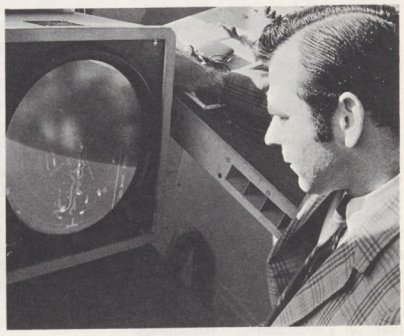
Food for the Needy

Police at NAFEC, near Atlantic City, take great pride in their Christmas and Thanksgiving food drives for needy families. They are (left to right): Corporal Jacob Smith; Compliance and Security Chief Thomas Chopin; Police Captain Sam Leonetti; and patrolmen David Stefan and Donald Drinkard.





With the equipment in use today the controller can automatically sort out transponder targets by selecting particular codes. Double strike targets are those under his control or those of particular interest. The single strikes are returns from other aircraft in the area. The bright target in the top left of the screen is "squawking." And below, transponder targets are clearly visible to Controller Leighton C. Adams, who guards a BRITE-1 display in the tower cab at Washington National.



LIGHTENING the ATC Task

By Theodore Maher

In virtually all air carrier and military aircraft flying today, and in more than 30,000 general aviation planes, there are "little black boxes" that will take much of the drudgery out of air traffic control and continue to contribute to aviation safety.

The device is the transponder, a key element of the agency's air traffic control system. Basically, the transponder is a tiny transmitter which responds to interrogation from the ground. Signals transmitted by transponders appear as tiny, illuminated bars alongside blips on radarscopes, providing positive aircraft identification.

Under today's system, controllers and pilots spend a considerable amount of time exchanging information via air-ground radio. When central computer complexes are completed nationwide, the information provided to the controller automatically from the aircraft will take on new dimensions.

At present, the controller is dependent on voice communication to obtain an aircraft's identity and its altitude. In the automated system, identity, position and altitude are provided automatically.

This vital information will appear instantaneously on the radarscopes in the form of alphanumeric tags that ride along with corresponding blips. Automation also will eliminate the necessity for voice "handoffs" of air traffic moving from one sector to the next. The alphanumeric tags will signal a transfer of control responsibility and carry with them the data needed to fully identify the aircraft and its position in the airspace.

To tell the controller whether the plane is ascending or descending, arrows pointing either up or down will appear along with other data on the alphanumeric tags.

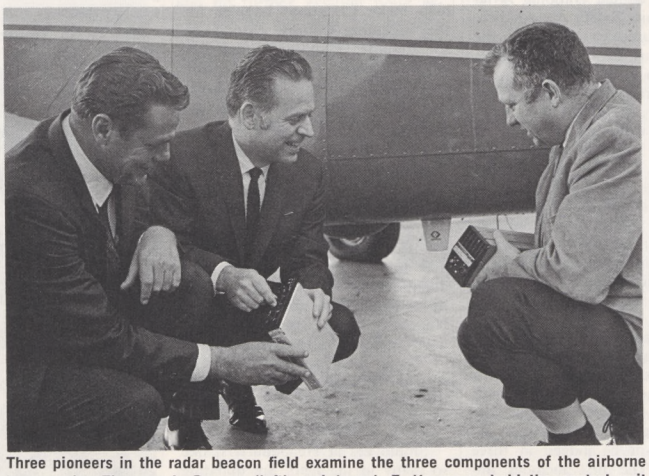
When the transponder transmits a discrete identification code, the appearance of AA252, as a portion of the data on the electronic tag, assures the controller that the target he is looking at is American Airlines Flight 252. Altitude data received from the transponder will also be presented on the data tag. The controller will be able to erase or inhibit any of the data on his display and he may recall it at any time he needs it.

As a result, manual coordination, communication and workload will be minimized. Identification of targets will be machine-generated and verified, eliminating use of "shrimp boats." Contoured outlines of weather information will also be available on the displays.

Prior to development of today's family of transponders, controllers often had difficulty following weak blips or those which sometimes faded into ground clutter or were blotted out by atmospheric conditions or weather phenomena. Positively identifying specific blips often called for a time-consuming series of exchanges between the controllers and pilots.

To give controllers a hand with this vexing problem, the agency, in 1954, launched a comprehensive research and development project in the field of radar beacon systems. Much of the initial development work had already been completed and was reflected in the military radar beacon system known as IFF, "Identification, Friend or Foe." However, refinements and improvements were required if such a system was to be adapted for use in the nation's air traffic control system.

A key person in the development project was Joseph E. Herrmann, now Chief of the Beacon Systems Section in the Systems Research and Development Service. Other members of the research team included Thurman Duncan and Kenneth Wise, also with the Beacon Systems Section.



Three pioneers in the radar beacon field examine the three components of the airborne transponder. Thurman L. Duncan (left), and Joseph E. Herrmann hold the control unit while Kenneth Wise holds the transponder itself. All three men are from Systems Research and Development Service. The third transponder component, the antenna, can be seen under the aircraft.

The site for the series of tests was the Technical Development Center in Indianapolis, the research forerunner of NAFEC.

Industry interest in transponder development was reflected in an incident that occurred when the study was in its later phases. Team members studying a radarscope one afternoon were surprised to see a transponder target at a time when no transponder-equipped research flight was aloft. They watched the plane complete a standard approach pattern and land at Indianapolis Airport. Mystified, they drove to the terminal where they were told by the captain of the "mystery plane" that his airline was already equipping its fleet with transponders in anticipation of the benefits of the new system.

In 1958, after initial success had been achieved, the test site was moved to New York, where a further series of exhaustive tests of the system was carried out, using specially-equipped agency, military and airline aircraft.

After "bugs" were worked out, the agency gave the system its official go-ahead, and in 1959 the first radar beacon facilities were commissioned at Idlewild (now JFK), La Guardia and Newark. The system became nationwide with installation of ground facilities in other areas in 1960, the year the use of transponders was made mandatory on positive control route segments.

National standards for the radar beacon system, upon which specifications for hardware are based, were developed by the Beacon System Section of SRDS. This Section also developed a light, small, relatively-inexpensive transponder meeting minimum national standards and having 4096 code capability. As a result of this effort, general aviation transponders are selling for as little as $795.

Development of the radar beacon system has helped make America's airways safer. The work in this field has eased the burden of air traffic control personnel and, coupled with fast-moving developments in automation, should further lighten their load in years to come.