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June - July 1959

250 PLANES - 2000 VISITORS AT FAA FLY-IN AT NAFEC



ATLANTIC CITY.—The FAA's first fly-in for general aviation attracted some 250 aircraft and 2000 visitors from all parts of the country. They heard Administrator Quesada outline FAA's program for general aviation and a review of progress to date. On hand were a number of local beauty queens to liven the proceedings. Mr. Quesada is shown on the left being greeted by Miss New Jersey Air National Guard and Miss Margate and Miss Brigantine. Picture on the right shows some of the "guest" aircraft.



WILLIAMS NAMED TO CONGRESSIONAL LIAISON POST

Robert E. Williams has been named Chief of the Office of Congressional Liaison. Prior to his appointment, he had been serving as Deputy Chief of that office.

The Office of Congressional Liaison has the responsibility of providing appropriate liaison for the Agency with members of Congress and with Congressional Committees, and furnishing them with legislative items and required information.

Before joining the FAA in 1959, Mr. Williams was Administrative Assistant to Representative John Beamer of Indiana, a position he held since 1954.

A native of Indiana, Mr. Williams attended Purdue University where he majored in government.

He resides with his wife and two children in Cheverly, Maryland.

McDERMOTT NAMED TO R & D POST

Francis M. McDermott has been named Technical Advisor to the Director, Bureau of Research and Development. In this position he will report to Captain Alden C. Packard, USN, Acting Bureau Director.

Prior to this appointment, Mr. McDermott worked on the application of automation and data processing in air traffic control during five years of research and development with the Technical Development Center of the former CAA, and one year with the former Airways Modernization Board. Before entering the research and development field, Mr. McDermott had been an Air Traffic Controller in the Chicago and Cleveland Air Route Traffic Control Centers.

Mr. McDermott has completed 21 years of Federal Service, having also served with the Federal Communications Commission, the Office of Strategic Services and the United States Navy.

IN THIS ISSUE

—Another 12-pager and a combined June-July issue. We expect to put out a short special issue in July as soon as the Agency seal and other materials are ready for release.

—The story - "Summer Air Traffic Survey" is must-reading for every FAA'er. Your friends and neighbors may ask you questions about this survey which will get much publicity. So, learn something about it beforehand.

—Special 6-page feature - "This is NAFEC" - an on-the-spot report by the FLY-BY staff.

—Mr. Quesada's a jet pilot now.

—For your own driving safety—read the somewhat off-beat "Don't Join the Luckless Legion."

—New appointments, events and happenings—all in this issue.

WHITE NAMED ASSOCIATE GENERAL COUNSEL

Gerald F. White has been named Associate General Counsel, Rules and Legislation, in the Office of General Counsel.

Prior to his appointment, Mr. White had been serving in the position in an acting capacity.

Mr. White has been associated with the FAA and the former CAA since 1946, and has held successively more responsible positions. He was Chief, Enforcement & Litigation Division, General Counsel's Office in the CAA from January 1953 until June 1957, when he was designated Assistant General Counsel in Charge of Regulations and Enforcement.

He attended Loyola University, Chicago, Illinois, and holds a Bachelor of Science in Law, and a Doctor of Jurisprudence Degree from Northwestern University, Chicago.

A native of Detroit, Michigan, Mr. White now resides in the District of Columbia with his wife and three sons.

CONFEREES MEET FROM CANADA AND U. S.

The fourth semi-annual meeting of the joint FAA/Canadian Air Services Committee met on May 20th and 21st at FAA Headquarters in Washington, D. C.

The committee was established to work out the day to day operational problems in aviation, resulting from the common border, between the United States and Canada. During its two years of existence, the committee has already effected a number of agreements. Among them has been the establishment on Canadian soil of two VORs as part of the Seattle-Anchorage Airway.

Air Vice Marshall A. de Niverville, the Director General of Canada's Depart-

ment of Transport, headed the Canadian contingent. The committee, which is composed of approximately 40 technicians, discussed subjects of interest to both nations.

Among the items on the agenda of this meeting were a discussion of the effect of jet aircraft in terminal building planning, and various airspace, air traffic control and procedure problems at the border.

The committee changed its name at this meeting to FAA/Department of Transport Committee.

NEW UNIVAC COMPUTERS AT TWO ARTC's

Electronic computers have taken over major roles in the control of air traffic along the approaches to two of the world's busiest traffic hubs—New York and Washington.

Remington Rand Univac electronic "brains" have been commissioned for daily use at the FAA Air Route Traffic Control Centers at Idlewild International Airport and Washington National Airport. By late summer, according to Mr. Quesada, additional systems will be installed at the Pittsburgh, Cleveland and Boston Air Route Traffic Control Centers to serve the high density traffic routes in the Northeastern portion of the country.

The FAA goal is a nationwide network of computers that will, in effect, "talk" to each other, using their own high-speed electronic language to aid in the control of traffic over the FAA's 128,000 miles of airways.

Electronic computers will not replace human air traffic controllers whose job it is to make the control decisions that keep traffic separated en route and when approaching the nation's busy air terminals. Rather, the computers will be used to relieve controllers of their "bookkeeping chores" and materially lessen the mental stress and fatigue involved in the control of air traffic in the jet age.

David D. Thomas, Director of the Bureau of Air Traffic Management, attended a demonstration of the new computer in New York on June 2.

"The tremendous increase in air traffic in recent years has put a tremendous burden on the human air traffic controller," he said, "and as more and more commercial jet airliners come into service, the controller's problems are multiplying. To keep tabs on scores of take-off and arrival times, altitudes, speeds, types of aircraft, changing weath-

er, flight progress, and to execute the complex paperwork associated with all these factors, the controller must coordinate mind and muscle almost beyond the limits of human efficiency."

Always hanging over the controllers, Thomas pointed out, is the threat of major disaster should he make even the slightest error in judgment, or fail to make perfect calculations.

NEW GROUP TO PROBE COLLISION PREVENTION

Formation of a new civil-military group to probe airborne anti-collision systems and to contribute research on the problems of collision prevention was announced on May 26. Members of the Collision Prevention Advisory Group have been chosen from six major fields representing civil and military aviation and will work with the FAA's Bureau of Research and Development.

Objective of the group is to assist in the development of suitable airborne collision prevention devices in a minimum amount of time through the most efficient use of available funds, personnel and facilities.

The chairman of the group will be Robert M. Buck of the Data Acquisition Branch in the Bureau of Research and Development, with Philip J. La Rochelle as recorder. Military and civil members are: W. Cary Robinson from the Department of the Army, James M. Brearley from the Department of the Navy, Capt. Charles T. Howard from the Department of the Air Force, Victor J. Kayne from the Aircraft Owners and Pilots Association, Frank C. White from the Air Transport Association, and William K. Lawton from the National Business Aircraft Association.

Airborne anti-collision devices can be classed into three groups: Conspicuity enhancement; proximity warning indicators and collision avoidance systems.

Under conspicuity enhancement are such factors as high visibility paint, smoke or contrail generators, and exterior lighting of aircraft. All of these techniques are directed toward increasing the range at which aircraft can be seen.

Proximity warning indicators are those systems whose principal function is to detect intruding aircraft and aid a pilot in visually locating the intruder. Collision avoidance systems are those that evaluate the threat created by intruding aircraft and inform the pilot as to the correct escape maneuver.

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QUESADA TAKES JET TRANSPORT TRAINING



Mr. Quesada at the controls of the big jet-- flying under the hood.



A pre-flight briefing

To gain first-hand experience in the flight techniques and operations of transport configuration jets, Mr. Quesada recently completed the five-day jet transport training course at the Air Force KC-135 School, Castle Air Force Base, Merced, California. He took the course from May 25-29 and was awarded the Air Force's Certificate of Training.

"We are organized," Mr. Quesada said, referring to FAA, "to deal with jet age air problems. Many of our policies and

programs will be concerned with military as well as civil jet aircraft operations. We must gain experience in their operating problems and techniques. Operations of jet transports are rapidly increasing and are becoming an increasingly important element in the FAA's programs and plans. I feel that this course will help me to better accomplish my job of directing our activities."

The course was divided into ground

training and flight familiarization, and included the aircraft and its systems, flight planning, pre-flight inspections and emergency procedures. Daily flights covered a wide range of procedures but emphasized flight characteristics, emergency procedures, and takeoff and landing operations.

Flying as First Pilot on a KC-135A, Mr. Quesada shot 20 landings with a total flying time of 16:55 hours of which 10:05 was day VFR, 3:20 night VFR, and 3:30 hood.

SUMMER AIR TRAFFIC SURVEY COMING UP SOON

The second half of U. S. aviation's biggest quiz game--the summer air traffic survey--is scheduled to begin in July. Sponsored by FAA's Bureau of Research and Development, and contracted out to Booz-Allen and Hamilton, the survey is to be made on a nationwide basis and requires the collection of detailed information concerning all flights made during the survey period.

The winter air traffic survey was conducted last January and was designed to collect information during aviation's lowest period of activity. By contrast, the July survey will cover the annual peak of air activity during these four "long" week-ends: July 9 - 12; July 16 - 19; July 23 - 26; and July 30 - August 2.

OBJECTIVES AND BACKGROUND

The study has two prime objectives:

1. To develop consistent and best estimates of the overall and detailed dimensions of flight activity today and into the future as far as 1980. These estimates are to include all U. S. flight activity--general aviation, military and air carrier.

2. to provide a basically sound, scientifically designed method of estimating air activity. This method must be general in the sense that it can be effectively applied and be capable of modification for continuous planning uses.

The background of the study is FAA's responsibility for regulating and controlling air traffic. In particular, we of FAA wish to plan for tomorrow--not be surprised by it.

This responsibility and planning must operate in the face of two more or less obvious facts: (1) air traffic is continuously increasing, and (2) flight characteristics of aircraft are achieving higher and higher levels. These factors, when combined with the constancy of airspace, pose a problem for continued study by FAA. Only through such studies as the air traffic survey can we make the right decisions as to air traffic control procedures, development and construction of electronic control hardware, and the location and erection of new facilities.

The primary needs of our air traffic planners center on three basic activity measures: (1) density of aircraft over blocks of airspace in the continental U. S., (2) landings and takeoffs per airport (movements), and (3) flow of airborne traffic between terminals.

Each of these basic measures must be further defined by the basic types of aircraft involved (single engine private planes up through the latest supersonic

jet bombers). This is necessary as each group of airspace "customers" has different needs and imposes specialized demands upon the system.

CIVIL AIR PATROL TO ASSIST

During the summer survey, the Civil Air Patrol will again play an important role. Through an agreement with Maj. Gen. Walter R. Agee, National Commander of the CAP, that organization will contribute as a public service the manpower for collecting information.

CAP members will be present at the selected 750 civil airfields and will interview more than 100,000 pilots who are expected to be taking off and landing at these airfields during the survey period.

Each pilot will be asked some 30 questions pertaining to the purpose and nature of the flight, the type of aircraft, where he came from or is going, his altitude, speed, flight time, weather, etc. It is expected that the summer survey results when consolidated with the winter survey, will provide a sample of approximately 200,000 flight segments. A single flight landing at two cities provides two flight segments. From this sample of 200,000, the air traffic patterns for the entire continental U. S. can be scientifically predicted.

EXTENT OF SURVEY COVERAGE

With the CAP covering flight activities of general aviation, the Air Force, Navy and Army will cover the Nation's military airbases and aircraft. Also, airline operations will be covered by collecting all flight schedules and feeding the data into the computers.

The composite picture of the extent of the survey coverage is:

general aviation	--52%
military	--100%
airlines	--100%

The 52% sample of general aviation will actually involve more activity in terms of takeoffs and landings than will the complete military and commercial picture. A 100% sample of general aviation is impossible to attain since every dirt runway and cow-pasture-flying operation in the Nation would have to be covered and included.

WEATHER ANALYSIS

Concurrent with the winter and summer surveys, detailed weather data is being collected from several hundred weather bureau stations throughout the U. S. This information reflects ceiling, visibility,

wind and other conditions that might affect flight activity during the survey periods. Both high and low altitude weather is identified and characterized in all parts of the U. S. Weather variations in the 920, one degree (latitude and longitude) "cells" are incorporated in subsequent analyses.

DATA HANDLING

The great mass of data that the surveys generate must be digested and analyzed. This project requires the use of one of the largest high speed electronic computers available, the IBM 709. The programming and computational phase of the task is being accomplished by the Corporation For Economic Industrial Research.

The computer will perform three very complex tasks essential to the development of the forecasting system:

1. simulate, or re-create the 200,000 reported flights.
2. perform the side-counts that are used in further analyses. Typical counts include purpose of flight, IFR - VFR mixes, altitudes flown, etc.
3. expand the sample flight activity counts obtained above to estimates of the total activity taking place over the U. S.

The amazing speed of the computer is illustrated by the fact that it can re-create a cross-country flight in all essential details in less than one-tenth of a second--while coincidentally accumulating all results.

FORECASTING THE ECONOMIC AND AERONAUTICAL ENVIRONMENT

Another major portion of the total task involves measuring and predicting the economic and aeronautical environment, as it is today and as it will probably be in 20 years. These forecasts are being developed from sources such as: FAA records, Bureau of the Census, Market Statistics, Inc. and others.

The growth and development of the entire aviation industry is naturally limited or accelerated, whichever the case might be, by the entire economic and aeronautical environment. This is why this forecast is vital to the overall project.

FORECASTING EQUATIONS

The end result of the traffic forecasting project will be approximately 150

equations. Each is capable of forecasting some specific phase of aviation activity for the present and the next 20 years. From these equations, over 15,000 specific air traffic indicators will be projected. These FAA will use in present and future planning.

EXAMPLE

The full potential of the forecasting equations and the air traffic indicators offers an almost unlimited number of answers to specific questions. For example, this question can be answered: What would be the expected activity at Idlewild Airport between 4:00 p.m. and 5:00 on a Sunday in July of 1964 if the weather is perfect? If the ceiling is 800 feet and the visibility reduced to 2 miles?

It is easy to see that the traffic forecasting project will provide a new tool with a tremendous potential.

QUESADA TO CHAIR ICAO MEETING

Mr. Quesada has accepted the Department of State's invitation to serve as chairman of the United States Delegation at the 12th session of the International Civil Aviation Organization Assembly in San Diego. He is also scheduled to make the welcoming address to the visiting ICAO delegates on behalf of the United States.

The meeting in California, running from June 16 for approximately four weeks, marks the first time that the ICAO Assembly has been held in this country since its inception at Chicago in 1944. The organization was established to deal with problems of international civil aviation and to promote cooperation among member nations.

One of the most important items on the comprehensive agenda will be the problem of providing needed air navigation facilities and services to meet the more exacting requirements of jet aircraft and the increase in air traffic. Another important topic will be discussion of the program to keep border crossing formalities to a minimum in order not to interfere with the effectiveness of international air commerce.

The election of 21 ICAO states to serve on the ICAO Council for a three-year term will also take place at this meeting. The Council is a permanent body responsible to the Assembly. Council members are elected to provide adequate representation for countries important in international air transport, countries making the largest contribution to pro-

vide facilities for international civil air navigation, and others to insure that major geographic areas of the world are represented. The President of the Council will also be elected.

In addition to the 74 member nations, UN countries that are not ICAO members, and some international organizations, have been invited to send observers.

FAA officials who will participate as

part of the U. S. Delegation of 19 persons, in addition to Mr. Quesada are, Alternate Delegates: Raymond B. Maloy, Chief, Office of International Coordination; Robert P. Boyle, Associate General Counsel; Advisers: Alfred Hand, Assistant to the Chief, Claude H. Smith, and Francis H. Fuqua, International Organization Division - all from the Office of International Coordination.

LUIKART GETS EXPERIENCE IN NAVY ATC OPERATIONS

Fordyce W. Luikart, FAA's Assistant Administrator of Personnel and Training, recently spent three days at sea observing air traffic control operations from Navy aircraft carriers. Mr. Luikart was the FAA representative from May 19 to May 22 in the Atlantic fleet maneuvers held off the southeastern coast of the United States.

Arriving in Jacksonville, Florida by air from Washington, Mr. Luikart changed planes for a flight out to sea. After arriving at the fleet rendezvous area and circling about an hour due to bad weather and an accident aboard the carrier Essex, the plane landed on the Saratoga.

Mr. Luikart and the other Navy guests -- Government officials and newsmen -- then spent three days observing day and night demonstrations of the launching and recovery of aircraft, firepower, and bomber operations using live ammunition and bombs. The group transferred by helicopter to the Essex for a conducted tour and then returned to the Saratoga.

The Assistant Administrator was es-

pecially interested in the personnel aspects of air traffic control operations from the "floating airfields." The ATC facilities, including radar and communications operations, were quite similar to those at any large airport, he found. The main difference, he noted, was in the split-second timing of the launching and recovery of the carrier-based jets. "Considering the increasing traffic at our airports," he commented, "and our efforts to facilitate the flow of fast traffic, we can probably learn many lessons from the Navy."

Leaving the fleet on Friday, May 22, Mr. Luikart flew to Cherry Point, N. C. After lunching with the Commandant and Wing Commander at the Marine Air Station, he returned by air to Washington.

Even though jet-age flying is not new to Mr. Luikart (he belongs to the Mach-buster Club), he found the Atlantic fleet maneuvers most interesting and informative.

Also, he stated that he was most pleased with the great interest in FAA shown by Naval personnel.





THIS IS NAFEC



AERIAL VIEW OF NAFEC.—The Administration Building is shown at bottom of photo; the large building just right of center houses the bank, cafeteria, the NAFEC Museum, and the civilian personnel offices; hangar at top center houses the New Jersey Air National Guard (a tenant of NAFEC); and hangar at upper right houses NAFEC operations. Not shown in this photo are the buildings which house the Experimentation Division, Systems Analysis Directorate, NAFEC Transportation, and various other facilities.

EDITOR'S NOTE: This special feature, the first in a new series, was developed to introduce all FAA'ers to one of our major organizational segments—the National Aviation Facilities Experimental Center at Atlantic City, New Jersey. The FLY-BY staff hopes to develop and present similar word-and-picture features at least once every three months—until all major FAA organizational segments have been covered. This article does not attempt to present or even summarize—all of NAFEC's projects and activities, but is, rather, a bird's-eye view of the Center. Sincere thanks to the following for their technical assistance to the FLY-BY staff in preparing this feature: Colonel William S. Cowart, Jr., NAFEC Director; A. I. (Irv) Rappoport, Chief of Public Affairs, and Mrs. Dolores Quigley of the same office, NAFEC; Frank Munroe, Personnel Officer, NAFEC; and Robert H. Hemmig, Chief, Optical Recording Data Processing Section, Operations Division, NAFEC.

INTRODUCTION TO NAFEC

Sprawling over 6,000 pine-studded acres on the south Jersey coast, the National Aviation Facilities Experimental Center is well on the way to becoming one of the aviation capitals of the world.

To NAFEC comes the products of research and development of American industry, and here the procedures and equipment that will control tomorrow's air traffic will be tested and evaluated under live or simulated conditions.

Testing and evaluation is well underway at the Center, but the big battle is still ahead. The day of automation in air traffic control has just begun to dawn and NAFEC is gearing up at a rapid pace to carry out its strategic role.



WELCOME TO NAFEC

IMPRESSIONS

The newcomer's first impression of NAFEC can easily and somewhat understandably be erroneous. Outwardly the Center seems rather quiet; some of the buildings are still standing empty; for brief intervals there may be little or no aircraft noise; there may be few people on the streets; and the famous balmy seashore weather casts its own relaxed spell. But inside the buildings and hangars, the tempo changes drastically. The place is a beehive of activity. New wiring for electronic devices is being installed. New lighting fixtures are going up. Strange looking equipment is being moved in and installed. Engineers are pouring over schematic drawings. And, new floors and pastel paints are adding their sparkle. It becomes immediately obvious that this is a well coordinated effort. Everyone is in a hurry--yet everyone seems to know where he's going and what he's doing. Not being satisfied with being merely on schedule, the NAFEC team is way ahead in many phases of its gearing up.

COLONEL IN A HURRY

The stimulus for this accelerated activity is NAFEC's director, the energetic Colonel Cowart, a former combat pilot detailed to FAA from the Air Force. Col. Cowart believes in the team concept and it's paying off. After picking the right people to handle a particular assignment, he outlines to them their responsibilities and goals, turns them loose on the assignment with a free hand with these instructions--"tell us what you need to do the job and we will get it for you if it's at all possible." As one NAFEC engineer stated proudly, "Col.

FACTS ABOUT NAFEC

HISTORICAL BACKGROUND: NAFEC was a WW II U. S. Naval Air Station. On April 4, 1958, the Airways Modernization Board announced that it had selected the station, after a study of 1800 possible sites, as the location for the new National Aviation Facilities Experimental Center. NAFEC formally came into being on July 1, 1958 when Navy departed the site. NAFEC transferred to FAA by Executive Order on November 1, 1958.

LOCATION: 12 miles from Atlantic City, New Jersey, on route #563.

DIRECTOR: Colonel William S. Cowart, Jr., USAF

MISSION: To develop, modify, test and evaluate systems, procedures, facilities and devices to meet the needs for safe and efficient air traffic control of all civil and military aviation.

PERSONNEL: A nucleus of more than 400 professional, scientific and technical persons, about 75% of whom are career civil service employees. 22 military officers are assigned to NAFEC. The balance of the base population of around 1,000 are employed by permanent contractors and tenant units.

AREA: About 6,000 acres

TENANTS: 119th Tactical Fighter Squadron (New Jersey Air National Guard); Atlantic City Station, U. S. Weather Bureau; Enroute portion of the New York Air Route Traffic Control Center (to move from Idlewild in 1959); Systems Analysis Division of the Bureau of Research & Development; Control tower operators of the Bureau of Air Traffic Management.

CONSTRUCTION: Longest present runway is 10,000 feet. This will be extended to 12,000 feet in 1959 and a parallel 12,000 foot runway will be constructed a quarter of a mile distant. The following year another, and parallel, 12,000 foot taxiway and 12,000 foot runway will be constructed about a mile distant. Construction of permanent buildings for NAFEC will begin in 1959. Temporarily the Center has been conducting its business in buildings rehabilitated after the Navy's departure.

NAFEC FLEET OF AIRCRAFT: 1 Convair C-131, 1 C-119, 1 F9F-8T Jet fighter, 1 C-54, 1 Piper Tri-Pacer, 1 Aero-Commander, 2 C-45's, 1 D-18, 2 C-47's, and 1 Grumman Gulfstream.

(CONTINUED ON NEXT PAGE)

Cowart will, if necessary, turn the country upside down to get a piece of much-needed equipment or a man with a particular skill."



Col. William S. Cowart, Jr., NAFEC Director--shown alighting from F9F-8T. Portrait photo on page 11.

CONSTRUCTION

To carry out his tremendous assignment, Colonel Cowart plans to spend about \$112 million between now and 1963 on construction and operation of the Center. Some \$23 million will be spent on building high-speed banked runways on which planes can land and turn off at 60 miles an hour. These would make it unnecessary for planes to land and slow to a stop, then turn and taxi off the strip. Instead, they could turn off while going a mile a minute, thus speeding the landing and takeoff of other planes. If the NAFEC experiments on such runways result in a positive evaluation, then such banked runways may well be standard for airports of the future.

Already a conventional NAFEC runway has been extended from 8,000 to 10,000 feet; a million dollar lighting system has been installed on it; and a control tower has been moved across the field to a better position. Col. Cowart's dream for NAFEC's physical facilities is to build one of the most modern and complete airports in the world to enable his team to carry out their varied projects and task assignments under actual or simulated conditions.

DATA PROCESSING CENTRAL

Of all NAFEC projects, the most important--and urgent--is to test and evaluate air traffic control systems. Col. Cowart and his staff look to the day when most air traffic control will be handled electronically.

The keystone effort in the initial program to modernize air traffic control is the Data Processing Central project. This is being set up in a renovated ware-



Runway visual aids on runway 13, showing narrow gauge Elfaka and MC-2 lighting configurations.



Remodeled warehouse that will house the Data Processing Central. Such excellent Lighting is typical of all NAFEC work areas. Equipment in this building will be linked by cable to the Air Traffic Control Simulator which is being installed in another building.

house at the Center. Its purpose is to provide for the development of a semi-automatic air traffic control data processing and display system to replace the existing manual system in all major high density areas of the nation's airways.

Today's air traffic controllers are saddled with burdensome clerical operations--manual recording of flight in-

formation, passing it along (sometimes by hand-carrying) to other controllers, transmitting the information to other control centers and terminal areas, and a host of other non-decision making functions. The General Precision Laboratory Incorporated of Pleasantville, New York is developing, designing and fabricating new equipment for processing

and displaying air traffic control data. This equipment is being installed at NAFEC for testing and evaluation. When perfected, it will receive, correlate, compute, display and exchange information in a manner which will enable the controller to handle more traffic safely, with much less effort than he is exerting today.

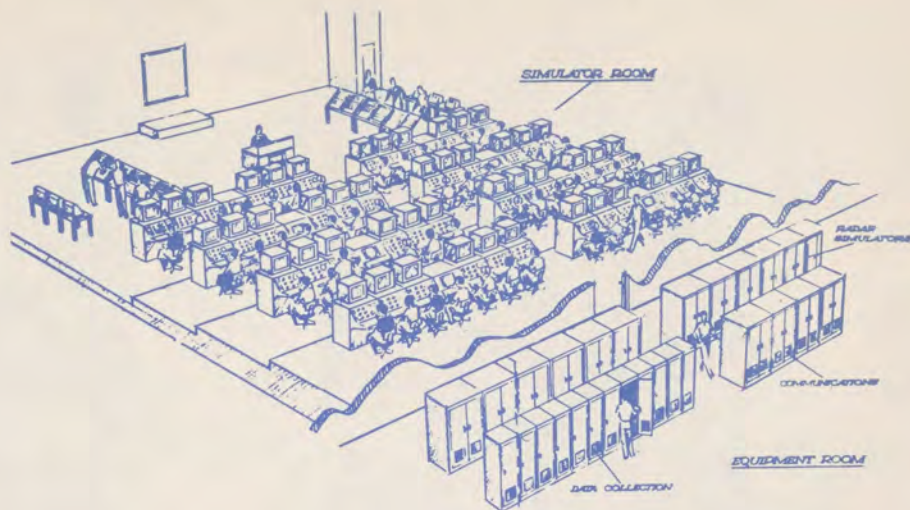
Will automation replace the controller? The experts say--definitely not! The machine will serve the man--will free him to devote his time to his most important role--that of making decisions.

NEW ARTC-LIVE TRAFFIC

The NAFEC evaluation of the ATC Data Processing Central cannot be accomplished without a sky full of planes to check the system against. This is being taken care of. An air route traffic control center is being set up at NAFEC. Previously, all en route air traffic between New York and Washington was controlled by the New York and Washington centers. The only control operations at NAFEC were those concerned with local traffic. The NAFEC ARTC will include the immediate Atlantic City area, the Federal airway extending southward to the New York-Washington control boundary, and control area extension 1148. During live testing of the ATC Data Processing Central, additional airspace in the Atlantic City area may be controlled from NAFEC instead of New York. Then, when testing has been completed, such airspace will revert back to the New York ARTC. The new NAFEC ARTC will also permit the testing and evaluation of facilities other than the Data Processing Central.

SIMULATED TRAFFIC

The Data Processing Central, as well as other test facilities, will also be checked against carefully programmed simulated air traffic. One of the most exciting electronic marvels at NAFEC is the soon-to-be commissioned air traffic control simulator. This apparatus, housed in a separate building from the Data Processing Central, can simulate under laboratory conditions a large number of airplanes in flight at predetermined speeds and on pre-determined courses. Initially the simulator will be used to "exercise" the Data Processing Central by providing aircraft position, voice communication, weather conditions, airport surface traffic, and other aircraft and facilities information. With the simulator, the DPC can be put to work in a live traffic environment,



Air Traffic Control Simulator--shown with other equipment in the simulator room are the 50 Target Generator consoles. Each console will require an operator, and each can simulate one target; that is, one aircraft in flight. In addition to being used to check other test facilities, the Simulator will be one of the controls against which the Data Processing Central will be checked.

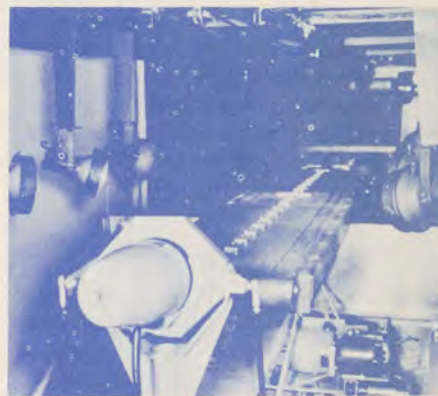
a simulated environment, or a mixture of both at the same time. Fact finding about the DPC will be expedited greatly by such latitude in testing and evaluating.

VISUAL LANDING SIMULATOR

Another electronic wonder at NAFEC is the Visual Landing Simulator. This simulator uses a moving belt on which are painted fluorescent markings that duplicate lights and markings seen by a pilot during landing and takeoff operations. A television camera receives the image of the moving belt. This image is reproduced by means of a closed circuit television system and projected on a screen. The screen is so placed as to be visible through the windshield of a flight trainer. The TV camera is coupled electrically to the controls of the flight trainer. When the pilot of the trainer "flies," signals move the camera so that roll, pitch, heading, transverse movements and altitude are simulated. The effect of this movement appears realistically to the pilot as though he is landing on a lighted runway.

The value of the Visual Landing Simulator lies in its ability to simulate landings under a variety of lighting conditions--also a variety of weather and visibility conditions. The machine can create variable visual conditions corresponding to heavy fog or rain. This is done by using filters over the ultra-violet lamps used to energize the runway lights or marks on the moving belt. Thus, with this simulator, NAFEC can evaluate different lighting configurations for use

at today's airports and those of tomorrow.

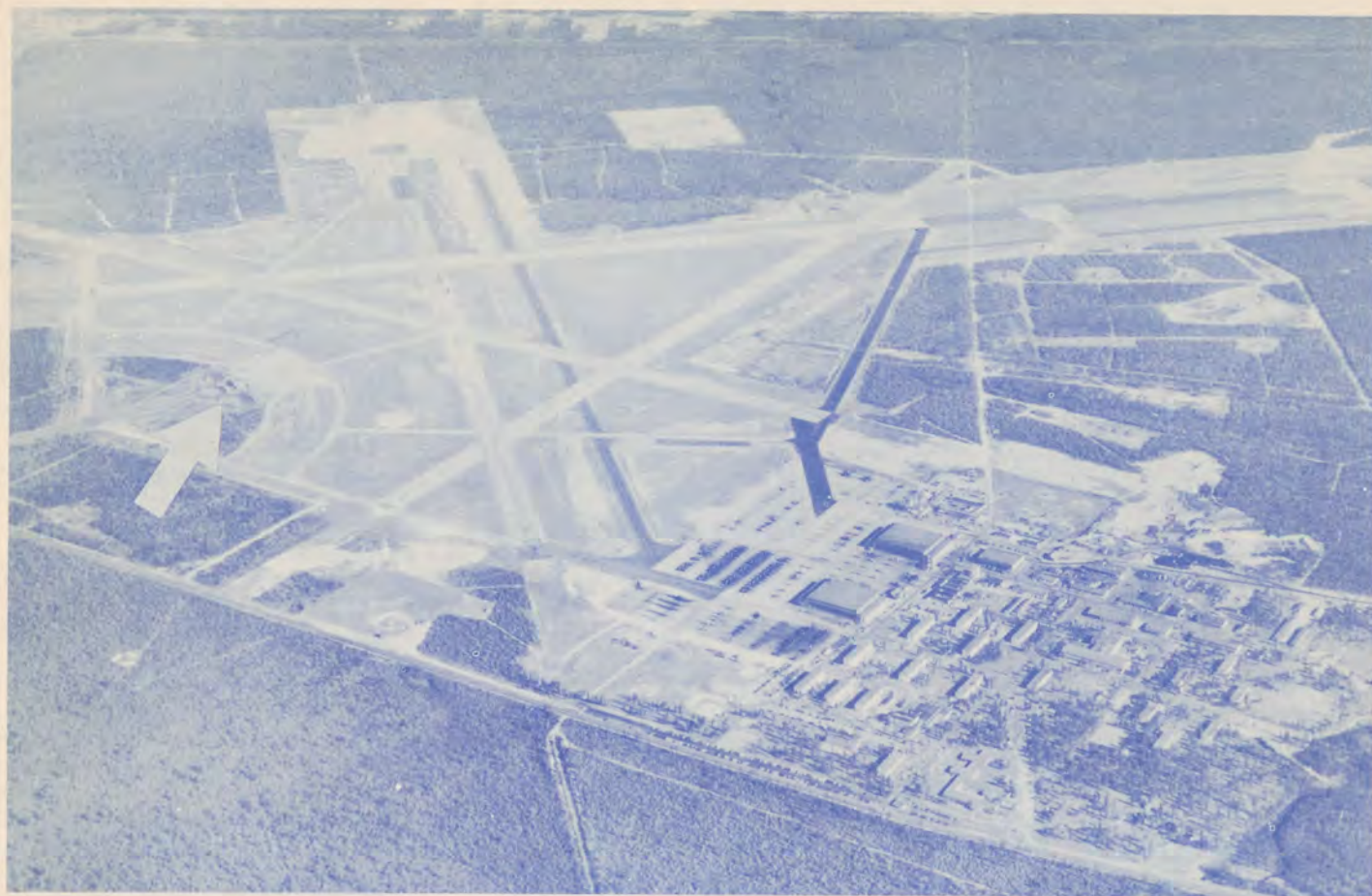


The Visual Landing Simulator--showing the TV camera and simulated runway.



Pilot "flying-in" on a simulated landing under poor visibility conditions.

(CONTINUED ON NEXT PAGE)



NAFEC from "way-up." The white arrow shows the location of the Atlantic City Municipal Airport. The many jet fighters shown on the aprons belong to the New Jersey Air National Guard--a tenant of NAFEC.

COMMUNITY MINDED

NAFEC is not only vitally concerned with its role in the future of all aviation; it is likewise concerned with its role in the community. It and the Atlantic City Municipal Airport are good neighbors--each operating on different sides of the same airfield, sharing the same runways, with the NAFEC tower controlling all in and out traffic.

On October 8, 1958, the president of the Atlantic Mainland Industrial Commission Incorporated wrote Colonel Cowart: "It is with great pleasure that we welcome the NAFEC to the Mainland in Atlantic County. The decision to select our area as the base for your operations is one which we are certain will never be regretted....we are happy to welcome you to the growing family of Mainland Area Industries."

Assuring the longevity of the initial welcome is recognized at NAFEC as being every employee's responsibility, but more specifically, the spearheading

effort falls within the bailiwick of A. I. (Irv) Rappoport, the Chief of Public Affairs. "Rapp," as he is known locally, puts in long days setting up conducted tours, making talks throughout the area, dealing with local news media and local organizations--this (and much more) in addition to his determination to keep abreast of all NAFEC developments.

The concerted NAFEC efforts to be a good employer, a model neighbor and a credit to the community are paying rich dividends. It looks like the welcome mat is out to stay.

CONTRACTOR SERVICES

NAFEC personnel--most of whom are highly skilled engineers and technicians--are not saddled with routine housekeeping and maintenance chores. These are contracted out to private firms. The firm of Ole Hansen & Sons, Incorporated provides most of the housekeeping and maintenance chores; and Lockheed Air Service, Incorporated

maintains the NAFEC fleet of aircraft.

Also, much of the actual testing and evaluation work is done on the premises on a contract basis. For example, last month's FLY-BY carried a story about the jet overrun barrier tests being conducted at NAFEC by the All American Engineering Company.

IN CONCLUSION

NAFEC is a dynamic growing organization--shouldering with its parent bureau, the Bureau of Research and Development, a heavy portion of FAA's objectives and responsibilities. The quest is not for the miraculous, but rather the attainable best that can be produced to further flying safety.

NAFEC's contribution will be a guarantee to the flying public that the components of tomorrow's air traffic control system have been tried and proven--and are the best that can be produced by the research and development capabilities of American industry.

LEADING THE NAFEC TEAM



Col. William S. Cowart, Jr.
Director, NAFEC



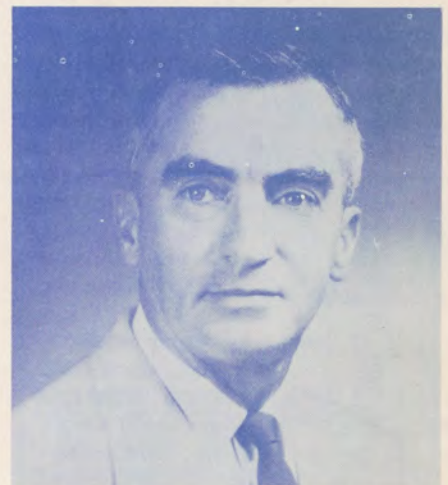
Hans H. Giesecke
Chief, Systems Analysis Division,
Bu. of R & D



Cdr. H. D. Savage
Chief, Plans & Budget Office



Lt. Col. J. D. Query
Chief, Administrative & Industrial Services
Division



Col. J. J. McCabe
Chief, Evaluation Division



Cdr. R. E. Rhodes
Chief, Operations Division



H. V. Hermansen
Chief, Experimentation Division

DON'T JOIN THE LUCKLESS LEGION



More than 2,800,000 hapless Americans were drafted into The Luckless Legion of automobile casualties in 1958. This is an army of suffering humanity which grows more rapidly each year. It is made up of the injured and the dead, the heedless and the innocent, the young and the old. Since the automobile first appeared on the American scene, these ranks of the ripped and the dead have included more than 60,000,000 of us.

The Luckless Legion is a silent, haunted army. We erect no monuments to it. No grim reminders mar the sleek beauty of the roads and highways which are its field of battle. A newspaper headline, perhaps, marks the induction of the latest recruit. Then silence. Silent suffering. A lifetime of pain and misery. Or the silent memories of those who mourn when the dead are laid to rest.

The members of the Luckless Legion are victims of a war that knows no victory. As drivers or pedestrians, they are the vanquished in the senseless war of speed and recklessness. They are losers in the struggle against fatigue and drunkenness. Sometimes they are victimized by a split second's mischance. But most often they have lost the battle against themselves, the endless battle of care and control behind the wheel of an automobile.

Deaths on the highways in 1958 showed a five per cent decrease over 1957. But this is hardly cause for self-congratulations—there were 300,000 more highway injuries than in 1957!

The Luckless Legion in 1958 numbered 16,700 men, women and children among

its dead. They were needless deaths because The Luckless Legion has no cause to die for.

For every highway fatality in 1958, seventy-seven people suffered painful injury. Hour by hour, day by day, during 1958 the Legion grew until it had reached the staggering total of 2,825,000 injured.

If only this army of the battered and the bruised could march down the main streets of every American town—we could see the magnitude of our national disgrace. A sorry procession it would be; a motley array of bandages and splints, crutches and wheelchairs. Down the avenue they would come, almost three million of them, carrying their banners of lost time, monumental expense, and needless suffering.

Perhaps it is because we have never really felt the presence of The Luckless Legion that our safety performance has not measured up to our promises. During 1958, injuries caused by highway accidents rose more than twelve per cent, almost twice the rate of increase for the previous year.

We have developed many rationalizations that fool us into thinking we have the situation well in hand. One of these is the popular measure of "number of deaths per million miles traveled." But these are merely recruiting slogans for The Luckless Legion.

In the rising curve of injuries lies the greatest waste of property and human resources in our nation. Behind the lines of our efforts toward national progress, The Luckless Legion stands as a vast fifth column. Behind our dynamic surge of scientific achievement, The Luckless Legion stands as a sad reminder of human frailty and carelessness.

Statistics, pledges and slogans do not seem to change us. Something more is needed.

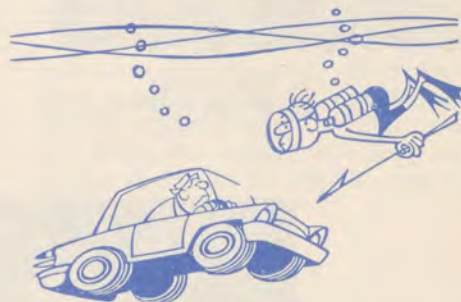
During the next few days—over the July 4th weekend—and during the days yet remaining in 1959, the Luckless Legion will be meeting in your com-

munity. You will be invited... on a stretch of highway... in a hospital room ... or to a morgue.

You can tell when the meeting time is near—in the temptation to bear down a little harder; to beat the darkness home; to test your reflexes when they are dulled by sleep or alcohol; to jaywalk on crowded streets; to forget caution when weather and road conditions are bad.

During 1959, every time you are behind the wheel of a car—remember that The Luckless Legion is looking for recruits.

Will you be one over July 4th—or later in the year?



AVIATION IN ITSELF IS NOT INHERENTLY DANGEROUS, BUT TO AN EVEN GREATER EXTENT THAN THE SEA, IT IS TERRIBLY UNFORGIVING OF ANY CARELESSNESS, INCAPACITY OR NEGLECT.