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FEDERAL AVIATION AGENCY'S NEW PERMANENT HOME--Here is an architect's concept of Federal Office Building 10 A.

A permanent new home for the Federal Aviation Agency's Washington staff has been authorized by the Congress to bring the Agency's headquarters together for the first time.

The General Services Administration will build the 10-story, fully air-conditioned office building in Southwest Washington as part of the current redevelopment program of that part of the Nation's Capital. Work is expected to begin by mid-winter and it is planned to have the building ready for occupancy in the Fall of 1962.

The FAA Washington staff presently is located in five buildings: 1711 New York Avenue, N.W., Temporary Buildings 4 and 5, located at 17th and Constitution Avenue, N.W., the Mather Building on G Street near 9th St., N.W., and the Columbian Building between D and E Streets on 5th St., N.W.

E.R. Quesada, FAA Administrator, asked for the new building in order to obtain the efficiency needed to cope with the problems of modern jet-age aviation. Commenting on the action by the Congress in approving the construction of the building, Mr. Quesada said: "We in the Federal Aviation Agency are extremely gratified at the speed with which the General Services Administration and the Congress have acted to provide the authorization and appropriation for this much needed headquarters building. It is essential for efficient administration of

the many varied programs of FAA that all Washington personnel be located in one building to permit proper coordination between the operating Bureaus and Offices.

"The design of the new building is outstanding and incorporates the latest ideas in architecture and construction. It will probably remain as a model for office buildings for the next 50 years.

"In the short span of 18 months, FAA has made many forward steps in accomplishing the purposes envisioned by the Congress in enacting the Federal Aviation Act of 1958. This building, together with the many new Air Traffic Control Centers and other aviation facilities, are tangible indications of the progress which we are making to meet the unlimited challenges of the Jet Age."

Allan L. Dean, Assistant Administrator for Management Services, is coordinating plans for the building with the General Services Administration, and Mary Healy, Chief of the Administrative Services Division, is working closely with GSA on final design and construction plans.

In the new building, which has been designated Federal Office Building 10 A, there will be offices for the Administrator, the Deputy Administrator, Assistant Administrators, the six Bureau Directors, and the heads of staff offices of the Agency. More than 3500 FAA personnel are expected to be located in

Building 10 A. There will be 560,000 square feet of general office space available in the eight floors to be set aside for this purpose.

The new FAA home will have certain features incorporated in the design to serve the few special needs of FAA. Those few special requirements for the building will be developed by FAA engineers within the next few weeks and submitted to the General Services Administration for consideration. Construction bids will be let this Fall.

Facing on Independence Avenue, the 10-story building will occupy a full two blocks between 7th and 9th Streets, S.W. To the rear, it will face C Street, S.W. Exterior facing of the building is expected to be limestone, trimmed in aluminum or stainless steel. Alternative materials are marble for the facing with bronze trim.

The first two levels of the building are set back from the streets, providing a colonnade on all sides. The first floor provides space for shipping and receiving, building maintenance personnel and special purpose rooms, such as a health center. The second level will include an employee's cafeteria, the kitchen and a combination reception-exhibit area for the general public. FAA offices will occupy the top eight floors. More than 430 automobile parking spaces will be available to FAA employees on two floors located below ground level.

FA Club Offers Tours To Vacationing FAAers

Looking for something a little bit unusual in the way of a vacation this summer? Then you might try life on a western dude ranch or take a visit to the 49th state--Alaska. You can do either or both of these if you have the cash and time on the books. For full details you can check with your FA Club Chairman. Here in a nutshell is what is offered.

The FA Club in Washington, D.C., extends to all FAAers, their families and friends an opportunity to spend 14 days on a western dude ranch. The location will be Hunter Peak Ranch near Cody, Wyoming. In addition to the mountain scenery, there will be horseback riding, hiking, fishing and boating. Also included is a scenic drive to Yellowstone National Park, complete with picnic lunch and two eruptions of Old Faithful.

This tour leaves Washington, D.C. July 29 but can be joined by other members along the way. Price of this 14-day tour runs to \$349.67 and includes everything. If you miss the 29th deadline, you can still make the dude ranch tour at the same rate starting anytime up through the first week in September. Another thing about this tour is the fact that you can extend your stay at the ranch up through the first week in September for only \$75 a week extra.

Now, as to the Alaska tour. This one leaves Washington, D.C. on August 17. Or you can join the party en route. This is a 13-day air, rail and motorcoach trip that takes you to Anchorage, McKinley Park, Fairbanks, Whitehorse, Skagway and Juneau before returning home on August 31. Extended stays or optional trips to the Arctic Coast can also be arranged when making your reservations. Price of the two-week tour comes to \$678.34 from Washington, D.C. or \$478.13 from Seattle.

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Editor

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Brookings Institution Conducts Survey

Sometime during July or August you might be one of the 1700 Federal employees called upon to give your ideas to a National Analysts, Inc. representative. This representative will be conducting a study for the Brookings Institution with regard to attitudes of the American people toward Federal public service. Participation is on a voluntary basis.

If you are one of those contacted, the interview involved may be fairly lengthy--running anywhere from half an hour to three hours. It can be done during official working hours if this arrangement is agreeable to your supervisor. But, if the interview will disrupt or otherwise unduly interfere with normal work of the Agency, then the interview should not be held during normal working hours. Arrangements in each case will be made between National Analysts, Inc., and you.

According to the Civil Service Commission, this is a desirable project. So if you are contacted, you should, if you are interested, cooperate.

Automatic Air Traffic Control Experimental Contract Awarded

A \$5,974,500 contract for advanced experimentation on automatic air traffic control has been awarded to the MITRE Corporation, Lexington, Mass., by the FAA.

The MITRE contract is one of the largest FAA has entered into in the field of research. The work to be performed under the contract includes the design and experimentation of a semi-automatic air traffic en route control system using current air defense SAGE facilities.

The project will use a military SAGE (Semi-Automatic Ground Environment) electronic computer at Lexington and long-range radar sites in New England, New York, and New Jersey. The test facility will tie in with other experimental equipment for en route and terminal air traffic control at the FAA's National Aviation Facilities Experimental Center.

The MITRE contract provides for two years of research and experimentation on joint use of military SAGE equipment and facilities for air traffic control, as well as for air defense purposes. This project is being carried out in cooperation with the Department of Defense and the United States Air Force. Cost of the project will be shared between the FAA and USAF.

E. V. Shores Appointed To Air Navigation Commission

Edmond V. Shores, a 22-year civil aviation veteran, was, on May 24, appointed a member of the Air Navigation Commission of the International Civil Aviation Organization (ICAO) from his post with the FAA. Appointments to this body are made by the ICAO Council and normally are for three year terms.

He succeeds Claude H. Smith, who returns to the FAA as Chief of the International Organizations Division in the Office of International Coordination.

A native of Kansas City, Mo., Mr. Shores has been with the CAA/FAA since January 1938. He has served in the telecommunications field, including an assignment as the Telecommunications Expert on ICAO Regional Planning Matters. He has served on 21 U. S. Delegations to international meetings.

In his new duties as a member of the 12-man Air Navigation Commission, Mr. Shores will participate in carrying out the commission's responsibilities to consider and recommend to the ICAO Council, adoption and modifications of proposed standards and recommended practices in international aviation.

The ICAO Council is composed of representatives of 21 member governments, with headquarters located in Montreal. Its function is to administer the affairs of ICAO, the specialized Agency of the United Nations. ICAO, currently comprised of 78 members, was established in 1947 to provide for the orderly development of international air navigation and to promote international aviation.

FAAer Receives Honor

The Institute of the Aeronautical Sciences, on June 30, awarded the Octave Chanute award for 1960 to Joseph J. Tymczyszyn, a senior engineering test pilot and flight test engineer of the FAA.

The Chanute award, one of aviation's major honors, was established in 1939 in memory of the pioneer aviator Octave Chanute. It is awarded annually, "For a notable contribution made by a pilot to the aeronautical sciences."

Mr. Tymczyszyn, attached to the Fourth Region's aircraft engineering division, is widely known as the flight test coordinator for the certification program of the Douglas DC-8 series of jet transports. His active test flying career has covered a very wide range of aircraft types including trainers, heavy bombers, fighters, and transports.

FRED C. LANTER DIES

Fred M. Lanter, 60, Director of the FAA's Aeronautical Center at Oklahoma City since 1947, died June 29 as a result of a heart ailment. He had entered Mercy Hospital in Oklahoma City with a heart ailment almost a week before he died. Among those attending the services, held July 1, were FAA officials from Washington, Regions' Three and Two headquarters.

When Mr. Lanter went to Oklahoma City in 1947, it was as director of a new aviation center which was housed in the old Will Rogers field barracks. He was instrumental in its growing until, on June 22, 1948, the 14 million dollar FAA installation was dedicated.

Mr. Lanter served during World War I and attended college at Tri-State, Angola, Ind. He joined the FAA in 1929 as an aeronautical inspector at Atlanta, Ga. In 1938 he became Assistant Chief General for the inspection section and later, for the division in Washington, D. C. He then became Director of Safety Regulation then Assistant Administrator for Safety Regulation in Washington. From October 1946 until 26 July 1947, he was Regional Administrator for the Second Region.

In 1948, Mr. Lanter was honored by the Oklahoma City Chamber of Commerce as "The Civil Servant of the Year."

How would you go about



describing Mr. Lanter? Maybe the answer is contained in an article written about him in the Oklahoma City Times. It said, "...Men who knew him best said he had a deep devotion to his community, more ability than most realized, and a genius for getting along with, and leading his people. Lanter dreamed with the nation's leaders of the goal of uniform air regulations throughout the world, the men and women trained to carry them out in every position of responsibility, and the inspection, research, and development of men and machines to meet the requirements of the air age...."



Architect's drawing of terminal building showing its flaring concrete piers which will support cables holding up the hanging roof.

Jet Age of Tomorrow

DULLES INTERNATIONAL AIRPORT

It only takes one long sentence to say that sometime during the late summer 1961--with an actual target date of July 1, 1961--Dulles International Airport located at Chantilly, Va., should be ready for flight operations.

But behind that one long sentence lies the story of a great deal of work that went into making this target date possible.

The FAA, faced with the necessity of providing a second airport for the Washington area began, in 1951, to acquire land for that purpose in Fairfax County. The controversy which followed selection of the original site delayed further action for nearly seven years. But the delay proved to be a blessing in disguise in that the tremendous expansion of aviation during those years clearly indicated the need for a larger tract. Selection of the present location, 23 miles west of the White House, near the crossroads of Chantilly, Va., was made on January 14, 1958. Criteria used to determine the property lines were that it must extend 2000 feet laterally from the center line of any runway, and 8000 feet longitudinally from the end of each runway. These distances were intended to assure that the airport and the adjoining communities would live happily alongside one another. In all, 9800 acres were acquired. It is not contemplated that more land will ever be needed.

Named for the late Secretary of State, John Foster Dulles, Dulles International

will be the world's greatest airport--twice the size of New York's Idlewild. Besides being the largest airport ever conceived, it is the first built from scratch with the future in mind. Even at this state of incompleteness it resembles something the Sunday supplements used to refer to as "the world of tomorrow."

Everything about or connected with the new airport is futuristic and mammoth. The word "big" becomes an understatement. Looking into the future, the State of Virginia has estimated that the average daily vehicular traffic generated

solely by the airport will be 44,000 vehicles per day in 1975.

Work on a high-speed access highway is underway to connect the airport with planned highways which will provide rapid access to downtown Washington and National Airport. This 17.8 mile highway is planned as a four-lane divided highway. Naturally, this road-building also includes grading, drainage, paving and the construction of bridges.

One of the features of this roadbuilding program means that you won't have to fly to get to Dulles from some distant place then use almost that same amount of time for transportation into Washington. And if you're driving to the airport to catch a plane or to meet someone, there will be a public parking lot 200 by 1200 feet to the north and immediately in front of the terminal building--enough space to accommodate 8500 cars.

Terminal

As you drive down the access road (when everything is completed), the \$9,000,000 terminal will seem to rise from a base of approach ramps. You will note that the single, great room of the terminal, the main concourse, is 150 feet wide and 600 feet long. For greatest flexibility all columns within this space have been eliminated.

The roof is a hanging roof, supported by a row of columns 40 feet apart, on each side of the concourse. Sixty-five

On April 18, 1960, the enlarged responsibility for planning and operation of Dulles was assigned to the FAA's Bureau of National Capital Airports. Under the realignment, the Bureau of National Capital Airports will have complete responsibility for direction of the planning and operation of Dulles International Airport. Included are negotiations and relationships with potential airport users, with other Federal, state, and local government agencies on operational and policy matters pertaining to the airport, and, as necessary, with the engineering, architectural construction, and equipment consultants and suppliers to the airport.

feet high on the automobile (or approach side) and 40 feet high on the field side, these great piers can be likened to two rows of concrete trees between which a continuous hammock has been hung. The roof is carried on light suspension bridge cables rather than massive trusses. The roof deck itself is made out of concrete panels that fit between these cables. An additional advantage of the hanging roof is that the reverse curvature of the ceiling favors good acoustics. No echoes will confuse the public address announcements.

The concrete piers are sloped outward to counteract the pull of the cables giving the building a dynamic look serving also as a sheltering marquee over the main concourse approach ramp.

This colonnade of 16 concrete piers has a stateliness and height which gives it a monumental and dignified look in harmony with Washington's Federal architecture. The soaring piers also give a sense of the excitement of travel which seems appropriate to a jet airport. Thus

the architects have created a building which is designed to express the spirit both of the nation's capital and of a true jet age airport.

The design also facilitates expansion since the same structural system can be continued with ease when more space is required. The building has already been planned for the expansion anticipated by 1975. The initial terminal building will become the central part of an ultimate 1200-foot facade.

The terminal building has been designed to have two levels. The upper level, a single lofty room, is the main concourse. An automobile ramp permits you to unload directly in front of the airline which serves you. Just inside the door are the ticketing and baggage counters so that check-in baggage need be carried only a few feet. Proceeding beyond this "business" side of the room you come to the concession area. This attractive area of news stands, shops, restaurant, coffee shop, and other facilities faces the field. It is directly opposite the Mobile Lounges

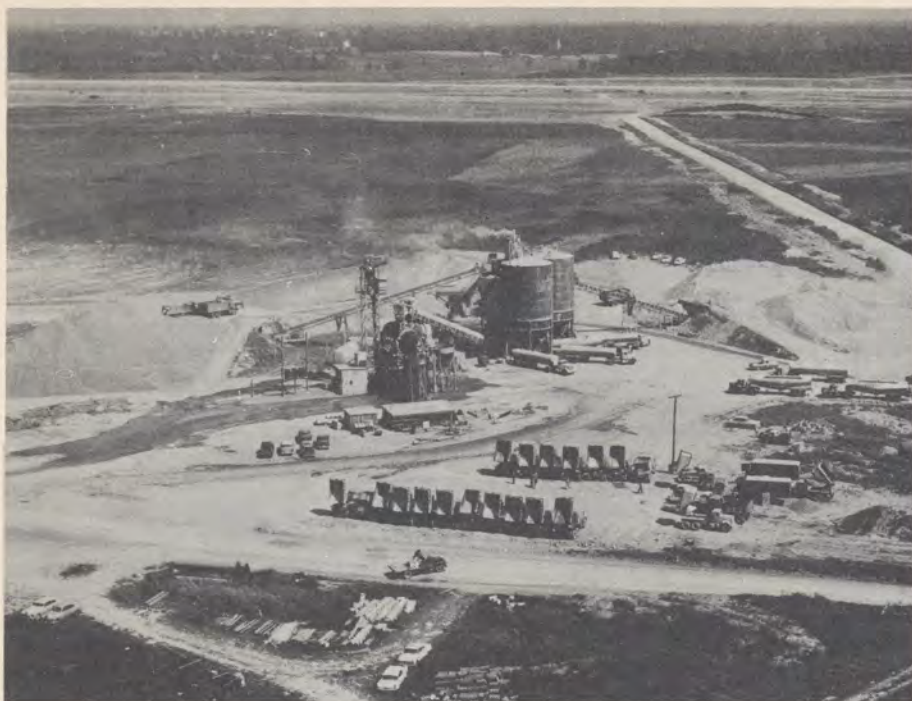
which await in docks as little as 150 feet from the terminal's entrance doors.

You will be transported from your parked aircraft to the terminal and leave your Mobile Lounge on this same main concourse level. You descend at once by escalator to the lower level. Here you get your checked baggage which has been delivered directly to this point. Here, too, are concessions which specifically serve your needs--extra telephones, hotel accommodation booths, Rent-a-car services, etc. From this lower level you go by gradual ramps either to buses, taxis or automobile pick-up or to the parking lot. You will be able to go to and from the parking lot without crossing any traffic artery.

You will notice that the two level concept effectively separates arriving and departing passengers thus eliminating much of the confusion found in single level terminals. Gone too is the usual confusion of arriving and departing automobiles, taxis, and buses and pedestrians trying to get to parked automobiles. It



Elevation view of the futuristic, two-level building with most of its concave roof cut away to show the interior. Arrows at center indicate the routes for arriving and departing passengers, a plan designed to eliminate the confusion found in single-level terminals. Control tower will be topped by a globe which will house radar equipment.



Cement plant, which was erected right on the site and some of the equipment used to haul the cement to the runways. Materials shipped in to manufacture concrete included 250,000 tons of sand; 600,000 tons of crushed stone, and 750,000 barrels of cement.

has been entirely eliminated by the separation of these various functions. Not only is this arrangement safer for the pedestrian but it greatly increases the efficiency of the traffic flow. Enplaning passengers entering the terminal building from the auto parking lot are carried up to the main concourse by escalators.

Access to the local service planes is by a central wing which projects out beyond the main concourse of the terminal. The roof of this wing serves as a beautiful and unique restaurant as

well as an observation platform. The control tower cab sits atop a concrete shaft which rises gracefully from the observation platform. Below the control tower cab are several levels of control rooms containing the most modern air traffic control equipment such as radar, radio and recording equipment. The summit sphere, 177 feet above the ground, houses airport surface detection radar for control of aircraft on the ground.

Local service lines and executive-type



Close-up of one part of the cement plant showing ramp which fed the plant and chutes which dropped cement into waiting trucks.

planes, and helicopters will taxi directly to an apron in front of the terminal building where they will be loaded and unloaded in a conventional way from ground level. There will be four landing pads, 100 feet in diameter, reserved for helicopters landing or taking off.

Utility Buildings

A contract has been let for the construction of two service buildings at a cost of \$1,461,000. One of these, a utilities building, measures 75 by 125 feet. It is to be one story in height and will house boilers for heating, air conditioning machinery and the main electrical equipment. A smaller building, the telephone structure, is to be 50 by 50



Before any construction could begin at Dulles, more than 12 million cubic yards of earth had to be excavated; more than 300 structures removed or demolished. Huge cats devoured the hedgerows and bowled over trees which were in the way. Hummocks were leveled, valleys filled, immense trenches opened and closed again over thousands of feet of pipes and conduits.

feet, two stories high and will also have the Weather Bureau Offices. The two buildings, which will serve the buildings in the terminal area, will be located approximately 400 feet southeast of the main terminal building.

The boilers, a cooling tower and refrigeration equipment have been purchased under separate contracts at a cost of \$238,858. The two high temperature boilers will each have an hourly output of 30,000,000 BTU (British Thermal Units). They will be equipped with natural gas burning equipment. The two refrigeration equipments each will be 960 horsepower units.

Mobile Lounges

Since the terminal consists of a single concentrated compact building, it is therefore radically different from, and much less costly than, the usual terminal building which sprawls out with "finger" buildings extending from thousands of feet to even miles to and between distant plane positions. This compact plan was made possible by the adoption of an entirely new method of passenger movement from terminal to parked aircraft--the Mobile Lounge System. The present terminal will accommodate 24 mobile lounge positions. It has been estimated that by 1975 there will be a need for 56 such positions.

In the Mobile Lounge concept the large jets and piston planes do not come up

to the terminal. Instead, they are serviced on a safely remoted central service apron. The transfer of passenger to plane is made by a Mobile Lounge which is loaded directly on the main concourse of the terminal building and then moves to the plane parked on the apron. Without walking up or down stairs, the passenger enters directly on plane level, protected from weather, noise, fumes and blast.

At Dulles International Airport the Mobile Lounge will serve all medium and large planes up to the largest jets. Large jet planes with two entrances will normally be served by two Mobile Lounges.

A thorough survey of the airport problem showed how the ever-increasing size of the conventional "finger" type airport building creates unreasonably long and fatiguing walking distances and time delays. Airports of this type now on the drawing boards show passenger walking distances of more than a mile. The Mobile Lounge concept reduces walking distances to an average of less than 300 feet.

The Mobile Lounge is envisioned as a vehicle approximately 50 feet long and 15 feet wide providing for the loading of passengers at the second level of a terminal building and unloading the passengers onto aircraft at the floor level of the plane. The vehicle would operate like a ferry boat being driven from either end. The lounge will provide seat-

ing for some 90 passengers in comfort. During the initial years of the airport's operation, 20 vehicles will be required to service the 30 airline loading positions that will be provided.

The transportation of passengers from the terminal building to aircraft is not of itself a new idea. European airports have utilized buses of various types to perform this function. This is the first time, however, that a specifically designed vehicle has been proposed for this purpose.

Work at Dulles began September 2, 1958, when some of the largest machinery in existence moved in to prepare the ground. Before any construction could begin, more than 12 million cubic yards of earth had to be excavated; more than 300 structures removed or demolished. Huge cats devoured the hedgerows. Hummocks were leveled, valleys filled, immense trenches opened and closed again over thousands upon thousands of feet of drain pipe and electrical conduits.

A plant was erected and enormous quantities of materials shipped in to manufacture concrete--250,000 tons of sand; 600,000 tons of crushed stone, and 750,000 barrels of cement.

Cost

The initial cost of construction of Dulles



Construction workers use multiple pneumatic drill in preparatory work before blasting to make room for drainage ditch. Drills were also used for foundation exploration work.



Steam shovel scoops out debris after blasting has taken place to make room for drain pipes and electrical conduits.

International Airport is estimated at 85 million dollars. Four projects alone put more than a one-third dent in this figure. These would include a \$3,941,535 contract for the first six-mile section of access road at a point adjacent to the airport; a \$4,432,000 contract for work on the terminal building; a \$12,493,475 contract for the runways and taxiways; and a \$10,468,000 contract for paving the 800 by 4000 foot jet parking apron and installation of six utility systems.

Runways

In paving the runways at Dulles, the contractor set up three of the largest type concrete mixers right on the site.

Graders, bulldozers, and all sorts of mechanical construction equipment set about making room for the runways. There were three runways involved in the contract; two parallel North-South runways each 11,500 feet long and 150 feet wide and separated by 6700 feet and one Northwest-Southeast runway 10,000 feet long and 150 feet wide. An additional Northwest-Southeast runway will be constructed when required by future airport traffic. Studies indicate that 65 percent of the aircraft operations will be from south to north. The easterly N-S runway will normally be used for landings and the westerly N-S runway for take-offs. This will permit simultaneous operations.

The paving work called for the laying of approximately 1,196,000 square yards of Portland cement concrete and an additional 462,000 yards of asphaltic concrete for the runway shoulders. If you've ever laid concrete for a patio, driveway, basement or sidewalk, you can get some idea of the work involved.

Concrete was laid in a 25-foot wide strip along the entire 11,500 feet, at the rate of approximately 3000 feet a day. It is from 12 to 15 inches deep laid over a nine-inch crushed stone base, strong enough to withstand the continuous impact of jets weighing a half million pounds. There is a 25-foot wide border of a two-inch topping of asphaltic concrete laid over four and one-half inches of crushed stone along both sides of the runway. This shoulder outside the regular runway width is to provide a clean surface to prevent overhanging jet engines from picking up dirt, dust and foreign objects from the ground. There was also the construction of the connecting cross-overs between the parallel taxiways and the runways, and the warm-up pads.

Each of the runways will be provided with high-speed taxiway turnoffs. Because the runways have parallel taxiways adjacent to them, wide radius turns have been provided at the intersection of the high-speed turnoff and the parallel taxiways. This will permit fast turns to be made onto the parallel taxiways if desired, or if necessary because of inadequate deceleration of the aircraft. The high speed taxiway turnoffs are designed for a maximum runway exit speed of 60 miles per hour which should allow any airplane, landing at whatever speed, to clear the runway 30 seconds after touchdown.

Ground Transportation

Proposals have been invited for ground transportation service for airline passengers to and from Washington National

and Dulles International Airports and for scheduled bus service for employees at both airports.

One invitation calls for the operation of a highly specialized transportation system for airline passengers to and from both Washington National and Dulles and the Metropolitan Washington area and between the two airports.

The second invitation calls for a regularly scheduled bus service primarily to serve the needs of employees working at both airports.

Problems involved in providing ground transportation to serve Dulles International Airport are unique. Historically, specialized airline type transportation has utilized taxis and limousines almost exclusively. Due to the greater passenger capacity of the large jet aircraft and the 27-mile distance of Dulles International Airport from downtown Washington, there is need for a radio controlled and dispatched, high-speed vehicle fleet capable of carrying multiple passengers to meet incoming and outgoing airline schedules with full reliability and flexibility.

To make the ground transportation of passengers compatible with the speed and comfort of that aboard a modern airliner, it will be designed, in effect, as a beginning or an extension of the total passenger trip.

A heliport will be located in front of the terminal from which 'copters will ferry passengers to and from Dulles and other landing points.

Hangars

No hangars will be constructed as a part of the initial development of the



Aerial view of two parallel North-South runways which are 11,500 feet long and 150 feet wide and the 10,000 foot long and 150 foot wide Northwest-Southeast runway. Paving work called for laying about 1,196,000 square yards of Portland cement concrete.

airport. Adequate provision, however, is being made for their location in developing the master plan. It is anticipated that they will either be developed by those who need hangar facilities, or will be developed with Federal funds on the basis of self-amortizing leases which are entered into by prospective tenants. It is contemplated that many associated facilities such as in flight food service, kitchens, hotel, filling station, etc., will be developed under this same alternate pattern. The site is sufficiently large to provide ample areas on which to build all types of needed airport facilities.

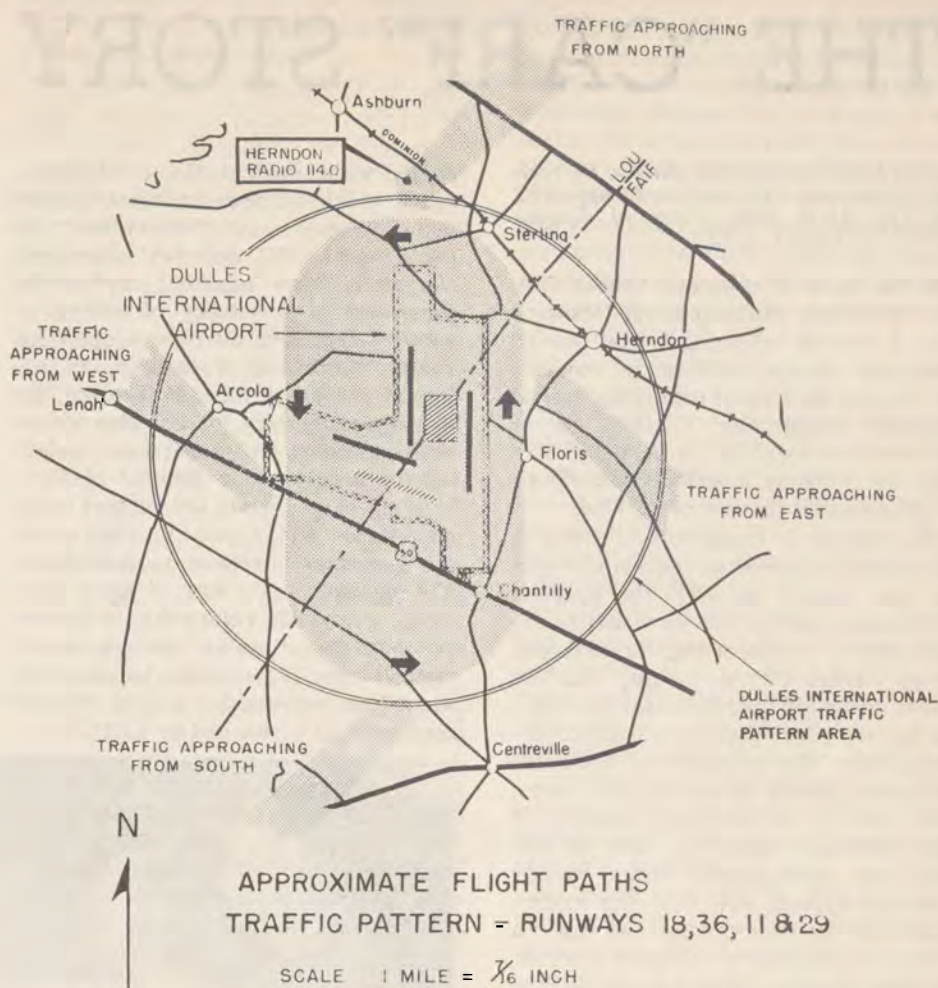
Noise Problem

Anticipating the possibility of a noise problem, as farmland is converted into housing developments and commercial ventures, wide clearances have been provided. All the trees near the boundaries have been left standing. In addition, the FAA plans a reforestation program which will assure a solid belt of timber 1000 feet deep around the perimeter, 2500 thick at runway ends. Studies have shown that trees and shrubbery are the best mufflers and sound suppressors yet devised.

Development of an airport traffic pattern for Dulles is designed to keep noise levels at a minimum in neighboring



One 25-foot wide strip of concrete almost reaches the end of one 11,500 foot runway.



communities. In speaking of the noise abatement at Dulles, Administrator Quesada said, "We are now working on flight operation rules and airport traffic patterns for the Dulles International Airport that will not only assure the highest degree of air safety possible, but will at the same time minimize the aircraft noise problem to the maximum practicable extent for those people who live in the vicinity of the airport."

Mr. Quesada added, "The airport will be furnished with the latest and best navigation aids to facilitate instrument weather flight operations. In bad weather air traffic will be under the constant surveillance of radar operated by FAA controllers."

Entry and departure flight paths now being developed for the Dulles airport would require aircraft to fly over the least populated areas. The rules would further require aircraft to climb rapidly after take-off to 1500 feet before proceeding on course. Also, large aircraft approaching to land would enter the airport traffic area at an altitude of at least 1500 feet and maintain 1500 feet for as long as practicable before landing.

The airport traffic pattern area would include the airspace within a five-mile

radius of the center of the airport from the ground up to 200 feet. Generally speaking, this airspace would be reserved for aircraft landing or taking off. All enroute aircraft would be restricted from flying in the area.

An additional noise abatement rule would require all large aircraft, both piston-engine and jets, to maintain an altitude at or above the ILS (Instrument Landing System) glide path when on final approach to land on a runway equipped with an ILS.

The normal flow of air traffic around the airport would be counter-clockwise with all aircraft making turns to the left. Exceptions to this rule would be permitted by the control tower if the air traffic could be expedited safely.

A jet age showpiece is taking shape in rural Virginia, in an area which once resounded to the roar of musketry and which, except for grazing cattle, lay undisturbed thereafter for nearly a century. For the past year, however, the countryside has again awakened to a roar—the roar of bulldozers and diesel engines—as Dulles International Airport rises from those same fields to meet the inexorable demand of modern aviation for space and more space.

THE "CARF" STORY

The following article, written by John G. Koppe and John A. Jarrell, appeared in the April 1960 issue of Region Three's FLIGHT LINES.

In the heart of downtown Kansas City, in the Kemper Building at 720 Delaware St., a central "clearing house" for all military altitude reservation requests is located. Its official title is the Central Altitude Reservation Facility, but is commonly referred to as "CARF." This facility is unique. It performs the only air traffic control function of its kind.

The layman is bound to ask, "What is an altitude reservation request and what purpose does it serve?" The simplest explanation is for one to visualize the planning of a motorcade, for example, from Kansas City to Tampa, Fla. The route to be followed is drawn out on the necessary road maps. Overnight accommodations, the visitation of historical and scenic points of interest, fuel stops, etc., are all worked out in advance of the proposed departure date so that everyone participating knows exactly what to expect. Now take this motorcade and put it in the air and call it a "mass movement" of military aircraft, in this instance, from Lincoln AFB to McDill AFB at Tampa. The route to be flown, altitudes requested, and the training maneuvers to be accomplished, with the amount of time and fuel necessary to accomplish same, are worked out in advance and forwarded to CARF. As the controlling and coordinating agency, CARF has the authority to approve or disapprove this request depending upon the "traffic picture"; that is, possible conflicts with other missions. (The term "missions" is used for the mass movement of aircraft or congested terminal areas, such as the airspace above Kansas City, Atlanta, etc.).

This facility was initially created through the joint efforts of the Strategic Air Command and the FAA predecessor, CAA, to break down the increasing volume of SAC altitude reservation missions into manageable proportions. It was soon to become a major and integral unit of the high altitude control system. CARF's reason for existence evolved from the need to relieve the individual ARTC Centers from coordinating the vast volume of special military activities in the upper airspace in the altitude levels from 15,000 feet and up.

The nature of many present day military air operations requires certain tactical and training missions to be con-

ducted within designated controlled airspace which has been made available by prior allocation or "reservation" by the several ATC agencies concerned. Normally, such missions involve the movement of a number of tactical or support type aircraft over a specified route within blocks of altitudes. Depending on the type of mission involved, due to the requirement for complex operational planning and preparation, including the necessity for detailed preflight briefing of air crews and support units, an advance ATC approval for the use of the requested airspace is mandatory. The number and scope of these missions, commonly referred to in day-to-day ATC operations as "altitude reservation" type flight plans, increased to where they represented a large share of the workload performed by ARTCCs.

Because of the special handling procedures required for altitude reservation type flight plans, which normally involve inter-facility coordination between numerous ARTCCs and the exchange of a large volume of messages between such facilities, consideration was given to centralizing and simplifying the coordination of such operations. This was done to reduce the overall workload and efforts of ATC personnel and facilities in processing such flight plans. Since Kansas City is strategically and centrally located with respect to SAC and FAA communication facilities, it was decided to locate CARF in Kansas City.

Service is provided by CARF to the Strategic Air Command, (the major user) Tactical Air Command, Air Defense Command, U. S. Navy, Presidential and Vice Presidential flights, and on some



Controllers A.D. Scott (left) and J. A. Jarrell check plotting board for day's operation.

occasions, to the Royal Canadian Air Force. (NOTE: At the present time, SAC altitude reservations constitute between 85 to 90 percent of the CARF workload, whereas during the first year of CARF's operation, SAC was almost a 100 percent "customer.")

CARF's area of jurisdiction for the allocation of airspace for all altitude reservation requests involves the designated controlled airspace of the continental U.S. and in those oceanic control areas controlled by ARTCCs located in the U.S., with the exception of New York. The floor of CARF's area begins at 15,000' MSL (Mean Sea Level) east of, and 24,000 Flight Level 240 (24,000') west of the 100th meridian, extending upward to infinity. The purpose of this diversion of altitudes is to allow ARTCCs west of the 100th meridian sufficient altitudes for handling conventional type aircraft in their areas where MEAs (Minimum Enroute Altitude) are high due to high terrain. In oceanic areas CARF is allocated flight level 240 (24,000') and above.

CARF is responsible for analyzing all altitude reservation mission requests to determine if conflicts will exist between other proposed missions or if the flight paths proceed through critical or congested areas that would create a serious air traffic control problem or cause undue restriction to the movement of normal air traffic.

The physical appearance of the Control Room at CARF is relatively simple and unimposing. There are 16 plotting boards approximately five by eight feet in size. Fourteen boards contain maps of the entire United States which are used to plot day-by-day operations. Each map represents a 12 hour portion of a 24 hour days' operations. The other two maps are used for Canadian and foreign areas to determine the foreign ATC centers from whom additional approval is required for mission routes that extend out of the U.S. There are many of this category due to the long operating range of our military aircraft.

When an altitude reservation request is received at CARF, a file is prepared and the request is retained in a calendar file until a map becomes available for the date the mission is proposed to operate. At the appropriate time a controller plots the route of flight on the map for time of operation. The requested altitudes are entered on the routes and "control times" are placed at frequent intervals and/or turning points along routes. If there are no other missions conflicting, an approval message is sent to the military sponsor and the concerned ARTCCs. These centers will then re-

serve the required airspace during the requested time periods.

Approximately 75 percent of all altitude reservation requests require the resolution of conflicts with other missions or require a re-routing to avoid areas of high density air traffic. To facilitate CARF operations, a world-wide SAC telephone network is used extensively to coordinate and resolve conflicts. In a typical days' activity, it is not uncommon for a CARF controller to talk to military project or planning officers in Hawaii, Alaska, England, Spain or North Africa in eliminating conflicts between proposed missions.

Since July 24, 1956, the date CARF was commissioned, altitude reservations have continued to increase in both number and complexity. In Fiscal Year 1957 CARF processed 3090 such requests. Fiscal Year 1958 saw 4122 missions processed. In 1959 a record of 7823 requests were processed. As of March 1, 1960, altitude reservation requests for processing had climbed to 7859 with four months of Fiscal Year 1960 still remaining, to establish a new record for CARF activity.

A picture of how the ARTC Centers are affected by CARF's activities is revealed through an unofficial report which indicates that Boston ARTC processed over 400 ALTRV missions in their area during Fiscal Year 1959. Kansas City ARTC, another very active area in SAC altitude reservations, also approached that figure. Other centers, not so adversely affected, still have a sufficient volume of this type of military activity to require the assignment of personnel on a more or less permanent basis to the duties of processing altitude reservations within their own area.

The growth of CARF staffing has long since exceeded the original estimates of its creators. It began operations with

a Chief Controller, one secretary, 10 controllers, and six teletype operators. Mr. Addison D. Scott, the present Chief Controller, formerly of the Kansas City ARTCC, now heads a staff consisting of a Deputy Chief, four Watch Supervisors, 21 controllers, and one secretary. The teletype duties have been assumed by personnel of the Kansas City Flight Service Station who are on duty at CARF. The rapid increase in workload and operations have been absorbed by CARF through the versatility of its personnel who hail from every "corner" of the FAA; from the Centers at Honolulu, Fairbanks, Anchorage, Seattle, Los Angeles, Albuquerque, El Paso, San Antonio, Indianapolis, Washington, New York, Jacksonville, Kansas City, and the RAPCONs at McDill AFB, March AFB, and Olathe, Kansas.

Like many FAA facilities, CARF has also outgrown its quarters. The original working space was tripled less than a year after it began operations. Future plans call for even greater expansion at the present site. Conjecture has it that CARF may some day occupy new quarters near the new Kansas City Center building which is now under construction at Olathe, Kansas.

The future of CARF is, without doubt, bright. Its place as a permanent facility in the Air Traffic Control System is well recognized by the military agencies who use its services. It is possible that future concepts of operation may permit Civil Turbojet aircraft to use CARF's facilities. This would require much study and research to adapt the operational procedures to such usage. In addition, studies are also under way by private organizations under Government auspices to automate many of CARF's functions and operations. If automation processes are practical of application, this will create a number of changes in the facility.



Plotting and coordinating routes, altitudes and control times on CARF charts. From left: Controllers Charles Wimes, Clyde Hood, Clarence Rainer, Ralph Klein and Victor Mahler; Deputy Chief James Kerr; Controller Anthony Martino; John Paul Biddle, Jr.

Two Bureaus Represented From Regional Offices

Eight division chiefs and a depot manager have been named to represent two Bureaus from Regional Offices. This is the latest step to establish a more direct chain of command in FAA's new field organization structure.

Revision of the management system will provide a direct line of authority between FAA Bureaus in Washington and the field.

Four of the newly-named division chiefs and a depot manager will represent the Bureau of Facilities and Materiel. The other four division chiefs will be directly responsible to Oscar Bakke, Director, Bureau of Flight Standards.

The new division chiefs who will head the regional Facilities and Materiel Division and their previous assignments are:

Robert M. Brown, Region One, formerly Chief of Air Navigation Facilities Division, New York Office.

Leland H. Hayden, Region Two, formerly Chief of the Program Staff Branch, Washington, D.C.

Clyde W. Pace, Jr., Region Three, formerly Chief of Airport Division, Kansas City.

Allan E. Horning, Region Four, formerly Assistant Administrator for Region Four, Los Angeles.

Named as manager of the Facilities and Materiel Depot at Oklahoma City is Ronald W. Pulling, formerly Chief of Facilities Materiel Division in the Aeronautical Center, Oklahoma City.

The four newly-named division chiefs for the Bureau of Flight Standards are:

Curtis A. McKay, Flight Standards Field Division Chief, Region One, formerly Flight Standards Field Division Chief, Region One.

George S. Moore, Flight Standards Field Division Chief, Region Two, formerly Chief, Air Carrier Operations Branch, Washington, D.C.

Edward C. Marsh, Flight Standards Field Division Chief, Region Three, formerly Acting Flight Standards Field Division Chief, Region Three.

Burleigh Putnam, Jr., Flight Standards Field Division Chief, Region Four, formerly Acting Deputy Director, Bureau of Flight Standards, Washington, D.C.

Bureau of Aviation Medicine

A new Bureau of Aviation Medicine was established within the FAA March 24. It replaces the former Office of the Civil Air Surgeon. The new Bureau will be headed by Dr. James L. Goddard, who will retain his present title of Civil Air Surgeon.

Special Assistants Named To Administrator And His Deputy

Administrator Quesada has named John V. "Jack" Tighe as his Special Assistant. Mr. Tighe formerly held the position of Special Assistant to Deputy Administrator Pyle.

At the same time, it was announced that Robert V. Reynolds had been named as Mr. Pyle's Special Assistant. Mr. Reynolds' appointment fills the vacancy left by Mr. Tighe.

Mr. Tighe, a veteran of 31 years in aviation, began his government service in 1936. He joined the U.S. Department of Commerce as a member of the original group who started development of the nation's air route traffic control system. Before that he served eight



John V. Tighe



Robert V. Reynolds

ment, he was Chief of FAA's General Safety Division in Region Four. His first position with the CAA in 1947 was that of Airman Standards Inspector in the General Safety District Office. He also served in the areas of Flight Operations and Air Worthiness. In December 1957, he was named Chief of the General Safety Division in Region One and in September 1958, was transferred to Region Four in the same capacity.

Before World War II he owned and operated a fixed base operation and was one of the early Civilian Pilot Training Program Operators in that government sponsored program, which provided basic pilot training before the outbreak of the war.

During World War II he served as a Group Commander for the Army Primary Flying School and later, as a Civilian and Military Ferry Pilot with overseas duty in the China-Burma-India Theatre, participated in "flying the Hump."

Following his separation from the service, he was elected and served as County Judge in Texas. He is still frequently referred to by many of his friends as "Judge."

A native of Haskell, Texas, he attended Baylor University in that State.

years with United Air Lines and its predecessor company, National Air Transport.

He served in the U.S. Air Force during World War II and currently holds a commission as Lieutenant Colonel in the Air Force Reserve. He has a commercial pilot rating and is a member of Quiet Birdmen. In his new position, he succeeds J. Gordon Bennett, who recently resigned from FAA to join American Airlines in New York.

Mr. Reynolds is a 13-year veteran of the CAA/FAA. Before his new appoint-