



A MONTHLY NEWSLETTER OF SIGNIFICANT REGIONAL AND WASHINGTON ACTIVITIES

CIVIL AERONAUTICS ADMINISTRATION, LOS ANGELES, CALIFORNIA

VOL. II, NO. 4

April 1, 1949

THE JOB OF AN AIRPORT TRAFFIC CONTROLLER

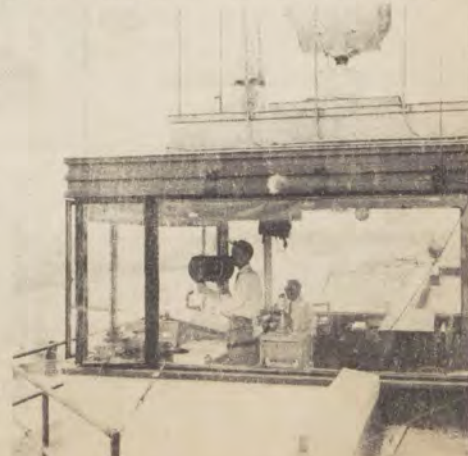
An Airport Traffic Controller's duties, as officially designated in his Manual of Operations, make him responsible for:

- A. The issuance of clearances and information to pilots of aircraft for the purpose of preventing collision between:
 1. Aircraft operating on the ground at the landing area.
 2. Aircraft and vehicles operating on the landing area.
 3. Aircraft in the Traffic Pattern, and landing and taking off at the landing area.
 4. Aircraft operating under Instrument Flight Rules, after control has been so delegated.
- B. The issuance of and relay of information and clearances which will prevent unnecessary delays to aircraft and which will permit the proper use of the landing area.

Actually the Airport Traffic Controller's job involves a lot more than these basic duties. The Airport Traffic Controller might well be considered to be the "Public Relations Man" of Air Traffic Control. Situated as he is in the Control Tower commanding an unobstructed view of his airport and surrounding areas, and continuously eavesdropping and conversing on a multitude of radio and interphone channels, the Airport Traffic Controller "Sees all, hears all, and knows everybody." He commands a sort of unofficial Observation Post, and inevitably comes to be regarded as a local "Ask Mr. Anthony Service." Smoke is observed on a nearby hill. Is it just trash or has a brush fire started? "Ask the Tower." Did General Marshall's plane arrive yesterday? "Ask the Tower". Is transportation available into town? "Ask the Tower". Where is a good place to eat around here? "Ask" And so it goes.

In some ways the job of the Airport Traffic Controller parallels that of the Aircraft Communicator and the Air Route Traffic Controller. Like the Aircraft Communicator, he may be called upon to furnish weather, navigation, or clearance information. Like the Air Route Traffic Controller, he may, at times, be directly responsible for the safe operation of aircraft flying "blind" or "on instruments." Most branches of the Federal Airways

(Continued on page 5)

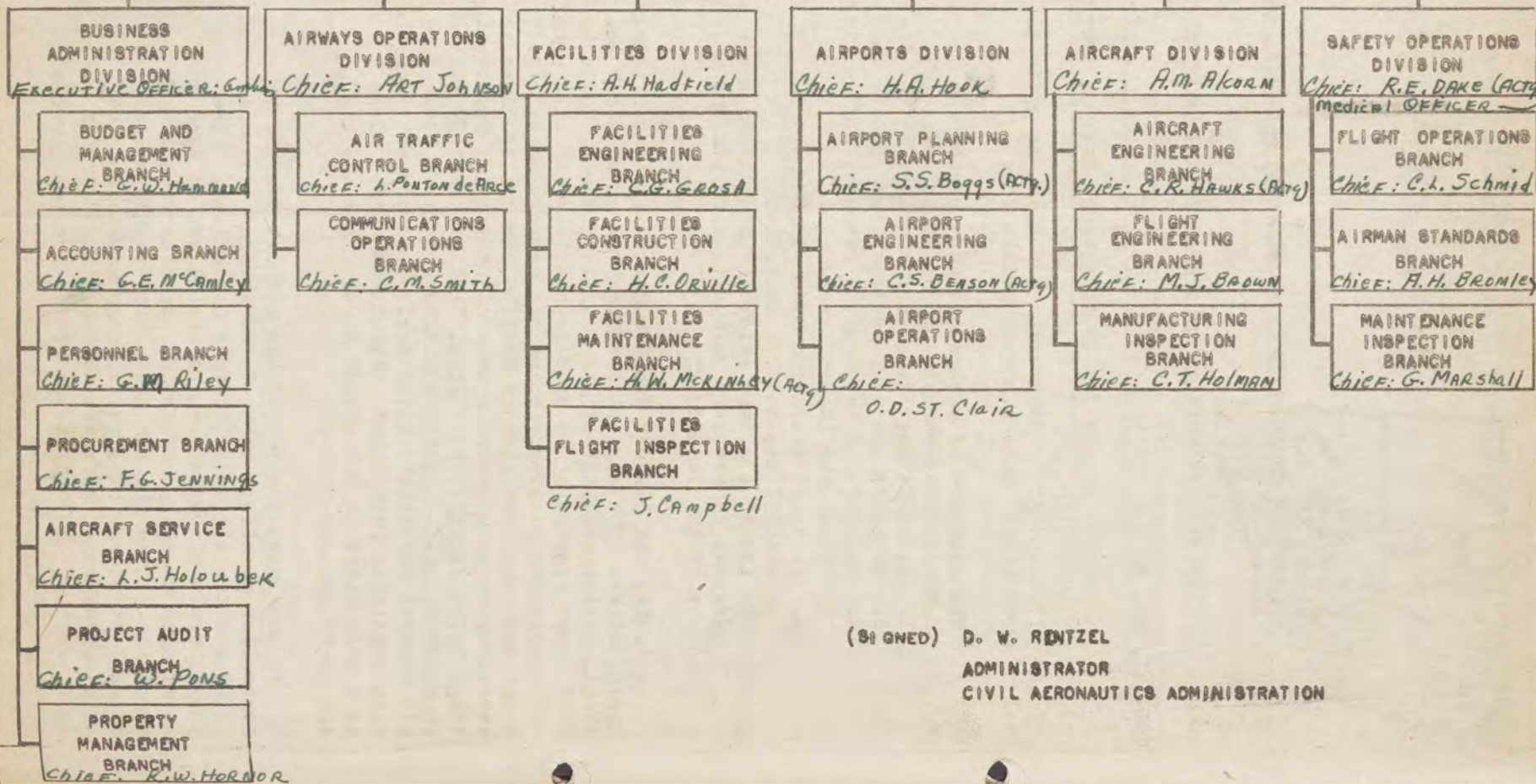


ORGANIZATION STRUCTURE OF THE SIXTH REGION
TO BE EFFECTIVE MAY 1, 1949

OFFICE OF REGIONAL ADMINISTRATOR
REGIONAL ADMINISTRATOR - J.S. Marniott
DEPUTY REGIONAL ADMINISTRATOR - J.E. Read (Actg)
ASSISTANT TO THE REGIONAL ADMINISTRATOR - M.E. Beeman

OPERATIONS PLANNING
AND EVALUATION
DIVISION Chief: To be announced

LEGAL DIVISION
Regional ATTORNEY: G.D. Woodmansee



(SIGNED) D. W. RENTZEL
ADMINISTRATOR
CIVIL AERONAUTICS ADMINISTRATION

E.S. Adams, MD

20



REGIONAL ADMINISTRATOR'S COLUMN

ORGANIZATION

This is my first opportunity to talk to all of you since returning from my Washington assignment. If you realize, as I think most of you do, that the Sixth Region is, in many respects, the most desirable Region in CAA, you will have some understanding of how glad I am to be back. The opportunity of again associating with the fine loyal group of CAA workers in this Region is a factor which I value highly and I sincerely appreciate the many individual expressions of welcome which I have received. Another thing which impressed me immediately upon my return was the capable manner in which the affairs of the Region had been administered by Mr. Read with your support and assistance.

I assume that the subject uppermost in the minds of a number of our people, particularly those in the Regional Office, is the organizational adjustment which is scheduled to take effect on May 1 in accordance with the Administrator's General Order #21 which outlines the organizational functions of the Regional Offices in the continental United States. The release of this Order was one of the reasons which hastened my return to Los Angeles, it being my desire to assist in working out the details of the program.

In thinking of organizational changes, we should bear in mind the purpose for which such changes are made. The fundamental purpose is to increase our operational efficiency. There are a number of well recognized principles of organization, but generally speaking the organizational structure should be one which will contribute to simple and easy procedures and methods of operations. Secondly, but most important, the organization should be manned by people who are administratively capable for their supervisory duties, as well as technically qualified for the phases of the work requiring technical knowledge.

General Order #21 has established the organizational framework for the Regions, and definite streamlining has been accomplished in accordance with sound principles of organization. The second phase of the program, that of selecting personnel to implement the organization, is now in process. The Administrator has stressed the importance of selecting the best qualified persons available for all key positions in order that their talents may be used to the greatest benefit of CAA. The need for persons who are to be assigned to key supervisory positions having administrative experience and ability is also emphasized. In preparation for this program, the Civil Service Commission was consulted and their approval obtained of a plan to select top supervisory personnel on the basis of their qualifications and demonstrated ability.

At the present time, the personnel selection program consists of picking people in grade to fill the positions for which they are best qualified. Mr. Read and I have discussed proposed personnel reassignments with all of those who are affected. Our recommended selections will be reviewed by the Washington Personnel Board, of which the Administrator is Chairman, along with the recommendations of all other Regions.

When finally approved and the revised organization becomes effective on May 1, we confidently expect that procedures and methods of operation will be simpler, and a marked degree of increased efficiency in the Regional Office will become apparent. The continued support and progressive attitude of all concerned will of course increase the degree of success which the Region as a whole attains.

PERSONALITY OF THE MONTH

Mild-mannered, soft-spoken (no one to our knowledge has ever heard him raise his voice or has seen him lose his temper) Alfred J. Dewey, Aviation Safety Agent in Ontario, came to the CAA in 1939 with a background of varied experience as an A & E Mechanic, Flight Instructor, Chief Pilot, and Owner-Operator of a successful flying school. Since his first job as Flight Supervisor in the then Civil Pilot Training Service Branch in the Santa Monica Regional Office, there have been so many different assignments in so many different localities that he hesitates to ask a stenographer to type his Form 57.

As District Flight Inspector in Sacramento, Oakland, Inglewood, and Tucson, respectively, Dewey supervised the various Civilian Pilot Training Programs then in full swing in those districts. In the early days of the War, when the armed forces were crying for instructors, he was assigned to liaison work with the Army. As Army-CPT Airman Procurement Supervisor he was instrumental in ferreting out available recruits and moulding the raw material into acceptable flight instructors for the Army and Navy Contract Schools.

In 1943, Jim volunteered for the USAAF. During the next three and one-half years, he earned his Captain's bars as ATC Pilot in the Ferrying Command, First Pilot on the Hump Route from India to China, Instructor on Instruments and Multi-Engine aircraft, and as a First Pilot on Scheduled Army Air Lines. Sounds like safe, prosaic, run-of-the-mill stuff, huh? Or does it?

Traveling to far-flung places wasn't exactly a new experience for Jim Dewey. As a youngster still in High School, he had accompanied an older sister on a trip to Europe, and as a young shaver had worked his way to Central America on a banana boat. Jim can also tell some really tall tales about our "good neighbors" to the South, if you can ever get him in a story-telling mood.

At the present writing, Dewey is more or less "settled" on an acre in Chino, California, and attached to the Ontario Aviation Safety District Office. However, Gwen, Mike, and Dick, Jim's wife and two boys, are always packed and ready to move on at a moment's notice.

In his spare time, he tinkers with machinery or works at ceramics. His early A & E experience stands him in good stead when it comes to rebuilding an old, broken-down airplane, or installing a new engine in his automobile. His more than ordinary artistic ability is evidently inherited from his father, a well-known Sierra Madre painter.

THE JOB OF AN AIRPORT TRAFFIC CONTROLLER (Continued from Page 1)

Operations Service deal more or less indirectly with the people they serve, but the Airport Traffic Controller is in a position to "see" what he is doing and to observe directly the results of his actions upon the pilots with whom he is dealing. This personal contact with his "customers" means that an efficient Airport Traffic Controller must combine the qualities of quick, keen judgment and a decisive speaking voice with considerable diplomacy, if he is to inspire confidence and respect in the flying public.

The Federal Government's interest in Airport Traffic Control was first evidenced as early as 1929 by the issuance of a set of "Uniform Field Rules" to be used at Airports. In 1938 this interest was expanded to include the actual licensing of Control Tower Operators, or Airport Traffic Controllers as now officially designated. Finally, in 1941, the Federal Government operating through the CAA began the formal operation of some of the major Control Towers and at the present time, controls and operates approximately 150 Towers in the United States and it's Territories. The Airport Traffic Controllers who man these Towers control well over a million and a half landings and takeoffs per month.

The constant advances of modern aviation have made the Airport Traffic Controller's job one of increasing complexity, requiring a high order of specialized skill and thorough training. Of necessity, an Airport Traffic Controller's training may only be obtained "on-the-job". In no other line of work are the same problems encountered, and proficiency can come from one source only - "experience".

The physical layout of a standard Control Tower is arranged around three positions of operation: the Local Control or "A" position, the Flight Data or "B" position, and the Approach Control or "C" position. These positions are normally manned by a Controller, an Assistant Controller, and a Senior Controller respectively, but with a progressive training program constantly in effect the operators rotate from one position to another as they become more experienced, and eventually qualify for all positions. The normal division of work puts the Senior Controller in charge of a watch and operating at the Approach Control position. In this position, he is responsible for the safe separation of all aircraft under his jurisdiction which are operating under Instrument Flight Rules; that is, either approaching or departing during weather conditions such that the pilots cannot see each other and must rely on instructions from the ground to avoid collision. The Local Controller is responsible for local traffic operating visually on and near the Airport, and issues takeoff, landing, and advisory instructions. The Flight Data Operator, normally a Assistant Controller, is the junior man of a watch and handles telephone calls, interphone contacts, transcribes and delivers clearances and weather information, and in general takes care of the routine non-control duties.

These three men work together as a well organized team and during bad weather and periods of heavy traffic the highest efficiency and closest cooperation must be achieved if their job is to be well done. Needless to say, the job must be well done.....in fact, perfectly done or the consequences may be



tragic. This cooperation-naturally extends to include the Air Route Traffic Control Center, and the personnel of the two units form a combination of high efficiency. The present Air Traffic Control system developed and constantly improved by the CAA has been widely copied abroad, and is recognized as a standard for the world today.

Those that prefer a job that is other than routine, Airport Traffic Control is for you. Anything can happen and usually does. Every take off, every landing, even every radio contact may be the beginning of an emergency situation that will demand the utmost in skill, initiative and resourcefulness on the part of the Airport Traffic Controller as he endeavors to assist the pilot by every possible means to effect a safe landing.

Almost without exception, every magazine story or movie about flying contains a highly dramatic sequence between a control tower and an aircraft. Often the aircraft is lost, flying blind in a grey swirling mist; or then again the aircraft is plunging down out of control; or perhaps there is a fire aboard, but no matter how unbelievable or fantastic these sequences dreamed up by a script writer seem, it is a sure bet that some airport traffic controller has worked an aircraft under similar conditions.

The actual hair raising stories of emergency situations would be so numerous and so voluminous that it is not possible to relate them in any one article. However, from time to time all of you have no doubt read of some of these incidents in your newspaper where the skill and technique of the controller on duty saved lives and protected property.

DELTA INSAC DESTROYED BY FIRE

The Delta INSAC was destroyed by fire of undetermined origin early Monday, March 21, morning. The blaze which started in the lean-to was discovered by the Communicator on duty, Miss Frances Bradley, who immediately called the Delta fire department. Their efforts to save the station were futile as the flames had spread very rapidly.

Regional Office personnel and the Delta Fire Chief have been investigating the fire but at this time the cause and place or origin of the blaze has not been determined.

As an interim measure, pending the rebuilding of the station, a mobile unit has been equipped and sent to Delta and the entire function of the station will be carried on starting March 30. The station garage will be used as an office during this period.

The accomplishment of returning Delta to an operating activity in this emergency represents an outstanding display of teamwork between the Communications, Plant and Structures, and Airways Operations Branches. The Communications Branch is outfitting and will install and test the mobile unit, Plant and Structures is lining the garage with celotex, making it more suitable for temporary office quarters, while the Operations Branch is securing office equipment, supplies and furniture.

ADMINISTRATOR OUTLINES THE PROGRAM FOR NEW AIDS TO AIR NAVIGATION

The art of piloting an aircraft from one spot to another, when the earth is invisible through cloud and storm, has progressed rapidly in the past 20 years. But today, civil and military aviation jointly are entering a revolutionary new phase of air navigation which will have a major impact on the American way of living and on our ability to defend ourselves in case of war.

Back in the days when an airplane was a novelty, a pilot could fly when and where he pleased without fear of collision, providing he maintained a safe altitude above the ground. The notion of air traffic control would have amused and amazed him.

But by the early 1930's, enough air traffic had developed to make definite airways necessary, particularly in the more congested areas. Too, the need for guidance when the pilot no longer could see the earth became more and more pressing. As a result, the Federal Government installed a system of airways throughout the country, using the best radio devices known at that time.

This air navigation system centered largely around four-course low-frequency radio ranges, plus radio location-markers, and low-and-medium frequency voice communication channels. Just before the start of World War II, the CAA began installing very-high-frequency Instrument Landing Systems. This system, which provides radio beams down which a pilot can fly his plane until he sights the runway, was adopted by the military forces.

The low-frequency ranges and communication systems served a useful purpose, and still are in general use today. But they have serious drawbacks, and have been outmoded by new electronic inventions which appeared before and during the war.

Those of us who travel by commercial airlines know how uncertain the schedules are during periods of bad weather. This uncertainty has been a grave handicap in the development of air travel, and has slowed down the growth of air freight and air express. It has caused the airline companies tremendous annual losses.

This outmoded air navigation system also has seriously handicapped our military air operations using the same system during instrument weather conditions. Speed is the essence of modern warfare; in case of sudden attack we must be able to move large numbers of military aircraft quickly and unerringly to the points where they are needed. The enemy will not wait for favorable weather, or give us time to acquaint our pilots with unfamiliar devices.

Fortunately, all significant groups connected with civil and military aviation have agreed on a definite program to modernize our airways and make all-weather flying a universal reality. This program was developed through the Radio Technical Commission for Aeronautics, and the plan itself is commonly referred to in aviation circles as "SC-31", because it was prepared by Special Committee 31 of the RTCA.

The first, or transition, phase of this revolutionary new air navigation program will be completed about 1953. A good start already has been made in developing and installing the new devices needed for this part of the program.

(Continued on Page 14)

Question Box



- Q. With reference to A. O. No. 354, on the subject of property accountability, how can the original cost of items on hand be established? This information is needed in determining whether or not survey reports or lost property affidavits will be required.
- A. The Regional Warehouse Catalog includes the contraction "AC" in the description of all items having an initial cost in excess of \$5.00. It is necessary to refer to the catalog when there is some doubt as to whether an item can be considered expendable or accountable. Accountable items will be indicated by an asterisk on the Standard Allowance List for Part II items now being prepared for Federal Airways facilities.
- Q. Why do we receive direct shipments from the Bureau of Federal Supply?
- A. Effective March 31, 1949, all supplies formerly furnished by the Bureau of Federal Supply will be shipped from the Regional Warehouse, thereby eliminating this special procedure.
- Q. If an employee is called to duty because of an emergency situation and injured enroute from his home to his place of duty, is the employee covered by the benefits of the Employees Compensation Act?
- A. No. The compensation act provides that an employee is provided compensation when suffering an injury or death while in the performance of duties. In the event therefore that the employee has not reported for official duty an injury enroute to work does not render him eligible for the benefits of compensation.
- Q. When an employee in travel status is injured while en route from his place of duty to his temporary residence, is the employee covered by the benefits of the Employee's Compensation Act?
- A. Yes, provided that no willful misconduct is involved.
- Q. What is the procedure to be followed in obtaining commodities such as fuel oil, or repairs which are required immediately but which cost in excess of \$100.00?
- A. Letterhead bids should be obtained from at least three (3) concerns wherever practicable. The quotations should then be dispatched to the Regional Office where they will be evaluated and notice of award made by return dispatch. A confirming purchase order will be issued by the Regional Office upon receipt from the field employee of the letterhead quotations.

FROM "U.S. AND US", WASHINGTON TIMES-HERALD

by

Harry B. Mitchell

President

U. S. Civil Service Commission

"If I were a young man or a young woman just getting a start in public service, I would do my best to see that I met the requirements for achievement in these respects:

ABILITY:

"I would have something to offer. Uncle Sam pays for work, talent, and judgment.

"You must be qualified to do a job, either with your hands or your head, or both.

"I would see that I had genuine ability in whatever field I was working in.

"If I were a clerk or a stenographer, I would be a fast, accurate one.

"I would study the work of my office and do it well. I would anticipate needs and be ready to meet them.

"I would keep a step ahead of the supervisor and plan for the day when I would be a supervisor. Whatever my work I would study and grow.

INTEGRITY:

"'Old-fashioned'? Perhaps. But there has never been a substitute for real honesty and reliability. Persons who can be depended upon to DO A JOB seldom have to worry about a job to do.

"Common honesty in a day's work, both in the amount and the quality of it, is one of the basic needs in the government service and one of the best assets an employee can have.

CO-OPERATIVENESS:

"Ability to get along with your fellow employees and your supervisors is not a small thing.

"You will go farther if you cultivate a cheerful, tactful attitude and are willing to see the other fellow's viewpoint.

"Note the advantages of his way of doing things. Give him credit for his help. No one ever lost anything by helping his fellow employees along.

LOYALTY:

"I do not mean passing the loyalty test needed to ferret out subversives. Not only loyalty to the American government, but to the job, the division, the agency; to the supervisor, the "big boss", and the little one.

"The sort of loyalty that keeps you on the job, that makes you forget the clock, that helps you think and plan to do the very best possible job, and makes you stoutly defend the work you and your associates are doing.

"Not blind loyalty, but intelligent adherence to a program you know is right. The Federal government needs loyal employees.

FORESIGHT:

"Plan for a better job. Look over your assets. Add to them by study and work experience. Go to night school if you need to. Take Civil Service examinations as they come along.

"Let your personnel office know that you have the ability to do more and better work. Don't be too modest and don't claim more than you can produce.

"When your chance comes, as it will, work!

"I am fully aware that all of this sounds much like a sermon on success, but I am also thoroughly convinced the persons who get ahead in the government service, or in private industry, must and do have these qualities.

"Finally, when they are in the kind of work that suits them best, they stick to their jobs, taking the bad times with the good in stride. They enjoy the confidence of the heads of their agencies. As the years go by, they make more money, because they are worth more. They have a sense of accomplishment. They know what it is to take joy in work that is well done."

AVIATION SAFETY HI-LITES

AIRCRAFT BRANCH:

Personnel from this Branch participated in the Pan American Airways proving runs on their first Boeing "Stratocruiser", 377, airplane to Honolulu and return. The airplane and its equipment performed very satisfactorily during the runs. The return flight of the first trip from Honolulu to San Francisco was made in six hours and fifty-nine minutes "off to over," which was within three minutes of equaling the speed record set by a DC-6. The return flight was made at 25,000 feet, pressurized to 5,500 feet, at a true ground speed of over 400 m.p.h. Incidentally, no effort was made to set a speed record.

An interesting simile can be drawn between the 21 hour flight schedule used just prior to the war and the projected schedule of 7 hours. A tentative date of April 1, 1949, has been set for the first scheduled run of the 377.

AIRMAN BRANCH:

The Captain of our Airman Branch team, Bob Dake, was not content with all the travel involved in the recent proving run trip to Honolulu and return on the Boeing 377, as he didn't take time out to replenish his shirt supply in Los Angeles, but left from San Francisco immediately for the Seattle Seventh Regional Conference. He did spend a few days in the Regional Office on his return, however, then off again to the CAA Center, Oklahoma City, for a two-week flight refresher course.

As a result of a recent conference between the State Aviation Commission, the Bureau of Readjustment Education, and the Airman Branch, our agents are assisting the State in implementing Multi-Engine and Airline Transport Pilot Rating courses in California. These courses were initiated with the thought of assisting operators and GI enrollments.

Speaking of approved schools, for the first three weeks of March, only seven schools cancelled out. One was approved - net loss of six. The anticipated mass cancelling of schools has not materialized. A few schools report slight increases in GI enrollments.

Fifty-nine flight engineers have been certificated for American Airlines, Inc. since the first of the year. These applicants completed their six-week Flight Engineer Training Course at American Airlines Training Center, Ardmore, Oklahoma. The trainees were given an oral and flight test on Douglas DC-6 aircraft at the American Airlines Operations Base, Los Angeles.

The Chief of the Pilot Division, H. Bromley, a member of the State Personnel Board, and a member of the State Fish and Game Division, composed a three man board which met Friday, March 25, 1949, for the purpose of selecting a Warden-Pilot, Division of Fish and Game, from 15 qualified applicants. Applicants were required to hold valid commercial pilot certificates, A & E licenses, and pass a written examination. Salary range is \$358-\$436.

AIRPORTS BRANCH HI-LITES

If you were in the vicinity of the Los Angeles Airport during the latter part of March and witnessed some four-hundred columns of flames reaching thirty feet or more into the heavens, you needn't have been alarmed; it wasn't an invasion from Mars, but only Airport officials testing the new FIDO, fog disbursement installation. The public demonstration of FIDO which, incidentally, is the only such commercial installation in the world, was presented on Tuesday, March 29th, with many notables in attendance.

The first phase of expansion (grading) of the Los Angeles airport is proceeding according to schedule and is now approximately 15 per cent complete. Out of a sum total of approximately \$20,000,000 to be spent in expanding the Airport, \$3,500,000 have been allotted for grading.

FEDERAL AIRWAYS HI-LITES

COMMUNICATIONS BRANCH:

VHF Range Program:

Final flight checks have been conducted on the VHF range at Red Bluff, but were not completed due to constant rains. It appeared from flight checks that were possible that the station will be satisfactory for commissioning.

Final installations are under way at Sacramento and at Fresno, although rainy weather is hampering the commissioning of both of these sites. Reports received in the office indicate that installation personnel had to either wade or swim the last half mile to get to the Sacramento site to accomplish the final work.

Installation personnel have completed insofar as possible the VOR facilities at Tucson, Douglas and Gila Bend. Final flight checks of these stations will be conducted within the next week or so, and as many of the sites as meet the final criteria will be commissioned. The VOR facility at Yuma, Arizona, is now commissioned. This is the first VOR facility to be commissioned by the Sixth Region.

Final installation work is now in progress at San Diego, and preliminary flights made on the facility indicate that it will be satisfactory for commissioning as soon as all equipment is installed.

Equipment:

Delivery of console equipment, which is expected to begin in the near future, will finally allow completion of the D-T control portion of our VOR facilities. The control equipment for the VOR ranges has been so tied up with the console program that we have had to use makeshift equipment in all cases to commission any of the facilities or to bring any of them up to the point where we have D-T control and voice operation of the ranges.

The delivery of the teletype consoles is expected in the near future at the Salt Lake City INSAC.

A new type of aircraft receiver, the Collins Type 51R, has been installed in Sixth Region patrol planes and has given indication of being far superior to the previously installed ARC Type 15 equipment.

MOR Facility:

It is anticipated that the MOR facility at Pescadero will be ready for tune up by Washington personnel by May 15. This facility is one of four presently being constructed and is specifically designed for long distance, omni-directional range, coast to coast and transoceanic flying. It has a rated power of 10 kw, which is approximately fifty times the power of a standard range, but operates in the low frequency range band.

VOR Facility:

The VOR facility at Daggett, California, was commissioned March 22, 1949.

Fan Markers:

The move of Castaic fan marker radio equipment to a new site was started on March 7. The estimated completion date is March 25.

The modification of Good Springs, Nevada, fan marker radio equipment to replace unsatisfactory motor alternator equipment with vacuum tube modulator/power supply equipment was started on February 28 and completed on March 16. The vacuum tube equipment for this facility was constructed in the Sixth Regional Shops.

Inspections and Tests:

From February 28 through March 3, Mr. M. H. Griffith, Chief, Communications Maintenance Division, Mr. T. A. Kouchnerkavich, Chief, Communications Engineering Division, Messrs. H. A. Selby, F. J. Cervenka and Ed Rudisuhle of the Washington Office, A-60, participated in the inspection of new equipment being

11
fabricated by Lenkurt Electric Company of San Carlos, California, for the Philippine rehabilitation program. The equipment is essentially carrier tone channeling and control equipment intended to interlink, by means of VHF FM radio link receivers and transmitters, the several OFACS transmitters, receivers and control station facilities in the Manila area. Several very novel design considerations are incorporated, such as automatic level control on the carrier channels.

On March 9 and 10, Mr. M. E. Zeigner, Maintenance Inspector, and Mr. A. D. Herbert, Radio Engineer-Landlines, participated with Mr. H. A. Selby of A-60 at San Francisco in tests of signal distortion, duplex teletype and frequency shift operation throughout a round-robin circuit between San Francisco control, Belmont transmitters and Pescadero receivers, Pise Mountain VHF repeater and back to San Francisco Control. Considerable qualitative information was obtained of distortion conditions throughout the circuit by using standard Lenkurt test equipment, which has been provided in each of the units for the Manila-Philippine installation. VHF link operation seems to be quite satisfactory at Pescadero, Pise Mountain to San Francisco control; however, difficulty is being experienced between San Francisco and Belmont transmitter station. Further work is in progress on the solution of these difficulties.

Mr. Murry Brimberg and Mr. R. A. Linnell, Radio Engineers from Washington Office, A-72, are here for inspection of aircraft and radio facilities in this Region and for Regional discussions.

Training Program:

On-the-job training for the second group of Filipino trainees, held at the San Francisco OFACS, was completed on February 24.

PLANT AND STRUCTURES BRANCH:

Bids have been received for the construction of a new watchhouse for the INSAC Station at the Ukiah, California Municipal Airport, and construction work will be started immediately. N. C. Seewald will be in charge of this project.

Negotiations have been proceeding satisfactorily for the construction by United Air Lines of an adequate control tower at Hubbard Field, Reno, Nevada. Construction work is now underway, and it is expected that this facility will be commissioned for CAA operation the latter part of this fiscal year. Negotiations are also continuing for the provision of a new building to house the INSAC Station and Weather Bureau. It is expected that this building will be completed and the INSAC facility relocated late this spring.

Our program for airconditioning airport traffic control towers is progressing. Plans have been completed for all projects, and contracts have already been awarded for Bakersfield, Santa Barbara and Santa Monica, California. This airconditioning program is under the direction of Engineer Sam Keim.

Construction work on facilities for Airport Surveillance and Precision Approach Radar at the Los Angeles Municipal Airport is proceeding very rapidly. A number of man holes and duct lines have already been installed, and concrete work on building foundations is underway. Work on this project is under the direction of Mr. James Crewshaw.

Surveys conducted during the past month have included relocation of Beacon Site No. 21 near Douglas, Arizona and reconnaissance for new beacon lights between Phoenix and Winslow, Arizona for budget estimates. Sites have also been selected for beacons at Julian and Crestline, California and are expected to be installed in the near future.

A number of projects closed because of winter weather will be reopened shortly and plans are now underway to activate this work. These projects include the INSAC Station at Winnemucca, Nevada and the relocation of the Harri-man Hills, Utah beacon site.

AIRWAYS OPERATIONS BRANCH:

A conference of Communication Operations Division Chiefs from all Regions was held in Washington during the week of February 28 and was attended by C. M. Smith of this Region. The main subjects discussed included the new conversion of teletype speeds from 60 to 75 words per minute; the reclassification of Communicator positions; the enlargement and revision of flight plan form ACA 398 and the operation of international notam offices.

Mr. C. W. Carmody, Chief of the Airport Traffic Control Division in the Washington Office visited Region Six during the month of March. The primary purposes of his trip were to represent the Washington office at the Chief Controllers conference and to visit several Sixth Region facilities.

Airways Operations Branch is "bustin' out all over" with conferences. The Chief Controllers of all Sixth Region Centers and Towers were summoned to the Regional Office for a week's conference beginning March 14. The Chief Aircraft Communicators from San Francisco, Los Angeles, Salt Lake City, Oakland and Fresno also spent the week of March 14 conferring in the Regional Office. Their visit marks the beginning of the Sixth Region Chief Communicators' familiarization tour in the Regional Office, five Chiefs to follow each week.

ADMINISTRATOR OUTLINES THE PROGRAM FOR NEW AIDS TO AIR NAVIGATION (Continued)

The ultimate program, which envisions some devices which a highly imaginative Buck Rogers might envy, is scheduled for completion about 1963.

Now let us look at some of the old and the new air navigation equipment. Earlier, I mentioned the four-course low-frequency range. This range offers, as the name implies, only four paths to or from the range. In order to stay on one of these courses, the pilot must listen continuously to dots and dashes which blend together when he is in the exact center of the airway. Needless to say, this is exacting and during thunderstorms and periods of heavy static, the range becomes difficult and even impossible to hear. There is danger, too, of the pilot confusing the courses and flying on a wrong heading.

To replace this kind of range, the CAA has been installing what is known as omni-directional, or ommiranges. These offer the pilot an almost unlimited number of courses which he may fly. And the ommiranges, operating in the very high frequency part of the radio spectrum, are largely free of static and interference.

With the Instrument Landing System, two radio beams are transmitted from the airfield. Received aboard the aircraft, these beams operate a cross-pointer indicator which is simply a dial with two needles crossing in the center. The vertical needle, which also is used with the omnirange, tells the pilot whether he is properly lined up with the center of the runway and, if not, which way he must turn. The horizontal needle tells him whether he is above or below his proper glide path, and how to correct his descent if necessary.

The ILS system is simple, positive, and in wide use by our scheduled airlines. Already, it has permitted the CAA to lower landing minimums from 400-foot ceilings to as low as 200 feet in many locations, greatly improving schedule reliability. Similar reductions in ceiling minimums have been approved where radar systems are in use.

The radar landing system, called Ground Controlled Approach or GCA, permits a controller on the ground to "talk the pilot down" over ordinary voice radio channels. The ground controller watches two radar screens.

The first, known as the surveillance radar screen, enables the operator to locate aircraft flying within a 30-mile radius of the airport. After positively identifying the aircraft on approach as a particular dot on the screen, the controller guides him safely into and through the holding pattern.

When the plane is ready to head in for a landing, the precision radar screen comes into play. The correct path to the runway is shown by lines on the screen, and if the dot representing the plane gets off the lines, the controller tells the pilot exactly how to correct his course.

This ground controlled approach radar may be used independently, or to monitor an approach made on the instrument landing system.

At present there are about 80 civilian Instrument Landing Systems in operation. We have improved-type surveillance and precision radar equipment for ground controlled approaches at LaGuardia Field in New York, at Washington National Airport and at Chicago. As rapidly as funds and manufacturers' delivery schedules permit, we are installing additional GCA radar sets at the busiest airports.

At other large airports CAA is planning to install the surveillance radar unit alone. This will permit the traffic controller to watch all the aircraft in his vicinity through radar, even when the weather has closed in. The controller can be certain that each plane is in its reported position, thus reducing collision hazards and speeding up the landing and takeoff sequences at the airport.

There has been some misunderstanding by the public of the whole subject of radar. Many people believed that war-developed radar would, in some magic way, instantly transform aviation into an all-weather transportation system, free of hazards and navigation problems. Ultimately, it promises to do just that. But we still have quite a way to go.

For one thing, military ground radar equipment designed for use on the fighting fronts proved to be inefficient and unsatisfactory for everyday civilian use. An extensive program was necessary to design, test, and produce ground radar which is economical and equally useful for civilian and military aircraft.

Best of all, with the omnirange, the pilot can fly by eye instead of ear. An occasional glance at a vertical needle in his cockpit is all the pilot needs to keep him on the right heading. About 250 of these omniranges are now operating in the United States, and the CAA program calls for an eventual total of about 400, blanketing most of the country with signals.

The omnirange gives the pilot simple, clear information about the course he is flying. If he is flying northeast, for example, on a course of 45 degrees, the numerals zero four five will be continuously visible. And the words "to" or "From" will tell him clearly whether he is on a course to or from the station. This course indication is entirely independent of the aircraft compass, and shows the track actually being flown, regardless of cross winds and the plane's heading. The difference between the omnirange course and the indicated magnetic heading continuously shows the pilot the amount of correction necessary for cross winds. But the pilot need not concern himself with this unless he wishes; if he flies by the vertical needle his wind correction is automatic.

Each omnirange eventually will be equipped with a device called Distance Measuring Equipment or DME. With suitable equipment in the aircraft, the pilot always will know his exact distance to the omnirange. This information will be displayed in the cockpit by a simple pointer on a dial. With the omnirange and the DME combined, the pilot continuously will know his exact position in space, without having to work out navigational problems.

In addition to all this, an electronic brain called a course-line computer has been developed. This device solves difficult navigation problems with the speed of light. Using this computer, a pilot won't need to fly directly to or from an omnirange. He can set a course from one selected point to another, and then let the computer, which uses signals from nearby omniranges, guide him accurately to his destination.

These new devices, all of which will come into general use in the next few years, will make possible multiple airways between cities, relieving the traffic congestion which already has passed the saturation point in many parts of the country.

Very-high-frequency voice radio, which is static-free, is coming into general use along the airways. It is making a definite contribution to safer flying. For the ultimate program, however, a private-line system will be developed for instantaneous, automatic transmission of information between ground and air.

So far, we have discussed the new equipment which will guide aircraft along their routes. Equally important, however, is the problem of getting them safely into the air, and onto the ground, during low visibility. For all-weather flying this is just as important as safe and reliable navigation enroute.

We have available today two entirely different methods of bringing aircraft safety to a landing through low ceilings. One, mentioned earlier, is called the Instrument Landing System, and uses radio beams. The second, using precision radar principles discovered during the war, is called Ground Controlled Approach. Each system has advantages, and each system has drawbacks. Each can be used separately. But when used together, as recommended under the RTCA program, they provide the pilot with a double check on his position at all times, and achieve the closest to ultimate safety which our present knowledge permits.

Airborne radar, as produced during the war, was a heavy item of equipment. Also, it required one or more men to operate it, in addition to other members of the crew. Overseas, where there were no other navigation aids, it was a necessary piece of military equipment, well worth the extra weight and manpower.

But in a country like the United States with adequate navigation aids, airborne radar of the wartime type cannot justify itself in commercial operation. A pilot can get far more navigational information from radio ranges, and use it more easily, than from radar equipment in his plane.

However, airborne radar does show promise in two special fields. Numerous experiments have indicated that a satisfactory light-weight radar can be produced which will help pilots to detect and fly around thunderstorms and other turbulent areas. Eventually, also, someone may develop a satisfactory radar collision warning device.

New applications of radar and television really will come into their own in the ultimate RTCA program, which will provide an air traffic system of almost inconceivable magnitude and precision. Some of the equipment needed has not yet been invented. But the specifications have been laid down, and the principles on which it will operate are understood. No one doubts the ability of American electronic engineers to produce the needed air and ground devices.

There is too little time to tell much about this ultimate air navigation system, but here, in a general way, is how it will work:

Before a pilot even takes off on a flight, a landing time will be reserved for him at his airport of destination. As he flies along, a dial will tell him in minutes and seconds whether he is ahead or behind his exact schedule, and he will slow down or speed up accordingly.

In the cockpit the pilot will see a pictorial presentation of everything around him. This picture, probably televised to him from the ground, will show his own aircraft in relation to others in his vicinity, indicate obstructions or other hazards, and even show the location of storms and turbulent air.

At the same time, radar will be continuously watching him from the ground. By means of a block system, something like that used on railroads, the pilot will be assured that he is in safe air space at all times.

The aircraft of the 1960's will carry equipment which continuously transmits to the ground the readings of the various cockpit instruments. Electronic brains on the ground will check these readings automatically against information derived from radar and other sources. If, for example, the altitude shown by ground radar differs from the altimeter reading in the cockpit, the pilot will be instantly and automatically notified.

If the pilot wishes to change his altitude or his flight plan, he will be able to query the ground stations by pushing an appropriate button. Approval or disapproval will be flashed back to his cockpit in a fraction of a second, since the calculations will be made by automatic machines on the ground.

This ultimate system, fantastic though it may sound, is designed to meet the everyday needs of civil and military aviation 15 years hence. It will, of course, solve the weather problems which plague aviation today, and it will permit aircraft to fly their schedules with clocklike precision and absolute reliability.

Furthermore, the RTCA system is designed with military as well as civilian requirements in mind. In case of war, the system will give instant warning of unfriendly aircraft, and permit interceptors to be vectored to attack. It will permit quick and heavy concentration of airpower anywhere it is needed within the country, and then assist in maintaining a continuous flow of supplies and manpower to the area.

This tremendous new program, on which the Army, Navy, Air Force and CAA are jointly agreed, will open the way for a whole new era of aviation in which the blessings of fast, safe, reliable low-cost transportation will be shared by every American citizen.

CAPITAL GLEANINGS

An agreement has been reached to overhaul the Government's efficiency rating system. Final details have not yet been worked out, however, it is indicated that the new system may discard the ratings of "unsatisfactory", "fair", "good", "very good" and "excellent" and designate the use of "satisfactory" and "unsatisfactory" only.

* * * *

The Executive Council of the National Federation of Federal Employees has endorsed the bill to raise the travel allowance for Government employees from \$6.00 to \$10.00 a day. This bill appears certain to be approved by both the Senate and House expenditures committees.

* * * *

The Administration has given its approval to a bill that would increase the benefits for the thousands of Federal workers who are injured each year on the job. The families of employees who are killed on the job would receive increased compensation under the legislation. The bill provides that an employee who is totally disabled would be paid compensation up to $66 \frac{2}{3}$ of his salary at the time of his injury. If he had one or more dependents, he would get a maximum of 75 per cent. A childless widow would get 45 per cent of the salary of her husband who is killed on his job. If there are children, the widow would get 40 per cent, plus 15 per cent for each child up to a maximum of 75 per cent.