



AIA  
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# ANNUAL REPORT

## 1955

Aircraft Industries Association of America, Inc.

*The following is the annual report of Admiral D. C. Ramsey,  
USN (Ret.), President of the Aircraft Industries Association.  
The report reviews operations of the fiscal year which com-  
menced on November 1, 1954, and ended on October 31, 1955.*

AIRCRAFT INDUSTRIES ASSOCIATION

610 Shoreham Building

Washington 5, D. C.

## TO THE BOARD OF GOVERNORS:

No year in the history of the American aircraft industry has been marked by manifestations of a greater degree of aeronautical progress than our fiscal year which closed October 31, 1955. Not only has there been tangible evidence of this progress but there remain undisclosed the fruits of intensified activity in many fields of aeronautical research and development which hold even greater promise for the future.

A new research plane, expected to have Mach-3 (three times the speed of sound) capabilities, is scheduled to fly before the end of the current calendar year.

Guided missile development and production have forged ahead and the programs of the Armed Services for these weapons clearly reflect the high order of importance attached to them.

Turbojet and turboprop engines of vastly greater power are in production and under development.

Experimental convertiplanes, combining the advantages of helicopters and airplanes, have made their appearance. The principle of wingless vertical flight, both ducted fan and jet, has been introduced. Progress in the development and operational use of helicopters continues at a gratifying pace. Apart from the growing commercial field of usefulness of these vehicles, all of the Armed Services find a pressing need for them. The Army in particular promises to become one of the helicopter industry's largest and most important customers.

### *Research and Development*

In the field of research and development, projects within the aircraft industry include such items as the development of atomic-powered aircraft, inter-continental ballistic missiles, the creation of an earth satellite and the challenge of the "thermal" barrier. In the approach to the solution of these and many other problems of vital concern, the industry will find its real strength in the availability of long experienced company management teams. Many felt the impacts and passed through the various crises of World War II when main emphasis was centered on production. Now it appears evident that emphasis must be focused on research and development to an even greater degree as the production curve approaches the planned

levels of strength of the Air Force in June 1957, and the attainment of corresponding Naval aviation strength during that year.

### *Production and Employment*

The aircraft industry produced about 13,000 planes during the past year, 8,500 of which were military. This compares with some 13,000 in the previous year, 9,600 of which were military. A current rate of approximately 700 planes per month for the military services is being maintained. Unless there are important changes in the international situation, it is expected that production rates approaching this magnitude will continue until the prescribed "maintenance levels" are reached. Although "maintenance level" has not been precisely defined, it is expected that it will call for maintenance of wing and carrier-group forces with the latest and best aircraft and equipment.

The modernization programs of both the Air Force and the Navy have progressed on schedule with Air Force wings now 94 per cent modernized and the Navy percentage only slightly less.

Despite the fact that informational security has been relaxed somewhat on advances in guided missiles, it is not possible to estimate production in this important field of aircraft industry endeavor. It is permissible to state, however, that great progress has been made, and that manufacture of these weapons has become a major factor in this industry's production, in volume of sales exceeding the half billion dollar mark.

There has been a marked increase in the production of civil aircraft of all types. In the transport field, this is reflected not only in the great growth of plane-mile, passenger-mile and ton-mile figures during the year, but in the generally improved earnings reports of the airlines. Moreover, airline estimates of growth during the remainder of this decade are optimistic.

A very substantial increase in the activity of the utility airplane segment of the aircraft industry was reported during the year. This is accounted for by the growing realization by American business and agriculture of the convenience, economy and competitive values of the use of the airplane for business purposes. Members of AIA's Utility Airplane Council estimate

that approximately 4,250 units, having a retail value of some \$75,000,000 will be delivered before the end of calendar 1955. This compares with slightly more than 3,000 in 1954. It appears that sales of twin-engine planes will be double the 1954 figures.

#### *Turbine Transport Orders*

Late in the year, the airlines — both foreign and American — placed orders with our industry for more than a billion dollars worth of turbojet and turboprop transports. This development would appear to insure that the commercial airways of the world will continue to be dominated by American equipment for many years to come. It is believed that no single event of the year has had more profound impact upon the future health and stability of our aircraft manufacturing industry.

#### *Employment*

Employment in the aircraft industry at the end of the fiscal year was approximately 740,000. This compares with approximately 790,000 a year ago and reflects the declining rate of military aircraft production. It is interesting to note that one out of every 11 employees is an engineering employee, when during World War II, the proportion was one in every 25. This is explained by the tremendous performance and complexity of modern aircraft, by the determination of the industry that it will not be surpassed in the quality of its product and by the fact that vast quantity output was the goal during the World War II period.

#### *Russian Aeronautical Progress*

Considerable public excitement in this country resulted from the May Day revelations in Moscow of advanced types of Russian military aircraft. There was a tendency in many quarters to assume that America has been surpassed in quality of air combat equipment, as well as in quantity. These assumptions have since been discounted to a large degree by our military leaders, who have assured the nation that the United States still maintains its lead in quality of equipment, although it is acknowledged that the Soviet gains have been great and leave no room for complacency in this country.

AIA has endeavored to keep the industry record clear. It was explained that there is no reason for

surprise at the Russian advances; that they were to be expected. It was demonstrated that the American industry's progress had been great; that, as long as our vital research and development programs are maintained at a high level, we will continue to hold our lead; that the industry's efforts are directed along the lines of a planned military program; and that, with our facilities substantially complete, we can produce superior aeronautical products in the quantities required by existing programs.

#### *Congressional Inquiries*

Of late, there has been an unusual amount of Congressional interest in various aspects of the aircraft production program. This has taken the form of questionnaires addressed directly to our company members by the Committees of Congress concerned.

#### *Study of Subcontractors and Suppliers*

AIA recently completed a study of the aircraft industry's employment of subcontractors and suppliers. On the basis of information provided by 35 major companies, it was determined that more than 50,000 first-tier subcontractors and suppliers are engaged in the aircraft production program; that \$4,759,320,000, or 54 per cent of all disbursements of the aircraft industry, excluding taxes, was paid to these outside firms; that 43 per cent of this amount was paid to small business firms (those employing fewer than 500 people), and that at least another billion dollars was paid to small business in second, third and fourth-tier purchases.

This document was widely distributed, and there were indications that it was well received by members of Congress, the military services and officials of the Executive Department of the Government.

#### *Aviation Education Program*

For the third year, the Aircraft Industries Association gave both financial and operational support to the work of the National Aviation Education Council (NAEC) in its Materials of Instruction Program. The NAEC is an organization largely composed of educators who believe that the impact of modern aviation on both the social and economic welfare of this country is so great that it needs interpretation to the youth of America within the framework of the nation's educational system. Because aviation cuts

across most lines of school curricula, it was believed that the most pressing need is acceptable, teacher-prepared classroom materials for direct and collateral study.

The Materials of Instruction Committee of the NAEC continues to produce these materials and to sell them to the schools at cost. A subcommittee of the Public Relations Advisory Committee and AIA staff work closely with the Council in this program.

It is gratifying to report that the whole field of aviation education is expanding rapidly, and that nearly all elements of aviation today are either pursuing definite programs in this field, or are studying means by which they may do so in the future. During the year, the National Aeronautic Association was successful in raising funds for a permanent secretariat and a headquarters for the NAEC through which it could pursue more vigorously its broad approach to the promotion of aviation education. Dr. Evan Evans, former president of NAEC and a long-time volunteer worker in its interest, has been appointed full-time executive director of the Council.

#### *Expansion of Export Service*

Because of the growing importance of the export markets, which presently account for over 7.5 per cent of the American aircraft industry's total production, the Board of Governors at its May meeting authorized the appointment of an associate director of the AIA Export Service. This addition to our staff now permits the Association to extend greater assistance in export matters to its members; to aid them in liaison, in export financing and in supplying informational needs.

#### *Special Needs of Utility Aircraft and Helicopter Councils*

Because the markets for both utility airplanes and helicopters are expanding, and show even greater prospects of growth in the near future, it becomes obvious that some solutions must be found for the problems incident to that growth.

With a burgeoning market in business and agricultural flying, greater utilization of utility aircraft and aggressive plans for further exploitation of those markets, the Utility Airplane Council regards the shortage of small airports as a most serious problem. The Association will continue to call official and public attention to this shortage.

With the large-scale entry of helicopters into com-

mercial and business use an accepted prospect of the near future, the Helicopter Council is calling especial attention to two of its major problems. One is the need for downtown heliports, both for specialized and airline use, and the other a revision of state and local laws to remove limitations written into them years ago applying to fixed-wing aircraft which unduly limit helicopter operations.

#### *CAA Certification Procedures*

The Technical Service has been cooperating with the Civil Aeronautics Administration (CAA) in determining the proper future role for both CAA and industry in civil type certification of aircraft, engines and propellers.

The Air Coordinating Committee and the Bureau of the Budget have recommended increased industry responsibilities and a reduction of CAA's safety promotion and enforcement activities. Whether this would require a change in the Civil Aeronautics Act of 1938 is under joint study at present.

#### *Titanium Development*

Throughout the year, seven of the thirteen AIA Technical committees have been working with the problems and developments of titanium use in aircraft. These committees have done all possible to advance the use of this metal.

Of concern has been a report of the staff of the Committee on Interior and Insular Affairs of the Senate contending that the aircraft industry has not fully discharged its responsibility for development and use of titanium. In order to correct this impression the Senate Committee has been informed of the high degree of continuing interest of the AIA and its member companies in the development and application of titanium to the needs of our industry.

#### *National Air Transport Coordinating Committee*

The Association continued during the year to support the National Air Transport Coordinating Committee (NATCC), sharing costs of its operations with the Air Transport Association, the airlines serving the metropolitan New York area and the New York Port Authority.

The NATCC continues to perform effective services in improving air traffic conditions in the greater New York area and in maintaining public understanding

of the noise problem. During the past year, NATCC was largely responsible for bringing to a successful conclusion the so-called Cedarhurst Case, in which a Long Island community sought to impose crippling restrictions on airline operations over the village. Had the Cedarhurst ordinance withstood the test of legality, a dangerous precedent would have been set which might have affected airline operations throughout the country.

NATCC continues to make its experience available to other cities with noise and other operational problems. During the past year, the Committee also has pursued an extensive program of aviation education in the New York area. It is currently making efforts to offset a propaganda campaign directed at creating public excitement over the noise aspects of the future use of jet transports.

#### *Traffic and Transportation*

The AIA Traffic Service which seeks to secure and maintain the lowest possible freight charges on aviation materials shipments is presently occupied with efforts to oppose legislation which would prevent AIA members from teaming to consolidate their small shipments into carload lots.

#### *National Air Museum*

At the request of the Smithsonian Institution two years ago, AIA agreed to share with the Air Transport Association the \$25,000 cost of an architectural survey

and plans for the National Air Museum as a part of the Smithsonian group. A public law authorizing the Museum was passed by Congress several years ago, but it was considered essential that a complete plan and estimate of cost should be developed prior to requesting Government funds to build the Museum.

The architectural survey and overall plan for the structure were completed during the year, but the proposed location on the Southwest Mall in Washington, D. C. ran into difficulties under the master plan for development of the City. Suggestions for relocation are now being studied.

#### *Administrative, Finances, Membership*

A proposed budget for 1956 has been submitted to the Board of Governors within the limit set by the Board as the dues target. A reduction in sales has made it necessary to propose a slight increase in the additional dues rate; however, actual experience for 1955 may permit cancellation of this proposed increase.

The Treasurer's Report will be submitted to the Board of Governors as soon as the annual audit of the financial records of 1955 has been completed.

Respectfully submitted,

*De Witt C. Ramsey*

DE WITT C. RAMSEY

# REPORT ON OPERATIONS

## For the Fiscal Year Ended October 31, 1955

### ORGANIZATION AND FUNCTIONS

The Aircraft Industries Association of America, Inc. is the national trade association of the manufacturers of aircraft, engines and accessories, parts, and materials used in the construction and operation of aircraft. All major airframe and engine manufacturers, and many major suppliers of aircraft equipment, are members of AIA and participate in its activities.

AIA is concerned with the industry-wide aspects of aircraft research, development and production. It represents the industry's viewpoints and interests to the Government, the Congress, the Military Services, allied and other industries and to the many segments of the public. It is cognizant of legislation and regulations that might affect the aircraft industry. It attempts to work out cooperatively among its members and with appropriate agencies and organizations the solutions to problems of common interest.

Policy direction of the Association's activities is vested in a Board of Governors which is composed of the chief executive officers of various member companies. Under this policy guidance AIA activities are carried on by committees and councils representing every phase of aircraft production and aircraft industry management. Each committee consists of high level company representatives especially qualified in the various fields of responsibility.

Through its seven Services and 28 committees the Association provides facilities for handling the multitude of technical, financial, legal, tax, public and industrial relations, patent, traffic and other problems. The helicopter and utility airplane interests of the Association are banded under councils, each of which has staff service.

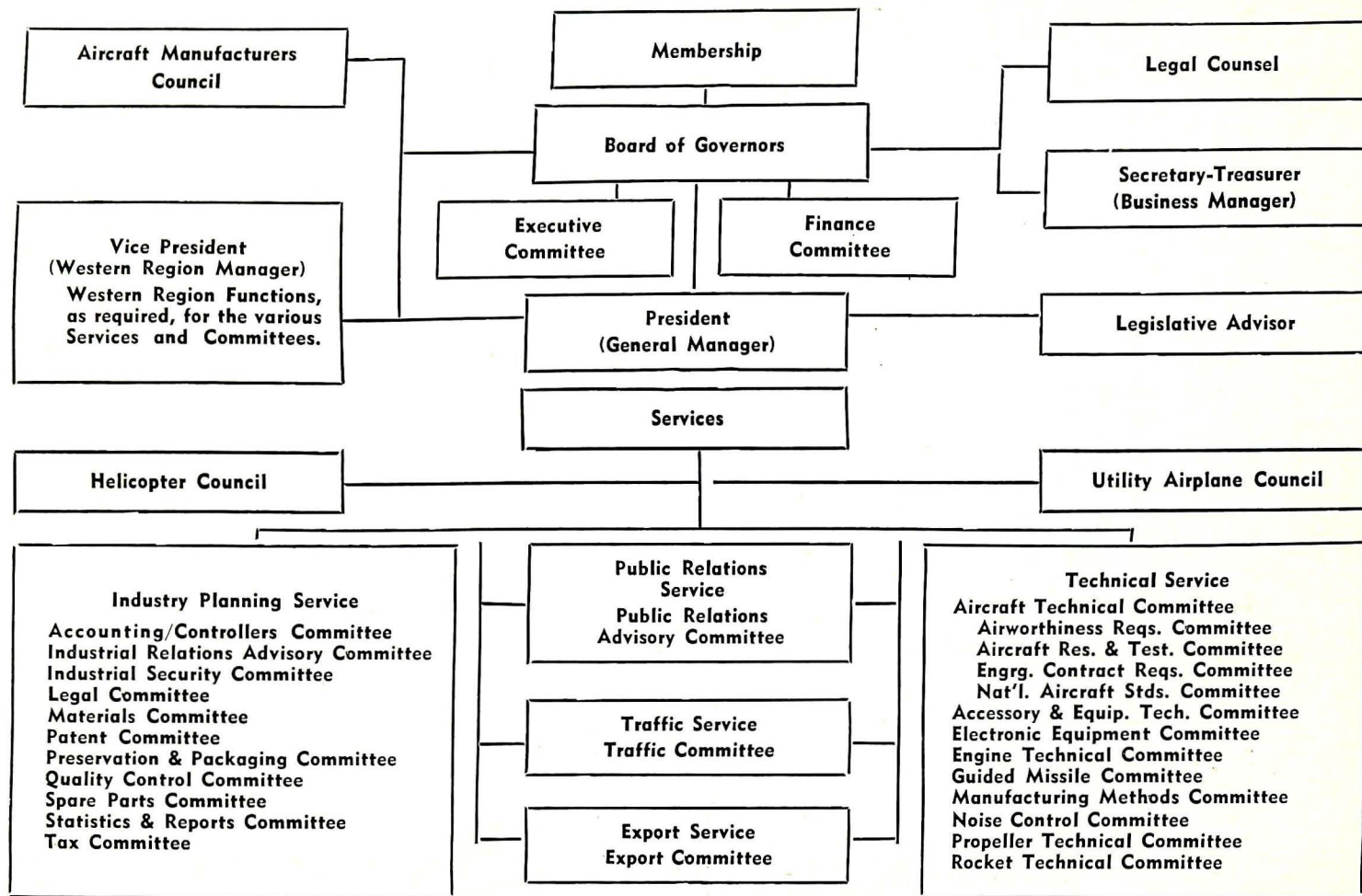
AIA is made up of 139 members, 122 of which are voting members and 17 of which are affiliates. The categories of voting membership are composed as follows:

	MEMBERS
DIVISION A — Manufacturers of aircraft and aircraft engines.	40
DIVISION B — Manufacturers of accessories, parts or materials used in aircraft construction or operation.	55
DIVISION C — This class includes miscellaneous persons and firms interested in aviation. (New applicants of this type are only eligible for "Division of Affiliates" membership.)	27

The Association is organized under a Board of Governors and under regional (Eastern and Western) Executive Committees of the Aircraft Manufacturers Council. Chief executive officer is the President, who also is General Manager, while a Vice-President performs the duties of general manager of the Western Region office at Los Angeles. The seven AIA Services, including the Utility Airplane Council and the Helicopter Council, operate under direction of the President.

A detailed report of the operations of AIA and its various Services and Committees is contained in the following pages.

### AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC.





# EXPORT SERVICE

Some measure of the importance of exports to the American aviation manufacturing industry is indicated by the fact that, according to official statistics, the 1954 value of U. S. manufactured aeronautical exports amount to \$619,384,000 or over 7.5 percent of the industry's total production. Expressed another way, these foreign sales provided daily employment for approximately 55,500 workers.

## *Organization and Activities of AIA Export Committee*

The Export Committee comprises 66 Export executives representing 34 AIA manufacturing members. Timely and informative Export Service memoranda, on all subjects of interest to the industry's exporters are regularly distributed to 168 individuals in 72 AIA member companies.

The Export Committee holds four major meetings each year. The principal activities of the Industry's Export group are carried on through five subcommittees. These are the Advisory Subcommittee, made up of 22 members and alternates, which does the executive planning for the Export Committee and all of the other subcommittees; Export Finance Subcommittee which works to improve export financing facilities; Military Aid Subcommittee which is concerned principally with offshore procurement, overseas spares provisioning, and Grant Reimbursable Aid; Government (Civil) Liaison Subcommittee, which deals with trade agreements, surplus disposal, security control and other related matters; and Foreign Military/Civil Liaison Subcommittee, which specializes in foreign liaison work with the U. S. Air Force, Army, Navy and with foreign air, military, naval attaches, foreign purchasing commissions, airlines and collective security groups.

The Advisory Subcommittee met monthly while the other groups met as required.

## *Expansion of Export Staff and Services*

To cope with the industry's requirement for more extensive export assistance from the AIA, especially with respect to export financing and liaison with foreign diplomatic and other aviation representatives from abroad, the staff of AIA's Export Service has been augmented by the appointment of an Associate Director. This permits a broader coverage of the informational memoranda and expansion of services for handling foreign trade opportunities and visitors. Increased contact has been developed and maintained with foreign government and private representatives who have visited the U. S. Expansion of the staff has permitted increased assistance to representatives of the U. S. aviation industry in securing maximum help from overseas aviation specialists of our Government.

## *Foreign Military Aid*

Although the Off-shore Procurement Program has tended to diminish during the past year, all aspects of this program have been watched closely and much work has been done to protect proprietary rights of AIA members.

There has been industry-wide concern over the apparent planning difficulties of the U. S. Government in connection with long term spare parts provisioning and servicing of American aviation equipment supplied under various aid programs to the NATO, SEATO and other allied air forces. This problem is being aggressively attacked by industry and some progress is being made. The success of this effort is certain to have an important bearing on future export sales.

## *Foreign Military/Civil Liaison*

This activity is designed to facilitate the industry's contact with all important foreign military and civil aviation officers or executives who are stationed in this country or come to the U. S. on business trips. The Export Service is compiling a comprehensive record of these individual and group contacts. Frequent meetings between foreign aviation officials and industry representatives are arranged.

## *Export Finance*

Export financing is one of the principal problems affecting industry's foreign business. To assist in the financing of U. S. aviation exports, numerous meetings have been held and continued close liaison has been maintained with officers of the Export-Import Bank, World Bank, leading commercial banks and private financing organizations.

The governments of other principal aircraft producing countries are directly or indirectly supporting more liberal export financing plans than is the U. S. Government. It is expected that the work of the AIA Export Finance Subcommittee will bring about an improvement which will place our aviation industry in a more fully competitive position with respect to the financing of export sales.

## *Military Surplus Disposal*

With the Department of Defense declaring as excess to its requirements and disposing as surplus tremendous quantities of repairable aircraft and related material, the foreign sales of the industry are threatened with serious competition. This subject is being given maximum attention to reduce the damaging effect of military surplus disposal. There is reason to believe that these efforts of the Export Committee will produce good results in the course of the ensuing year.

### *U. S. Government Foreign Trade Promotion*

While the agencies of the Government, principally the Departments of State and Commerce, are greatly restricted today because of limited funds for foreign trade promotional assistance, the work of the Export Committee in correcting this situation is already showing results.

Although the quantity of aviation trade promotional reports from our Government's representatives abroad is showing little increase, the quality of this foreign market reporting is definitely improving. The State Department and Defense Department Attaches abroad are becoming more helpful to the industry's foreign travellers. To a large

extent these improvements result from industry representations.

### *Reciprocal Trade Agreements*

The Export Committee and the AIA's Export Service are continuing their close study of all negotiations looking to the improvement of reciprocal trade agreements. Not only is cooperative effort being carried on with the Government agencies dealing with this foreign trade facilitation program but also with private industrial groups who are engaged in furthering international trade interests of this country.

# INDUSTRY PLANNING SERVICE

The Industry Planning Service deals with the business, legal, and administrative operations of the aircraft industry.

It maintains close liaison with the military services and with other Governmental agencies in connection with the multitude of laws, regulations, directives and specifications which affect the business activities of the industry.

The following is a summary of the activities of this service during the past year:

## INDUSTRIAL RELATIONS COMMITTEE

The Industrial Relations Committee is concerned with labor-management problems which have to do with wages, hours, manpower, and other working conditions.

### *Manpower*

Although some companies have increased their working force during the past year, over-all employment in the industry has tapered off approximately ten percent. With the exception of engineering, scientific, and certain technical personnel categories, the manpower supply is adequate.

The Reserve Act of 1955 permits draft registrants who are employed in critical occupations to be enlisted in the Reserve under a plan whereby these registrants will serve three to six months on active duty and then fulfill their remaining obligation in the Reserve. This plan does not replace the occupational deferment system in use by Selective Service, but does provide a means of returning to the plants, after a period of three to six months of military training, those scientific and engineering personnel in critical categories. Heretofore these men were required to serve for a period of two years when inducted under Selective Service.

### *Ad Hoc Committees*

The Department of Defense (DOD) requested assistance in the gathering of information from the aircraft industry covering two related fields.

The first request was concerned with the establishment of criteria for "Utilization of Contractor Maintenance Personnel." At the present time, a lack of trained personnel forces the Military Services to utilize the services of a number of contractor employees. These contractor employees fall into two categories as far as funding is concerned — those contractor representatives who are charged to overhead, and those under a direct labor contract.

Industry recommendations were requested on a list of ten subjects. Industry comments were consolidated and a meeting of approximately 55 representatives of 35 companies met to discuss the recommendations which were submitted to DOD. In September a subcommittee met with representatives of interested government agencies to discuss

the recommendations. Final action by DOD has not been taken.

The second project dealt with "Contracts With Commercial and Industrial Organizations for Maintenance, Repair, Overhaul, Modification, or Modernization of Military Supplies and Equipment." Again the DOD provided a list of ten areas in which information was sought. An Ad Hoc Committee was established and its recommendations transmitted to the Defense Department. Late in the year a subcommittee of this group met with DOD representatives. This project has not been completed.

### *Surveys*

Staff has conducted routine surveys and research projects on various manpower matters.

## INDUSTRIAL SECURITY COMMITTEE

The state of flux existing in the field of security procedures and regulations continues to provide activity for this Committee.

### *Commission on Government Security*

A member of the AIA Industrial Security Committee was the only representative of industry to testify before a Subcommittee of the Senate Committee on Government Operations when hearings were held on Senate Joint Resolution No. 21 (which proposed the establishment of a Security Commission to study the entire security field and make recommendations to the President). This Resolution became Public Law 304 of the 84th Congress. Because of the great volume of "classified" material which must be in the possession of the contractor in connection with defense production, the aircraft industry has a continuing interest in the Security Commission's activities.

### *Industrial Security Manual*

This Manual, which establishes the requirements for the safeguarding of "classified" information in the hands of Government contractors, was again revised during the early part of this year. In the course of meetings between this Committee and DOD security personnel, the Committee made recommendations for changes in the Manual and on security problems in general. The recommendations are being considered at the present time.

### *Industrial Security Advisory Committee to the DOD*

The AIA Committee recommended that the Defense Department appoint an advisory committee from industry to assist the Department in implementing security policy changes. This Committee of 17 members representing 10 industries has now been appointed, and six of its members are also members of AIA's Industrial Security Committee.

## SPARE PARTS COMMITTEE

During the past year, this committee worked on some forty projects related to spare parts, special tools, test and ground handling equipment; Federal Cataloging; training aids and training equipment. Prior to 1955, the committee handled a number of projects involving specifications and requirements on handbooks and parts catalogs but this activity is now under the cognizance of the AIA Technical Service.

The committee membership includes all segments of the aircraft industry—airframes, engines, propellers, accessories and electronics. The committee studies problem areas as they develop, frequently upon recommendation of the military services. The following are some of the more important projects which were under study during the year.

### *Federal Cataloging*

The committee maintained close vigilance over and continues to press for a revision of the Department of Defense Federal Cataloging plan for aeronautical products.

### *Joint Study of Service/Industry Logistics Problems*

Upon Air Force invitation, the committee provided members for a joint Service/AIA Committee to assist in the planning phases of Service/Industry logistics programs, taking into consideration the availability of new types of electronic data processing machines. As the prompt and complete exchange of information between the military services and the contractors constitutes one of the biggest paperwork handling problems, the benefits from this study could be very substantial to all concerned.

### *Contractor Preparation of Spare Parts Delivery Status Reports*

The Air Force has requested the committee to consider preparation of a new report on a monthly or quarterly basis from each contractor which would provide detailed information on the delivery status of each of the thousands of spare parts on order. (Present reporting on the delivery status of spare parts is limited to a brief report on those items which are overdue.) A special panel is being established to determine the scope and nature of the problem and to avoid duplication of information which is produced for other purposes.

### *Public Law 663, Section 1311, 83rd Congress*

Recent legislation places limitations on the reporting of government obligations for procurement of spare parts, special tools, test and ground handling equipment, training parts and equipment, technical data, etc. Discussions between the committee and Air Force and Navy representatives have taken place and a panel is studying the law to determine its effect upon procedures employed in the forecasting of spare parts requirements on newly designed aeronautical items.

### *Navy and Air Force Provisioning Documents for Special Support Equipment*

The committee assisted the Air Force and the Navy in

drafting new procedures for forecasting requirements for special tools, test and ground handling equipment to be used to service new airplanes and components. The resultant Air Force document is MCP 71-650 and the Navy document is SAR-308.

### *Air Force and Navy Spare Parts Provisioning Procedures*

Revision of the current procedures for forecasting spare parts requirements is under way within the two services. (MCP 71-649 for the Air Force and Case 30 for the Navy.) Some proposed changes have been discussed with the committee and formal committee coordination of the proposed revisions is expected in the near future.

### *Retrofit Kits for Modification of Ground Support Equipment*

The committee recommended that a formal procedure for the supply of information and parts to the Air Force by the contractor was necessary so that delivered ground support equipment could be modified to keep up with design changes. The Air Force is taking action to modify the engineering change procedure, bulletins ANA 390 and 391, to accomplish this and will refer the proposed revision to AIA for coordination.

### *AMC Forms 263 and 321*

During the year, the committee proposed to the Air Force various revisions to formats of the Air Force Policy Letter Check List (Form 263) and Programming Check List (Form 321) which provide the initial information on operation of aircraft from which the contractor develops recommended spare parts lists. These format changes were recommended to provide the contractor with more and better basic initial information. These lists are now being revised.

### *Support Lists for Aircraft Test Programs*

To replace the intra-service procedures which were not well known within all of industry, the committee has recommended to the Air Force and Navy that procedures, specifications and contract clauses be developed under which the spare parts necessary for aircraft test programs can be made available by the contractor when needed. MIL-S-26799 is the Air Force specification and the Navy document is under preparation.

### *Prompter Approval of Spare Parts Exhibits, and Payment Therefor*

For a long time the committee has discussed with the military services the length of time required for contractual coverage on spare parts orders. The services have cooperated fully and the Air Force now authorizes Administrative Contracting Officers to issue and sign supplemental agreements covering approved definitized spare parts orders which, heretofore, were routed through the depots. Likewise, the Bureau of Aeronautics now issues provisional orders which authorize payment much sooner than before.

Because of these procedural changes, the contractors' spare parts accounts receivable have been substantially reduced.

#### *Review of Government Furnished Aeronautical Equipment Spares*

Statistics developed a year ago by the committee indicated that the majority of airplanes out of commission for parts, and aircraft not fully equipped are the result of shortages of government furnished aeronautical equipment. Representations were made to the Air Force and the Procurement Division has advised that the GFAE situation is much improved. The committee is still working on this as, despite improvement, shortages of GFAE spare parts are still a problem.

#### *Serial Numbers and Delivery Instructions*

Tardiness in contractors' receipt of Air Force serial numbers and/or Air Force or Navy shipping instructions have resulted in the holdup of finished spare parts inventories. The serial number problem has been solved, but the expediting of delivery instructions is still an active project.

#### *Air Force Open Call Contracts*

The committee reviewed a new Air Force Procurement Instruction which prescribed new contract clauses for emergency and replenishment spare parts under the "open call" type of contract. The committee objected to inclusion in the open call contracts of provisions already covered by the large production contracts. The committee also requested that where the Air Force and the contractor had already agreed to a set of basic contract clauses these clauses should be applicable equally to the open call contracts. The Air Force Procurement Instruction is now being rewritten to incorporate the committee's recommendations.

#### *Information Items*

In addition to the foregoing active items, the committee is following, on an "information" basis, a number of matters in which other AIA committees have primary interest. A few examples are the "Filmsort" system of providing spare parts information and drawings on a combination tabulating card/microfilm; pricing of consignee copies of DD250, and various specifications.

### MATERIALS COMMITTEE

Because of the generally stabilized conditions existing in its field of activity, this Committee conducted its business in regional meetings. Activity for 1955 is covered under the following general headings:

#### *DOD Small Business Program*

The major portion of the Committee's activity dealt with the various aspects of the Small Business Program. Several members served on the Air Force Industry Advisory Committee on Small Business. Through these members, the Committee's recommendations on DOD Directive 4100.20, Small Business Subcontracting Policy, and on the proposed Contractor's Military Procurement Commitment

Report, were made known to the Air Force and the Department of Defense.

Committee members assisted in the gathering of comprehensive data on the amount of procurement from small business firms by the aircraft industry during 1954.

Through a subcommittee established for the purpose, the Committee maintained liaison with the Small Defense Industries Association on matters of common concern.

#### *Defense Materials System (DMS)*

Committee members were able to carry out their materials procurement operations satisfactorily under the simplified DMS, so no Committee action was necessary other than to keep informed of any new instructions issued.

#### *Aircraft Production Resources Agency (APRA)*

Materials requirements reporting procedures of APRA presented no significant problems. The smooth functioning relationship of previous years was continued.

#### *Maintenance of the Mobilization Base*

The Committee was interested in provisions of the various DOD directives on Maintenance of the Mobilization Base that relate to Maximum Subcontracting, Definitions of Subcontracts, Maintenance of Subcontract Structure, List of Planned Wartime Material Suppliers, and on other matters within the scope of the Committee's activities. Committee members attended a DOD sponsored Mobilization Planning meeting held in Los Angeles in October. The meeting was the first of a series, the purpose of which is to infuse more production know-how into Industrial Mobilization Planning.

#### *Specifications and Standards*

Materials specifications and standards, either under development or undergoing change, that affected procurements and costs were followed closely. Those given special consideration were:

- (a) MIL-STD-183—Continuous Identification Marking of Steel.
- (b) MS 33528 — New Sheet Thicknesses Applicable to Aluminum.
- (c) Steel Founders' Society Survey of Specifications for Aircraft Steel Castings.
- (d) ARTC Survey of Heavy Aluminum Alloy Plate, Tapered Sheet and Plate Requirements.

### PATENT COMMITTEE

During 1955 important Patent Committee activities covered such matters as Armed Services Procurement Regulation (ASPR) Section IX, "Patents, Copyrights and Technical Data," and review of Patent Legislation, 84th Congress.

#### *ASPR Section IX*

##### (a) *Part I, "Patents"*

The DOD released on 4 January 1955 an official revision to Part I "Patents." Although the Commit-

tee found many of the provisions of the revised part satisfactory, it found others that were not and made appropriate recommendations to the Department of Defense. Except for minor revisions to correct what essentially were drafting errors, the DOD has not adopted the AIA recommendations. Future committee action will depend on experience obtained in negotiating contracts under the revised Part I.

(b) *Part II, "Copyrights"*

In December 1954 the DOD released to industry for comment a draft of a proposed revision of Part II. The proposed revision was entitled "Copyrights and Technical Data." It treated Technical Data as a category of copyrightable material. After careful review the Patent Committee concluded that the basic premises underlying the technical data portions of the draft would be unworkable. Further, the draft did not recognize that technical data, which includes manufacturing information, is inseparably linked to policies regarding supplementary sources. Because of AIA objections and objections from other industry groups, the proposed Part II was not issued. The ASPR Committee of the DOD began an entirely new draft which is nearing completion. The Patent Committee hopes for an opportunity to review the new draft before it is put into effect.

*Patent Legislation — 84th Congress*

The Committee followed closely the progress of all bills affecting patents that were introduced in the 84th Congress. As the bills reached the hearing stage, the Committee prepared statements presenting the industry position. The Committee took similar action regarding a proposed rule of the Federal Communications Commission (FCC) affecting patents. These committee actions are summarized as follows:

(a) *FCC Docket 10090* — To require filing of patent information annually by holders of non-carrier radio licenses — A committee member appeared at a hearing 1 February in opposition to the FCC proposed rule. A supplemental statement was filed with FCC on 30 June 1955.

(b) *HR 4983* — A bill to increase patent office fees — A committee member appeared on 17 June 1955 at a House Judiciary Subcommittee hearing on this bill and gave AIA's recommendations on appropriate patent office fees.

(c) *HR 639 and HR 2383* — Bills to authorize establishment of an invention awards board to reward persons who make their inventions (whether patented or not) available to the Department of Defense — A statement was filed on 13 June 1955 with a House Judiciary Subcommittee in opposition to these bills.

(d) *S. Res. 92* — A Senate Resolution providing \$50,000 to a subcommittee of the Senate Judiciary Committee for an examination and review of the administration of the Patent Office and statutes relating to patents with the objective of making the American patent system work more effectively — The Patent Committee will follow the hearings of this subcommittee closely.

## QUALITY CONTROL COMMITTEE

Early in the year, upon a Committee recommendation, the Board of Governors approved changing the name of the Inspection Committee to a more descriptive title, the Quality Control Committee (QCC).

Important to the committee's 1955 activities was the continuation of well established liaison with quality control personnel of the Department of Defense and the Military Services. Emphasis was placed on the development of adequate techniques for controlling quality of the larger and more highly stressed forgings, castings, plate, sheet, and honeycomb structures required in modern airplanes and missiles.

Government representatives attended the committee's national meetings as well as those held by both the Eastern and Western Regions. From time to time QCC members held informal conferences with government representatives on matters of immediate concern and on long-range objectives. The Committee cooperated with other interested AIA committees in the solution of problems arising from Air Force inspection of engineering and technical data, such as drawings, handbooks, etc.

Committee members were active in exchanging information on new quality control techniques. The Committee witnessed a company sponsored demonstration of newly developed universal inspection procedures and the associated gages and equipment. The demonstration was a great success and more of a similar nature are planned. Development of ultrasonic inspection procedures was intensified, with a joint subcommittee of Aircraft Research and Testing Committee and QCC preparing recommended ultrasonic inspection standards for large plates, billets and forgings. In this endeavor the subcommittee also worked with the Airframe Technical Committee of the Society for Non-Destructive Testing. The Quality Control Committee established a cooperative relationship with the American Society for Quality Control to devise improved statistical quality control procedures.

## PRESERVATION AND PACKAGING COMMITTEE

Two national and three regional committee meetings marked the first full year of operation of the Preservation and Packaging Committee.

### *Relationship with Government Agencies*

The Committee established working relationships with packaging personnel of the Department of Defense and the three military services and also with the Forest Products Laboratory, Department of Agriculture. Committee members represented AIA at an Air Materiel Command Packaging Conference held at Topeka Air Depot in September and at a Joint Military-Industry Symposium on Packaging and Materials Handling held in Washington, D. C., in October. The Departments of Defense and Commerce sponsored the Joint Symposium, which is planned to be the

first of a series. Several member companies accepted a DOD invitation to enroll supervisory employees in the Joint Military Packaging Course, Rossford Ordnance Depot, Toledo, Ohio.

### *Specifications and Standards*

Because of the emphasis on new and improved preservation and packaging procedures for military items, applicable government specifications and standards continue to be under intensive development and revision. The Committee was active in presenting and following up industry recommendations stressing simplification, standardization, and reduced costs. Specifications and standards involved were:

*MIL-C-25139(USAF)* . . . A lighter and cheaper wooden crate for shipment of bulky, lightweight airframe items.

*MIL-C-25010(USAF)* . . . A two-way crate to allow selective shipment by air or surface transport.

*MIL-P-4861(USAF)* . . . Packaging of "O" Rings in Standard Unit Quantities.

*MIL-P-7936(AER)* . . . A statement of general requirements for preparation for delivery of Naval Aeronautical equipment.

*MIL-P-116(c)* . . . A proposed revision of requirements for methods of preservation.

*MIL-B-10377* . . . Use of Ply-veneer for exterior shipping containers.

*JAN-P-108* . . . V-Board and W-Board for exterior and interior boxes.

*JAN-P-106A, etc.* . . . Miscellaneous specifications for wooden crates and boxes.

*MIL-STD-129A* . . . A revision of requirements for marking for shipment and storage.

*MIL-D-6055A, etc.* . . . Miscellaneous specifications for reusable metal containers.

### STATISTICS AND REPORTS COMMITTEE

During the past year reduction in the number of reports required by the government from the aircraft industry has been a daily working goal of the Statistics and Reports Committee (S&R). In many individual cases this work has been performed in collaboration with the U. S. Bureau of the Budget, the Air Force, the Navy, the Bureau of the Census, and the Bureau of Labor Statistics. Reduction of paperwork is claiming the attention of many industries; in this connection members of the Statistics and Reports Committee participated in several multi-industry groups, for example, the Advisory Council on Federal Reports.

As a result of the Committee's activities six reporting requirements or proposed requirements were either disapproved or withdrawn by one or another of various federal agencies. Detailed study led the Committee to recommend simplifications in the case of some 15 other reports, proposing that the government agencies amend the reports along the lines suggested by the Committee.

### *Standard Industrial Classification Manual*

In the current revision of this Manual no mutually acceptable basis for classifying the "Guided Missiles and Missile Systems" industry has been found. AIA has strongly recommended that manufacturers of guided missiles be classified in Industry code 3725, thus making missile manufacture a part of the larger "Aircraft and Parts" industry code 372.

### *Air Force Facilities Contract Reporting*

An inter-industry group, which included two aircraft manufacturers' representatives, has suggested a series of practical steps to simplify and reduce the paperwork involved in operating brick-and-mortar facilities for the Air Force. The Air Force has agreed to these recommendations in principle, but have still to issue the necessary revised documents.

### *"Aviation Facts and Figures"*

The 1955 edition, published in April, brought up to date the material in earlier editions. Reaction was decidedly favorable with approximately 10,000 copies being sold. Research work has been initiated on the 1956 edition.

### *Statistics*

The S&R staff continued publication of the series on civil aircraft, employment, finances, labor turnover, average hours and earnings, and military aircraft procurement.

### ACCOUNTING AND CONTROLLERS COMMITTEE

The Accounting and Controllers Committee (ACC) deals with problems affecting financial management within the industry, and, therefore, a major portion of its activities are related to the Government's procurement policies and procedures such as the Armed Services Procurement Regulations, and implementing directives. During the past year, some of the major activities of this Committee have been:

#### *Cost Principles—Proposed Revision of ASPR Section IV*

For several years, the Department of Defense has had under consideration a proposed revision of ASPR Section IV which deals with the cost principles used in determining allowable costs under cost-reimbursement-type contracts. After consideration of a draft revision released by DOD during the year, AIA views were submitted to the Department of Defense. The principal objections to the proposed revision were: (1) contractors would be required to make numerous changes in established accounting methods and procedures which would result in considerable expense to the contractors as well as to the Government, (2) the provisions relating to the allowability of incentive compensation and employee pension plans, and (3) the provisions relating to the allowability of general research expense would discriminate against this industry in that there would be no allowance for such expense if more than 25% of a con-

tractor's business were with the Government. Representatives of DOD, individuals of the aircraft industry, and other government contractors are planning to hold meetings in the near future to attempt to reconcile such differences as may then be found to exist.

#### *Depreciation Allowances in Contract Pricing*

The Internal Revenue Code of 1954 contained a liberalized policy for determining "normal depreciation" for tax purposes. This Committee recommended that the Military Services adopt the same standards for determining normal depreciation for contract pricing purposes. In addition to the straight line method, the Internal Revenue Code of 1954 provided for the use of two new methods for determining normal depreciation. The new methods are the declining-balance method and the sum-of-the-years-digits method. These methods permit tax write-offs of approximately two-thirds of the original cost of the facility during the first half of its normal life. This contrasts with the straight-line method, which permitted annual deduction for tax purposes and allowance as a cost for contract cost purposes of an equal portion of the original cost during each year of the normal expected life of the facility. In May the Department of Defense issued a cost interpretation under Section XV of the ASPR, which adopted the new methods provided for by the Internal Revenue Code of 1954 for computing normal depreciation in addition to the straight-line method. A survey of the companies represented on the ACC discloses that the majority of the companies now are using one or the other or both of the new methods for computing normal depreciation for tax purposes as well as for contract cost purposes.

#### *Cost Allowances Under Fixed-Price Contracts*

A new policy controlling the negotiation of prices under fixed-price contracts, which long had been advocated by this committee, was adopted by the DOD. This policy states that the contracting officer shall not have as an objective the negotiation of costs as such, but rather shall strive to obtain fair and reasonable prices for the items purchased, giving due consideration to the contractor's general performance, efficiency, economy and ingenuity displayed in meeting contract requirements. Also to be considered are quality of the product, character and extent of subcontracting, changes in market conditions, competitive aspects, extent of contractor's technical, production, and financial risk, and Government assistance in the form of facilities, equipment, or financing. Although applicable to negotiations for fixed-price contracts and fixed-price contracts with provision for price redetermination, this policy of the Department of Defense does not apply to fixed-price, incentive type contracts.

#### *Cost Plus Fixed Fee Contract Clauses*

In view of the unsatisfactory experience over the past years with certain clauses used in cost-reimbursement-type supply contracts, which are required by Section VII of the ASPR, the ACC, through its Procurement Regulations Subcommittee, prepared a brief setting forth industry's

position on these clauses and met with individuals in the Military Services in an effort to correct some of the inequitable features. The clauses considered by the Committee to be either inequitable or impractical from industry's standpoint pertain to insurance and liability to third parties, allowable costs, method of payment, inspection, delays in performance, and change orders.

#### *Research and Development Contractual Practices and Procedures*

In response to a request from the Department of Defense for assistance in a DOD study of research and development contractual practices and procedures which have caused dissatisfaction and which may affect the willingness of contractors to perform research and development work under contract with the military services, detailed comments and recommendations were forwarded to the Department of Defense near the end of the year 1953. During the past year the Committee has been cooperating with appropriate DOD groups to improve the administration of research and development contracts through amendment to appropriate ASPR's.

#### *Progress Payments*

The Department of Defense has proposed new contract clauses governing progress payments which are being considered by this Committee. The proposed clauses provide methods for use in computing the amount of progress payments, the liquidation and reduction or suspension thereof, the extent of the Government's title to and control of the property covered thereby with special provisions covering default in contract performance, rights reserved by the Government, and the treatment of progress payments to subcontractors.

#### *Payment Limitations on Incentive and Price-Revision-Type Contracts*

To eliminate the need for substantial refunds by contractors after final determination of prices on incentive-type and price-revision-type contracts, and to facilitate timely adjustment of provisional billing prices, the Department of Defense issued directives which limited total payments on contracts of either type. Since this would work a financial hardship on many companies which had long-term contracts, representations were made to the DOD by the AIA and other associations as a result of which a new directive will be issued in the near future.

#### *Air Force Procedure Governing Industrial Production Facilities*

In cooperation with the Materials Committee, the ACC reviewed a proposed revision of the Air Force regulation pertaining to the acquisition, accountability, and use of Government facilities. Recommendations regarding the revision have been submitted to the Air Force.

#### *Subcontractor Use of Government-Owned Manufacturing Facilities*

Another problem of concern is the position taken by the



Air Force that a subcontractor, if he is using Government-owned facilities, shall submit two quotations to the prime contractors, one based upon the payment of rent for the use of such facilities and the other on a rent-free basis. In view of the administrative difficulties involved and the added expense to subcontractors and prime contractors, efforts are being made to limit application of the directive to situations in which a subcontractor may have an undue competitive advantage by reason of the use of Government facilities on a rent-free basis.

### *Renegotiation*

A request for recommendations concerning extension or continuation of the Renegotiation Act of 1951 beyond December 31, 1956 has been received from the Joint Congressional Committee on Internal Revenue Taxation. The Joint Congressional Committee also requested any recommendations to change the Act which would facilitate the administration of the renegotiation process.

### *Additional Compensation for Personal Services at Air Force Test Bases*

In cooperation with the Air Force this Committee is working on the development of a uniform policy of extra compensation to company personnel stationed at isolated Air Force test bases.

### *Tax Clauses for Fixed-Price Contracts*

At the request of the Department of Defense the ACC submitted comments on a proposed revision of the tax clauses used in fixed-price type contracts. These clauses are of particular interest because of their relationship to the over-all problem of Federal, state, and local taxes—especially the California personal property tax situation.

### *Other Problems*

During the past year, some of the other problems considered by this Committee were the retention of contract records, civil defense costs, security costs, interest costs, liability for Government furnished aeronautical equipment and other property, reporting and screening of excess personal property, the use of predetermined overhead rates, and engineering change procedures.

## TAX COMMITTEE

Representatives of companies in the western region of the United States, the majority of which are located in the State of California, comprise the membership of this Committee. Although interested in all tax problems of a general nature, the Committee's principal concern is with state and local tax matters.

A major concern during this year was the personal property taxes assessed by certain counties in the State of California on property in the possession of contractors intended for incorporation in an end item sold to the Federal Government. The members of this Committee consulted with and furnished advice to the members of the ACC and the

Legal Committee on the ramifications of this problem.

In conjunction with the ACC, this Committee reviewed and submitted to the Treasury Department recommendations concerning proposed regulations for implementing the provisions of the Internal Revenue Code of 1954 with respect to the handling for tax purposes of employee sickness and accident benefits. Subsequently, a new set of regulations on this subject was released to industry for review and comment.

This Committee, in cooperation with the ACC, reviewed that portion of the DOD proposed revision of ASPR Section XV (Cost Principles) which pertained to taxes, reimbursement thereof to the contractor, procedures for securing refunds thereof, etc.

In cooperation with the Air Transport Association, the Committee attended hearings and proposed to California's State Board of Equalization a ruling under California's sales and use tax regulations that clearly exempts sales of aircraft and components when sold to a commercial airline, a foreign government or a non-resident of the State of California.

Most of the other matters handled by this Committee were primarily of a local nature concerning the administration of state and local tax laws and regulations.

## LEGAL COMMITTEE

Member company's principal legal official or counsel comprise the membership of this Committee.

### *Payments to Issuer of Tax Exempt Obligations*

This Committee, in conjunction with the Accounting and Controllers Committee, prepared and filed a statement with the Senate Finance Committee opposing a provision of the Internal Revenue Code of 1954, which would have resulted in the non-deductibility of rental payments to any state or municipality for use of facilities acquired or improved from the proceeds of industrial development revenue bonds.

### *Tax Clauses for Fixed-Price Contracts*

Working with the ACC, the Committee also was concerned with the legal aspects involved in the proposed revision by the Department of Defense of the tax clauses for use in fixed-price contracts. (See Accounting and Controllers Committee Report.)

In cooperation with the ACC, the Legal Committee has been concerned with problems relating to the legal liability of contractors under bailment agreements, various problems of subcontractors, the retention and disposition of records, import duty on materials for incorporation in aircraft, management incentive compensation, obligations under the correction of defects clause, security requirements of the Atomic Energy Commission and the Military Services, personal property taxes of the various states, problems arising under the Renegotiation Act of 1951, letter contract problems, flight risk insurance clauses, interest costs, second-source procurement, patents and title to drawings and technical data, and problems arising under terminated contracts.

# PUBLIC RELATIONS SERVICE

The Public Relations Service continued its efforts to obtain better public understanding of air power, civil aviation, and the progress and problems of the aircraft industry. As the information center for AIA, public relations served as the channel through which the industry's policy, programs, accomplishments and problems were interpreted to the public. Because of the widely dispersed nature of the industry and the increasing nation-wide interest in aviation matters, information offices operated in New York, Los Angeles and Washington. The service maintains close liaison with the public information sections of the Government, including the military services, with national organizations, and with press, radio-TV, and other media of information.

Among the subjects which have received special attention during the year are: the importance of aggressive research and development programs to national security, the quality of American aeronautical products, the critical shortage of scientific and technical personnel, the need for an expanded national aviation education program, American leadership in the world air transportation market, the growing importance of the utility airplane as a profit-making business and agricultural vehicle, the development and increasing military and civil use of the helicopter, the industry's continuing and successful cost reduction programs, and the spectacular records set by American aircraft and other aeronautical products.

## *Public Relations Advisory Committee*

Two national and four regional meetings of the Public Relations Advisory Committee (PRAC) were held to discuss policy, programs and problems, and to provide policy and program direction to the public relations staff. PRAC subcommittees on Aviation Education, Editorial Review and the National Aircraft Show were particularly active.

## *Information Service*

A constant increase in requests for information from the press, Government agencies, Congress, financial institutions, educators, and a miscellany of organizations and individuals marked the past year. This, plus the dissemination of topical information, has kept all three offices at a high level of activity. On several occasions the AIA President and Western Region Vice-President appeared before important national groups and other important audiences as well as broadcast audiences.

A series of background memoranda dealing with specific activities were prepared and distributed. These dealt with such topics as the supply and subcontracting programs of the aircraft industry, efforts being made to control aircraft noise—both in-flight and on the ground, aviation aspects

of the Federal budget, and various reports on aircraft production, employment and other similar statistical information.

## *Publications*

PLANES, the Association's official publication, continued to stress the industry's accomplishments and its significant contributions to our national security and economy, as well as presenting the industry's views on important problems and difficulties confronting it. The acceptance of this publication by the press and other important segments of the public continued at an extremely high level. By supplying information for the LEGION AIR REVIEW, continued assistance was afforded the American Legion's air power program.

A second edition of AVIATION FACTS AND FIGURES was distributed during the year. More than 10,000 copies of this publication were sold by the publisher and an additional distribution to national leaders was made by AIA. The 36th annual edition of the AIRCRAFT YEARBOOK was issued early in the year. Many new features were introduced in the 1954 edition of this standard work on American aviation, and further innovations are scheduled for the coming edition. For the second year U.S. AVIATION TODAY was prepared and distributed. This booklet contains photographs and descriptions of American aircraft in production and is widely used in the nation's schools.

## *AIA-NAEC Aviation Education Program*

This program, now in its third year, enjoyed increasing success as more and more educators and school systems took advantage of the low-cost, teacher-prepared materials of instruction on all aspects of aviation. To date, eight booklets have been prepared and made available to schools and educators. These booklets have been designed not only to create a better understanding of aviation matters, but to assist in developing good reading and spelling habits, in social comprehension, and other corollary learning activities. The new booklets issued during the past year were:

**TILLIE THE TIGER**—A story of the marvels of modern air transportation as seen by a tiger cub who, with a plane load of other animals, takes a long overseas flight from her jungle home to an American zoo.

**THE FARMERS WINGS**—This booklet describes how the airplane has revolutionized the life of the American farmer. It describes how the small utility plane is used for crop spraying, fence patrol, cattle counting, as well as an indispensable transportation vehicle not only for business purposes, but for trips to Sunday school and church and for shopping trips.

### *Industrial Editors Program*

In an effort better to inform the hundreds of thousands of Americans who are directly dependent on the aircraft manufacturing industry payroll on the problems and accomplishments of their industry and its products, increased emphasis has been directed toward expanding the coverage of industry-wide activities in individual company publications.

Several meetings of the industry editors group have been held during which problem, methods, techniques have been discussed and recommendations made to improve the overall quality of these publications. A three-day conference with Air Force personnel at the Air Materiel Command and the Southern Air Materiel Area provided the group with up-to-date information on the problems confronting the

user of aeronautical products and gave perspective to the relationship between company products and the over-all supply and logistics systems of the Air Force. One of the highlights of this conference was attendance at the Air Force fire-power demonstration which disclosed the incredible destructive capability of modern air weapons. Similar conferences with other military units are contemplated in the future.

### *Cooperation with Other AIA Services*

Public relations continued to work closely with other AIA services, providing counsel and assistance whenever possible and received valuable aid in return. The research and statistical section of the Industry Planning Service, and the Association's legislative advisor have been of especial assistance in carrying out the public relations objectives.

# TECHNICAL SERVICE

## *General*

The Technical Service and its technical committees are concerned with industry problems affecting the research, design, development, and manufacture of airplanes, guided missiles, helicopters, engines, propellers and aeronautical equipment.

Continuous liaison is maintained with the Department of Defense, the Military Services and the civil aeronautics agencies, such as the National Advisory Committee for Aeronautics, CAA and CAB, in connection with research activities, materials and facilities development, design requirements, qualification testing, engineering procurement specifications and related directives and implementing procedures. This liaison makes possible an interchange of technical information between the government and industry thereby insuring that the industry's development needs are recognized and that military procurement specifications and civil air regulations are realistic with respect to manufacturing capabilities and the design state-of-the-art.

## *Government-Industry Relationship Re Civil Aircraft Certification*

A re-analysis of certification procedures and responsibilities currently is being made by the CAA and all manufacturers of civil-type aeronautical products. This study stems from an Administration directive to the Department of Commerce stating, "With the increasing maturity of civil aviation, the Federal Government soon should be able to reduce substantially its safety promotion and enforcement activities without affecting the present high level of safety."

The CAA's Office of Aviation Safety has submitted a proposed plan to AIA for coordination with industry. Industry review will be made by segment; i.e., transport, personal aircraft, helicopters and engines, since, in various instances, company responsibility has already been delegated by the CAA, consequently, it is unrealistic to apply one procedure "across the board."

Essentially it is the manufacturers' opinion that the CAA should exercise whatever minimum surveillance is necessary to insure that unairworthy aircraft engines and propellers are not produced.

Whether or not a change in the Civil Aeronautics Act is needed will be dependent upon how far the CAA can delegate its responsibilities to industry and still consider the remaining CAA enforcement to be "an affirmative finding of airworthiness" as specified in the Act.

## *Recognition for Industrial Standardization*

As government standardization of materials, utility parts, aircraft components and equipment continues to increase,

the industrial standardization programs being carried on by the National Aircraft Standards Committee (NASC), Electronic Equipment Committee (EEC) and the Society of Automotive Engineers (SAE) are becoming more and more important to the maintenance of aeronautical quality. Great benefit would accrue to the Services and industry alike if greater use were made of the military air services of National Aircraft Standards, the SAE's Aeronautical Material Specifications (AMS) and other industrial standards. Although this has been a stated objective of the DOD, implementation by the Services is still to be achieved.

## *Service Publications*

The first meeting dealing with this new activity was held in St. Louis in September at which airframe, engine, electronic and equipment manufacturers discussed mutual problem areas and outlined plans for a future program. Interest in service publications was reflected by the 75 representatives from member companies who attended this initial meeting. Some of the items of interest as evidenced by questions presented to the Military Services include the following:

- Evaluation of the contractor publications printing program initiated in July 1955
- Procedures and funding of this printing program
- Printing of Contractor Furnished Equipment (CFE) publications under the weapons-system concept
- Vendor-aircraft manufacturer relationships for GFAE maintenance information
- Standardization of military publications requirements
- Contracts requirements for maintaining publications on out-of-production aircraft.

## *Drafting Practices*

Drafting Practices Panels of airframe, engine and equipment industry segments have cooperated in developing recommendations pertaining to various "across-the-board" military drafting standards as listed in MIL-D-5028—Drawings and Data Lists—the drafting standard for the aircraft industry. Representation on the Committee for Standard Drawing Practice of the DOD Office of Standardization is expected to improve the aircraft industry's ability to assist the Military in this field of technical data. Recommendations have been submitted to the Services on thirteen drafting practices and related specifications.

## AIRCRAFT TECHNICAL COMMITTEE

The Aircraft Technical Committee (ATC), comprised of the engineering executives of the airplane companies, has functioned as the policy committee on engineering problems. Its primary interest has been in government research

facilities and planning, and overall government programs for integrating the design-requirement specifications of the Military Services.

*Military Standardization of Airplane Design Requirements:* Although some engineering effort is being expended by the Air Force and Navy BuAer on development and coordination of joint military airplane design requirements, the results have been disappointing. Inherent in the problem is the question of specification philosophy and the use of manual-type material to supplement general design requirements. A policy on "approach to design requirements" would be most helpful in expediting the Military Services' agreement in this field. To better illustrate the continuing nature of this problem, the 1935 conclusions of the Federal Aviation Commission Report stated:

"A much higher degree of uniformity than now exists should be attained in auxiliary material and the methods of its development, and also in the practices of the Army and Navy in such technical matters as the analyzing of aircraft for strength, testing for performance, and so on."

*Basis for Helicopter Procurement:* Some confusion exists within industry as to the policy of the Army, Navy and the Air Force in utilizing military specifications and civil air regulations in purchasing helicopters. Considerable engineering effort has been and is being devoted by the Services to a series of joint MIL design requirements. On the other hand the Air Coordinating Committee, which represents both military and civil aviation interest, recommended in its May 1954 Aviation Policy Report that:

"All transport aircraft, whether fixed—or rotary-wing, except those designed for specific military missions, should be designed to meet the basic civil airworthiness standards."

Industry is interested in this subject and believes that the issues currently being considered by the CAA, Army, Navy and Air Force should be submitted to industry for study and comment.

*Airplane Flight Control Symposium:* As a result of interest displayed by the Services, the NACA and the airplane manufacturers, the AIA assumed sponsorship of an annual symposium on airplane flight controls as previously sponsored by the Navy Bureau of Aeronautics (BuAer).

On January 19th and 20th, in Dallas, Texas, more than 50 representatives of the DOD, NACA, Air Force, BuAer and industry participated in an exchange of technical information and safety problems related to control and stability of high altitude, high speed aircraft. The DOD Assistant Secretary for Applications Engineering has strongly endorsed such industry meetings, stating that great savings in engineering manpower can be achieved by such exchange of technical data.

## AIRWORTHINESS REQUIREMENTS COMMITTEE

Although the Airworthiness Requirements Committee (ARC) functions principally through its divisions of transport, utility aircraft and helicopters, certain important projects were given attention by the full committee:

*Gust Loads Criteria:* An intensive study was made of latest Weather Bureau and NACA meteorological data on thunderstorms, jet streams and wind shear to re-evaluate the existing gust-loading criteria for aircraft. As a result, increases in strength requirements were recommended to the Civil Aeronautics Board and adopted in Civil Air Regulations (CAR) Part 4b transport aircraft rules. Similar recommendations were submitted to the Military.

*Air Force-Navy-Civil (ANC) Design Criteria:* A much curtailed ANC bulletin program was supported by industry, limited to those areas where true standardization between military and civil could be achieved. In this category fall:

ANC-5 Strength of Aircraft Elements

ANC-17, Plastics for Aircraft—ANC Plastics Subcommittee

ANC-23, Sandwich Construction

With the abolition of the Munitions Board, this limited ANC program needs new sponsorship within the DOD.

### *ARC Transport Subcommittee*

*Special Export Design Conditions:* Since the International Civil Aviation Organization (ICAO) Convention covers only international air navigation and does not include provisions for sale of aircraft, manufacturers have little need for ICAO Annex 8, Airworthiness Standards. Efforts are progressing to convert Annex 8 from detailed requirements to a statement of objectives.

Import and export of aircraft are covered by reciprocal agreements and each nation must determine what special design conditions it will impose on imported aircraft to comply essentially with its domestic code. The nations should strive to keep "Special Conditions" to an absolute minimum and ICAO should concentrate its efforts on activities to highlight areas of divergence between domestic codes, thus evolving true international standardization which Annex 8 has failed to provide.

*Turbine Transport Regulations:* The committee continued to develop and recommend revised airworthiness rules for jet transports. With certification of three different models pending, the CAA and CAB have solicited industry assistance in preparing appropriate changes to the Civil Air Regulations and substantial progress was made at the 1955 Annual Airworthiness Review headed by the CAB Bureau of Safety Regulation.

*Crash Survival Design and Equipment:* An important meeting was held in Los Angeles between the airline operators and the transport manufacturers to discuss all phases

of aircraft crashworthiness. Topics covered were survival equipment, structures, fuel tanks, ditching and flotation, emergency exits, lighting, cabin interior, seats and berths and automatic actuating devices. Periodic joint conferences of this nature will be held to improve further the overall safety of new airplane designs.

*Additional Projects:* The committee also provided industry opinion to the CAA and CAB on the following airworthiness rules:

- Airplane structural fatigue strength
- Windshield and cockpit visibility
- Automatic indication of proper feathering
- Escape from ditched aircraft
- Anti-collision light systems
- Aircraft electrical systems

*Powerplant Installation Subcommittee:* The principal achievement of this group was the comprehensive review of the powerplant installation requirements of CAR 4b and the recommendations developed to bring these rules up-to-date. In a special meeting with the CAA, and later at the CAB's hearing, the industry presented recommendations on fuel flow tests, fuel tank construction boost pump capabilities, engine location, unusable fuel and turbine propeller systems.

Additional projects during the year were:

- Structural criteria for turbo-prop engine supports
- Turbine engine starting systems
- Navy fuel system specification
- Missile application of jet engines
- Fire shielding of engines.

#### *ARC Helicopter Subcommittee*

*Helicopters for Scheduled Operation:* The Army Transportation Corps' interest in purchasing multi-engined helicopters has expedited development of T-category rules by the CAB. As a result, new CAR Part 7 is pending issuance by the CAB which will mark another milestone in helicopter aviation.

The committee met with the airlines, CAA and CAB and provided basic rules which the manufacturers feel will allow the maximum flexibility in helicopter operational use. Should the Army's multi-engined helicopters be certificated under CAR Part 7, it would permit them to be turned over to airline operators for accelerated service testing and subsequent use.

*Radio Technical Commission for Aeronautics (RTCA) Subcommittee on Future Helicopter Operational Requirements:*

The AIA's Helicopter Committee has been invited to participate in the recently established RTCA activity "to develop information regarding the anticipated flight characteristics and capabilities of helicopters which are expected to be in use after 1960." Such information will have an important influence on helicopter air navigational aids, air traffic control and heliport configuration.

*CAA Helicopter Fire Test Program:* The Committee is cooperating with the CAA's Indianapolis Test Center in a fire test program. This program is intended to (1) supply military and civil operators with fire protection information, (2) supply helicopter manufacturers with design information, and (3) supply test data that will provide a basis for recommendations covering safety practices. A new facility to accomplish the necessary fire testing has been constructed at this Center, and the first test article has been installed.

#### *ARC Personal Aircraft Subcommittee*

*Delegation Option for Airplane Approval:* The increased experience of light airplane manufacturers with CAA procedures has enabled a number of companies to assume full responsibility for the compliance of their products with CAR 3 airworthiness rules. Recognition of industry's responsibilities is consistent with the ACC aviation policy recommendations.

*Civil Air Regulations Part 3:* Work with the CAA and CAB has continued in bringing the airworthiness rules up-to-date. With the gradual weight increase in personal aircraft, the 6,000 lb. limitation has been approached and industry has found certain requirements to be unrealistic. A basic change has been recommended to the CAB, so that the powerplant installation and fire protection rules will be based on engine cubic inch displacement rather than airplane gross weight.

Preliminary studies are also under way on rules for turbine powered personal aircraft. The question of load factor for maneuvering loads in design will require early resolution.

*Additional Projects:* At the Civil Aeronautics Board's Annual Airworthiness Review in Washington, D. C. in September, the Committee met with all interested industry and government representatives to discuss the following subjects:

- Control Surface Mass Balance Supporting Structure
- Control System Details
- Fuel Tank Sump Drains
- Fuel Valves
- Fire Wall Construction
- Carburetor Air Temperature Indicating System

#### AIRCRAFT RESEARCH AND TESTING COMMITTEE

The activity of the Aircraft Research and Testing Committee (ARTC) was directed toward the ever-mounting engineering problems resulting from higher speeds and temperatures in both the aircraft and missiles fields. Primary attention has been given to development and testing as related to equipment, structures, materials and processes.

Effort also has been applied to the solution of problems involving titanium, steel, aluminum and plastic materials, as well as elevated temperature and dynamic testing of structures and equipment, and specifications for spot and

seam welding processes. Also of concern were the influence of nuclear propulsion, problems in flight-test instrumentation and problems in high-temperature fuel-tank sealants.

One hundred seventy-five bulletins were issued. Six regularly scheduled, closed Regional meetings were held. Two national meetings were held, involving representatives of the DOD, the Military Services, NACA and other outside organizations. Three of these Regional meetings and one of the national meetings dealt with matters of particular interest to the Department of Defense—Batelle Titanium Laboratory. Numerous other meetings were held by subordinate project and panel groups. A special meeting with the Military Services, the producing industry and others was held on transparent materials.

Included among Committee recommendations were those made to NACA on flutter and vibration research; to the Aircraft Division of the SAE on high temperature hydraulic fluids; to the Air Force-Navy-Civil Committees on aluminum and plastics; to the DOD, Military Services and NACA on flight test temperature and stress surveying; to the DOD on titanium; and to the Services on high-strength steel.

Publications included a revision of the electrical test procedures for radomes and a new report on "Tentative Requirements for Quality Aluminum Alloy Castings." Nearing completion after two years' work is a handbook on fatigue and fatigue testing.

## ACCESSORY AND EQUIPMENT TECHNICAL COMMITTEE

The Accessory and Equipment Technical Committee (AETC) and its subcommittees are comprised of representatives of 78 companies or divisions thereof, representing the major U.S. manufacturers of accessories and equipment for aircraft and missiles. The Military Services have given assurance of their desire to maintain a strong equipment industry within the concept of the weapons-system method of procurement. AETC has urged the military and the prime manufacturer to utilize equipment industry specialist know-how in early phases of technical development of new equipment.

Because development of equipment for the ever-increasing severity of environmental operating conditions is subjected to an extremely short lead time, AETC is studying means for streamlining the equipment approval system now in effect.

Presentations at AETC meetings by key military and industry representatives on problems affecting the equipment industry included:

- Relations between aircraft and equipment manufacturers under current Air Force regulations and policies
- Various aspects of research, design, and procurement of accessories and equipment for supersonic aircraft
- Areas in which the equipment manufacturer can improve his products and services

- Hydraulic and pneumatic power systems
- Selection of aircraft accessory power sources
- Aircraft electrical power.

### *Administrative Engineering Subcommittee*

The Administrative Engineering Subcommittee has cooperated with the Military Services and other segments of the aircraft and missile industry in solution of engineering contract requirements problems such as: engineering change procedures, drawing and data list requirements, microfilm specification and application, inspection and acceptance of drawings, equipment approval policies, worldwide distribution of drawings by design manufacturer, protection of designer's proprietary rights with regard to supplying engineering data, definition and use of specification control drawings, and over-control of vendor processes on items subject to government source inspection.

### *Powerplant Control Subcommittee*

The Powerplant Control Subcommittee, representing the major control-system manufacturers, cooperated with the Military Services, NACA and manufacturers of engines, airframes and missiles in defining and initiating basic research to improve current materials and control devices which are not adequate for utilization in the severe environments experienced in current operation.

Other active projects during 1955 included cooling problems, separate power supply requirements, reliability procedure, simplification of emergency controls, and definition of control-specification terms.

### *Auxiliary Power Subcommittee*

With the continuing increase in the use of auxiliary turbine power sources for alternator drives, compressors, pumps, starters and other functional equipment in aircraft and missiles—both "air breathing" and "non-air breathing" units—the AETC subcommittee is assisting the Military Services in coordination of MIL specification for turbine type auxiliary power plants.

### *Other Product Subcommittees*

To provide means for dissemination of information and establishing recommendations on specific products by the product designers, the following AETC subcommittee and mailing lists are maintained:

- Engine Pad and Drive Subcommittee
- Pump Subcommittee
- Electrical Equipment Subcommittee
- Shock Strut Subcommittee
- Instrument Mailing List
- Hydraulic & Pneumatic Mailing List

### *Council for Military Aircraft Standards (CMAS)*

AETC has provided representatives to assist the Military Services and airframe manufacturers on five CMAS projects, namely, standardization of electrical actuators, gaging fac-

tors for aeronautical bolts, conversion to unified class 3B threads, aeronautical screw threads for numbered sizes and gaging practices for screw threads.

## ELECTRONIC EQUIPMENT COMMITTEE

Under the direction of its executive committee, the Electronic Equipment Committee (EEC) has devoted major attention to electronics systems, equipment and components.

### *Reliability*

The Committee has devoted considerable effort toward the improvement of both technical and contractual aspects of reliability requirements for electronic equipment and systems. Liaison is being maintained with other groups and agencies with similar interests.

### *Tube Requirements*

Tube specification requirements and application data for missiles, aircraft and supporting ground equipment have been coordinated by the Electron Tube Subcommittee with tube manufacturers and cognizant government agencies to improve the reliability of electron tubes. The Committee's visits to Signal Corps Engineering Laboratories (SCEL) provided valuable first-hand information on SCEL activities in electron tubes, semiconductor devices and related electronic developments.

### *Semiconductors*

Rapid development of transistors and semiconductor devices suitable for military applications accelerated EEC recommendations for improvement of Service transistor specifications, liaison on Armed Services Electron Tube Committee (ASETC) Semiconductor Committee, and preparation of a NAS transistor procurement specification.

The NAS specification on selenium rectifiers and current work on silicon rectifiers are being expanded to include both signal and power diodes.

### *Parts-Approval Procedure*

Because specifications have fallen behind development, more than 80 percent of all electronic parts in complex military equipment are non-standard. A major Committee effort has been initiated to simplify the Military Services' procedures for approval and logistic support of non-standard parts and to expedite release of industry and government specifications for advanced part designs.

### *NAS Component Standards*

Twelve NAS procurement specifications have been developed and others, not covered by Military specifications, are under development including: miniature capacitors, high temperature wire, selenium rectifiers, precision variable resistors, radio noise filters, miniature screws, transistors,

miniature turret terminals, silicon diodes and high temperature coaxial cable.

## *Presentations*

Presentations at EEC meetings by key military representatives included:

- Navy electronics equipment needs
- Bureau of Ordnance guided missile electronics
- Aspects of Army electronic component reliability
- Requirements, development, use and maintenance of test equipment used to maintain prime airborne electronic equipment
- Voltage frequency characteristics, transient A.C. voltage limits, and transient frequency limits
- Technical objectives, organization and activities of Wright Air Development Center Electronic Components Laboratory and each of its branches.

## ENGINEERING CONTRACT REQUIREMENTS COMMITTEE

The Engineering Contract Requirements Committee (ECRC) is a relatively new committee concerned principally with the engineering data requirements of contracts for aircraft and guided missiles. Two important panels of the committee have been established to serve in the specialized areas of drafting and service publications. Some of the more significant activities of the committee during the past year are:

### *Quality Control of Engineering and Technical Data*

During the year, the Air Force endeavored to apply the same specification for inspection of hardware to the acceptance of engineering data. The Committee met with the Air Force to discuss problems created by this action, with the result that the Air Force accepted industry practices for quality control of technical data.

### *Microfilming*

Industry is concerned over the possibility of dual procedures and equipment for microfilming engineering and technical data as a result of divergence in existing Air Force and Navy supply systems and management procedures. Whether such differences can be eliminated or at least isolated from requirements on the contractor presently is being explored with the Military Services.

### *Design Data Requirements*

The program identifying and compiling requirements of all specifications applicable to aircraft which require submittal of data to the Services, is continuing. The objective is to obtain a common specification for such requirements and thereby reduce the amount of data requested.

Other subjects which the committee has under study in-



clude Air Force Table 250, MIL-STD-208 on part numbering aircraft service changes, and weapons systems general specifications.

## ENGINE TECHNICAL COMMITTEE

The Engine Technical Committee (ETC) has been concerned primarily with engineering procurement specifications for engines as issued by the Military Services, and with Civil Air Regulations pertaining to type certification, development and operation of engines in civil use. To carry out its responsibilities, the committee has maintained close liaison with the Military Services and the regulatory agencies of the Civil Aeronautics Administration.

During the year, the committee has acted on the following subjects, either directly or in cooperation with one of its specialist subcommittees.

### *DOD Policy Directive Governing the Development and Application of Aircraft Turbine Engines*

This directive, as originally proposed, was felt to be over-restrictive in that design competition would have been hampered or eliminated, and specific aircraft would have been dependent on one engine design—a situation which could have led to catastrophic results in the event of a national emergency. Through representations made on behalf of the engine companies, concurred in by the aircraft manufacturers, the DOD directive was revised and issued in a form acceptable to all concerned.

### *Fire Shielding of Turbine Engines*

Considerable study has been conducted regarding the necessity for and/or proper application of fire shielding to turbine engine installations. Although recommendations have been withheld pending evaluation of research being conducted by the government, there is general agreement that fire shielding of turbine engine installations cannot be handled in the same manner as piston engine installations. Each turbine engine installation will have to be considered on its own merits.

### *Performance Data for Turbojet and Turboprop Engines*

This subject has continued to receive attention not only by the ETC but by other AIA committees and the Military Services. Detailed proposals prepared by the ETC Performance Panel and approved by ETC, presently are being evaluated by the Military Services.

### *Recommendations Submitted on Proposed New or Revised Military Specifications*

The ETC, with subcommittee and panel assistance, has in the past year submitted recommendations to the Military Services on the following: altitude guarantees for turbojet

engines, specifications governing engine mockups, experimental lubricating oil, part numbers, design criteria for engines, and screw-thread standardization.

### *Council for Military Aircraft Propulsion Standards (CMAPS)*

Review of the Charter and Rules of Procedure of the proposed CMAPS, originally slated to replace the ANI Committee in 1952, has led to the conclusion that much of the wording has become outdated. Charged with bringing the proposed documents more into line with current thinking on standardization, a small group selected from ETC has been assigned the task of revising the original Charter and Rules for consideration by the Military Services.

## GUIDED MISSILE COMMITTEE

The Guided Missile Committee (GMC) has continued its practice of holding meetings at military guided missile test ranges and, by discussions with the government representatives, to improve the understanding of guided missile problems of mutual interest.

### *Test Range Operation*

Continuing its activity of last year, the committee met with representatives of the DOD and the Military Departments for discussion of the committee study on guided missile test range operations. While no formal DOD views on the industry position and recommendations were set forth, some sympathy for the industry recommendations in obtaining more uniform and efficient operation at the missile test ranges was evident, particularly from the DOD representatives. The committee is continuing to keep its views on this subject before personnel of the Military Services. The need for most efficient operation of test ranges will become increasingly important to the Services and industry as the tempo of missile development and production increases.

### *Missile Reliability*

Continuing its attention to this subject, the committee has been studying corollary problems such as government requests for performance guarantees on the reliability and accuracy of the missiles flight performance. In this connection, adequate definition, measurement and evaluation of the performance of missiles with respect to their reliability and accuracy, and the judicious application of this evaluation is a major problem.

### *Designer's Handbook for Pilotless Aircraft and Guided Aircraft Rockets*

Committee members, through their individual companies, cooperated with the Air Force preparing a draft of Handbook of Instructions for Aircraft Designers, Volume II, Pilotless Aircraft and Guided Aircraft Rockets.

## MANUFACTURING METHODS COMMITTEE

The growing complexity of aircraft and related manufacture required increased technical panel activity within the Manufacturing Methods Committee (MMC) to develop new and improved methods and equipment. Marking an increase in engine manufacturers' activity, a new Powerplant Panel was formed to supplement the airplane, missile, and system equipment panels. The Panels, with full industry representation, continued work on programs involving plant facilities, production engineering, and materials utilization and handling problems.

Three National meetings were held, each involving outside representation by the Department of Defense and the military services.

Major emphasis remained on standardization of equipment to meet normal aircraft industry requirements as well as those of the Department of Defense machine tool stockpiling program. Government plans and policies dealing with maintenance of the mobilization base received attention. Twenty-two National Aircraft Standards for manufacturing use were issued.

As the manufacturing complexity of high-performance aircraft and missiles continued to increase, the need for continuing information exchange and increasing research and development in the field of manufacturing methods became more apparent. Many of the problems resulted from the expanded use of new materials (such as titanium and high-temperature resistant steel in sheet/plate and sandwich applications), new types of construction and factory equipment used to functionally test complex aircraft systems and installations.

### *Machine Tool Panel*

The Panel met four times during the year. Three of the meetings were with representatives of the machine tool building industry and military services.

Specifications for six cutting machines were completed and issued as National Aircraft Standards. These Standards are being used as the basis of mobilization stockpile purchases by the Air Force as well as for current aircraft production programs. Specifications on stretch press and hydraulic press forming machines are nearing completion. Development of specifications for spar and skin mills for ferrous and titanium materials will be undertaken in the near future.

Work on these machine tool specifications involved extensive cooperation with the Tooling Panel regarding the standardized features required for interchangeability in order to permit airplane parts worked on the tool of one brand to be worked also on the tool of any other brand. This is aimed primarily at the situation which might occur in time of national emergency where work in one plant might have to be transferred to another plant.

### *Tooling Panel*

Although the major portion of Panel work was conducted

through subcommittees, the Panel met three times during the year to work on more than twenty projects. Subcommittee activity, especially that dealing with spar and skin mills, was carried out in close cooperation with the Machine Tool Panel on standardization requirements for interchangeability of work holders and fixtures.

In the optical tooling field, attention was given to new equipment developments and requirements, including the use of closed circuit television.

Sixteen National Aircraft Standards dealing with drill specifications, glossary of optical tooling terms and tooling components were completed and issued. Others are under consideration.

### *Conservation Panel*

Developments and requirements concerning materials handling and utilization problems from the manufacturing standpoint formed the basis of Panel considerations. During the year, the Panel held three meetings, one of which was attended by representatives of the Department of Defense.

Work continued on up-dating the Conservation Handbook, initially published in November 1953. A supplement was published describing specific applications in practice having to do with equipment; liquids, gases and oils; maintenance and building; material handling; metals, including production hardware; office and operating supplies; paints and processes; production tooling and small tools; warehousing, shipping, packaging and protective devices. Plans were made to issue revisions to this material in the future and to add another supplement dealing with electrical and electronics equipment.

### *Powerplant Panel*

Since its establishment in mid-year, this Panel has met twice to organize its program and operation. Representatives of the Air Force attended one meeting which was concerned with the machine tool stockpiling program.

Three active projects are: the development of standard specifications for turbine disc turning machinery, roll forming machinery, and welding equipment.

## NATIONAL AIRCRAFT STANDARDS COMMITTEE

Early this year the Air Force announced that greater consideration would be given to the amount of standard components and equipment included in production design proposals. The increasing complexity and cost of modern weapons systems demand that continuous effort be made to reduce the number of sizes and types of items. The logistic and economic benefits which can be achieved from increased standardization are obvious and the efforts of the National Aircraft Standards Committee (NASC) have been directed toward this goal for the past fifteen years. A few of the highlights of this year's activity follow.

## *International Standardization*

NASC has been working closely with the Services on an increasing number of international military standardization projects. The major concern has been with the functional compatibility of equipment and interchangeability of consumable parts and components. Attention is being given to turn-around cross-servicing, that is, the ability of forces of one nation to provide essential services to another nation's aircraft.

## *Standardization of Sheet Metal Thicknesses*

During the past year the aircraft industry led in the adoption of the new sheet metal thickness standard for design and, through NASC, currently is working for its recognition in production of aircraft and missiles.

## *Coordination of Government Specifications*

During 1955, approximately two hundred military specifications and standards were coordinated with the aircraft industry through NASC, almost double the previous year's total. Requests for aircraft industry review of military specification drafts are now received from several government activities, whereas they were formerly limited almost exclusively to one agency.

## *Council for Military Aircraft Standards*

In the interest of aeronautical standardization the NASC effort is being combined with that of the Air Force and Navy through regularly scheduled meetings. Projects range from the standardization of electro-mechanical actuators to bolt and nut simplification.

## *National Aircraft Standards*

This series of standards is developed by the aircraft industry and frequently serves as a forerunner of military standards. During the past year, approximately seventy new standards and revisions were released, including new standards for electronic equipment clamp, tube connector fittings, inspection procedure for flush fasteners, and extrusion tolerances.

## NOISE CONTROL COMMITTEE

Research, development, design, construction and operation of mufflers and cells for ground testing jet aircraft and powerplants continued to occupy the attention of this committee.

Periodic meetings were held to facilitate exchange of information. A subcommittee worked on a standard reference base for members' measurement equipment through cross-calibration. Another subcommittee was revising the noise measurement standards, initially published in August 1952.

## PROPELLER TECHNICAL COMMITTEE

Due to a similarity of problems in the consideration of a powerplant package consisting of an engine-propeller combination, the Propeller Technical Committee (PTC) continued its close association with the ETC in policy matters. In addition, specialized problems facing the propeller industry were accorded attention during the year. These include:

### *Availability of Test Facilities for Propellers*

The availability of propeller dynamometers and wind tunnels for the testing of advanced type propellers is a major problem. The PTC has discussed this matter with NACA, and a special panel was appointed for drafting Committee recommendations which indicate preference for a 16-foot wind tunnel with a dynamometer especially designed for the tunnel.

### *Standardized Method of Presenting Propeller Performance*

Although a standardized method of presenting propeller performance has been under study for some time, the differing viewpoints of the manufacturers and different data employed has precluded the possibility of arriving at a single standardized method. As more experience is gained, it is expected that a uniform method will evolve.

### *Turbine-Propeller Type Certification Requirements*

The attention of both CAB and CAA has been invited to the fact that no basic difference exists between propellers for reciprocating and for turboprop engines, and that little, if any, need exists for different or additional testing of the latter. These agencies also were advised that prescribed testing presently contains requirements which might increase the weight of propellers without assuring a higher degree of airworthiness.

### *Nose Mounted Propeller Standards for Turboprop Engines under 10,000 H.P.*

The PTC reviewed the possible necessity of a standard for nose mounted propellers for turboprop engines under 10,000 H.P. It was agreed that such a standard is desirable since no weight penalty is invoked on engines down to 5,000 H.P.

### *Additional Projects*

Representatives of the propeller industry also have participated in joint committee action with the ETC to define industry needs on preferred material gage sizes, drawings and data lists, and other government documents involving action by the two committees.

## ROCKET TECHNICAL COMMITTEE

The Rocket Technical Committee (RTC) has increased its activity as more experience has been gained and rocket engines have come into more general use as a propulsion means for aircraft and missiles.

Consideration of a proposed specification for solid propellant rockets, briefly reviewed by the committee, indicates that the RTC may eventually evolve as a policy group, with subcommittees representing liquid and solid propellant rocket manufacturers performing the detailed work in these fields.

During the year the committee took action on the following subjects, either directly or through RTC panels:

### *Rocket Propellant Tank Specification*

The committee reviewed the proposed specification, submitted recommendations and met with the military services to resolve controversial points.

### *Handbook of Rocket Design and Installation Criteria*

A proposed Army Navy Aeronautical bulletin was prepared by the military services which incorporated many features of the handbook material originally prepared by RTC and submitted to the Services in 1952. The Service proposal was reviewed by the committee and detailed recommendations forwarded to the services. Many of the new RTC recommendations were motivated by changes in the

state-of-the-art since the original handbook material was prepared.

### *Standardization of Rocket Components*

A special RTC panel studied standardization of components having common applications and usage. Preliminary specifications for several items were coordinated with suppliers and from all indications, the program should be successful.

### *Rocket Propellants*

A panel reviewed procurement specifications of various fuels and oxidizers and compiled "use limit" (the amount of deterioration which can be tolerated) specifications for certain propellants. Use limits have been established for the higher priority fuels and oxidizers and it is expected that work of the panel may be completed during the coming year.

### *Rocket Propulsion Systems Specification*

The responsibility of the rocket-engine manufacturer for integrating the rocket engine into the propulsion system incorporated in the missile or aircraft of another manufacturer lacks definition. Consequently, a Rocket Propulsion System Specification Panel has been formed and charged with the task of preparing a specification which can be used as a model for defining requirements of a complete propulsion system.

# TRAFFIC SERVICE

The Traffic Service is concerned with traffic and transportation matters of importance to our member companies. It endeavors to secure the lowest lawful freight charges on materials used by members. It compiles and distributes information on methods of billing freight to assure the application of the lowest lawful rate. It advises member companies on traffic matters and coordinates the efforts of individual traffic departments in those situations where industry-wide action is required. Effective representation of the industry's position on traffic matters has saved it and the Government large amounts through reductions in freight rates and through measures which have avoided rate increases. A more detailed description of the activities of the Traffic Service follows:

## *Consolidation of Shipments*

Member companies, particularly those located on the Pacific Coast, have been able to accomplish substantial savings in freight charges by consolidating small shipments into carloads. These savings have been increased by the successful prosecution of a proceeding before the Interstate Commerce Commission (ICC) which has resulted in the publication of more liberal mixing rules. Freight forwarders, who make a business of consolidating small shipments, have long sought to prevent the operations of these shipper organizations and they now have legislation before Congress which, if enacted, will prevent shippers from consolidating their shipments. Unfortunately, in these efforts they have the substantial support of the ICC. The Traffic Service will continue to oppose enactment of this legislation.

## *Air Freight Forwarder Investigation*

The Civil Aeronautics Board (CAB) during the past year has conducted an investigation of air freight forwarders who perform a service by air similar to freight forwarders operating over surface carriers. Through appearances before the CAB and through representations made to the National Industrial Traffic League, of which AIA is a member, the Traffic Service has been instrumental in obtaining substantial modification of the proposed regulation of shipper associations; however, the goal of the Traffic Service effort is to obtain complete removal of regulation, and reconsideration of the Board's decision is being requested.

## *Limitation of Liability by Railroads and Motor Carriers*

Recently, both the railroads and the motor carriers docketed for consideration by their Classification Commit-

tee proposals which would greatly limit the carriers' liability for damage to freight entrusted in their care. Claim payments in situations covered by these proposals would be greatly reduced. For example, on shipments of titanium, it was proposed that the carrier would be liable for no more than 2 percent of the amount of the claim. Members of the Interstate Commerce Commission have indicated their sympathy with efforts of the carriers to reduce their liability and in this particular instance the carriers stated that they were urged to docket this subject by the Commission. Appearances before the Classification Committees were made by the Traffic Service and justifications were advanced for rejection of these proposals.

In addition, the motor carriers have proposed to impose a \$3.00 per pound limitation of liability on all freight unless a higher value is declared by the shippers. This application has been filed with the ICC. A hearing in which the Traffic Service will participate is anticipated in the near future.

## *The President's Cabinet Committee Report on Transportation*

This year the President's Cabinet Committee on Transportation submitted recommendations for legislation to modify the present law under which the ICC regulates surface carriers. Under existing law, competition in rate making is regarded as highly undesirable and, when carriers seek to make rates which will attract business, their efforts usually are met with a suspension proceeding followed by an order which directs them to cancel their proposals. Under the proposals advanced by the Cabinet Committee these powers of the Commission will be greatly modified and in lieu thereof the idea of dynamic competition will be introduced. These proposals have been given consideration by the Regional Traffic Committees, resulting in active support of the legislation which has been introduced to accomplish these ends.

## *Miscellaneous Rate Adjustments*

Among negotiations which have been carried on with the carriers, either to avoid increases or to bring about reduced ratings or classifications, are the following: Forms and jigs moved between aircraft plants, jet and radial type engines, helicopter rotor wing blades, exposed X-ray films forwarded with shipments, helicopter transmission assemblies, and drag chutes.

Seven meetings of the Regional Traffic Committees have been held during the year. Technical advice is continuously supplied by the Traffic Service to the membership, and 127 bulletins have been issued.

# HELICOPTER COUNCIL

The Helicopter Council made substantial progress in obtaining increased acceptance of the modern helicopter as a valuable vehicle for both military and civil purposes. The Council continued its close liaison with federal, state and local aviation officials, as well as the airlines and other interested aviation agencies to assist in the preparation of regulations appropriate to the flight characteristics of the helicopter.

## *Major Objectives*

The Council continued to bring to the attention of proper authorities the fact that full commercial utilization of the helicopter cannot be achieved until certain obstacles are recognized and remedial steps taken.

Basic in this regard is the necessity for state officials to carefully analyze existing state laws and to eliminate these sections which unduly handicap the helicopter in the full development of its potentialities. In most instances, existing state laws were written to meet the requirements and performance of fixed-wing aircraft. Rephrasing or clearer definitions of certain sections of these laws could eliminate the unnecessary restrictions now imposed on helicopter operations.

An analysis by the Council of various state laws governing aviation is serving as a valuable guide for the state authorities who are endeavoring to resolve this problem.

The Helicopter Council is working closely with important national organizations who have an interest in this field. Among those with whom constant liaison is being maintained are: The National Association of State Aviation Officials, The National Institute of Municipal Law Officers, and The American Bar Association, which in August approved the following resolution:

"RESOLVED, that the American Bar Association is aware of a present need for the revision of many State aeronautical statutes and administrative regulations so as to recognize and permit effective utilization of helicopters and convertiplanes, and that the Standing Committee on Aeronautical Law be, and it hereby is, authorized to continue to study proposals from interested public and private groups regarding such statutes and regulations, and to submit, for the consideration of the House of Delegates, recommendations regarding same to be made available to appropriate governmental and administrative officers of the several states and territories."

## *Heliports*

Another Council activity involves heliports. Recognizing

the need for informative and authoritative guidance in this field, the Council, through its Heliport Committee, initiated a series of discussions with many public and private interests. As a result of these discussions various studies have been issued dealing with the necessity for proper and timely heliport location and design. An outstanding report on this subject recently was produced by the Aviation Department of the Port of New York Authority. Representatives of many interested groups such as the Air Transport Association, helicopter operators, the Helicopter Council member companies and staff helped to prepare the data contained therein. The Helicopter Council is now considering an arrangement with the Port of New York Authority to assist in the distribution of its report.

## *Meetings*

Regular spring and fall Council meetings were held, with a third tentatively scheduled in Washington, December 17. To conserve the time of the executives comprising its membership it has been a practice of the Council to hold the number of meetings to a minimum.

During the latter part of the year it became apparent that special attention should be accorded to the disposal of military surplus helicopters, and a special Council committee was named to act in this matter. At a meeting in Washington, October 10, this committee discussed a proposal to present the industry position on this subject to appropriate officials of the Department of Defense. When the recommendations of this committee have been approved by Council members it is planned that a committee presentation will be made to the Department of Defense.

## *Educational Activity*

Demand for background material on helicopters continued unabated through the year. Inquiries originated with the press, other media, planning officials on all levels, and educational interests. The Council now has available for distribution a selection of 60 papers covering many facets of the industry and its product.

Council staff participated in approximately 50 meetings, including various regional gatherings of the American Helicopter Society, as well as the annual forums of this group in Washington and on the West Coast; the spring and fall demonstrations of the Army Transportation School at Ft. Eustis, Va.; the Institute of the Aeronautical Sciences, and various meetings of the Aviation Writers Association.

The Helicopter Council membership at the end of the fiscal year included 9 companies, with 2 additional applicants awaiting Board action.

# UTILITY AIRPLANE COUNCIL

The Utility Airplane Council is composed of AIA member companies who are active in the manufacture of utility and executive aircraft and their engines for business, industry and agricultural use. Council members continue to deliver the largest percentage of such aircraft and engines, accounting for almost 100 percent of today's active general civil aviation fleet.

To advance the specialized needs of its members the Council draws freely on the various AIA services. It is active in many inter-associational activities. It maintains close contact with interested government agencies. Because of its long experience with the common problems of this segment of the industry, the Council is a recognized source of authoritative information on the role of general aviation in the nation's transport economy, mobilization reserve, and civil defense.

## *Business Flying Substantial*

It is estimated that the business use of aircraft — in terms of purchases of new equipment, spare parts and maintenance, gasoline and oil, hangar rental, mechanics' wages and professional pilot salaries — now adds a half billion dollars or more to the national economy. As the business use of civil aircraft accounts for a little less than half the flight hours and utilizes about two-fifths of the entire active aircraft fleet of the general aviation segment of civil aviation, the whole field of general aviation is probably in the "Billion Dollar Class."

## *Military Production Activities*

The increased volume of civil business engaged most of the productive facilities of this segment of the industry, but a substantial part of its capacity continues to be devoted to the production of military aircraft, engines and component parts. Such military production is carried on both as prime and subcontractors. Light utilitarian aircraft are extensively used by the various Services for liaison, light cargo, personnel transportation and other uses which correspond to the myriad uses of aircraft in the civil field. The industry is also a major supplier of military trainer aircraft, its facilities and its knowledge being especially adaptable to the production of such types. Included in current military activities are the development and production of service test quantities of small jet aircraft for training and other purposes. The engineering talents and research capabilities of the industry are sought by the military services, and research and development activities are continuously under way. The results of such work often are found of value in the civil aircraft area thus broadening the base which the light aircraft and engine industry maintains as a part of the mobilization capacity of the aircraft industry.

## *Maintained Mobilization Base*

The fact that the industry has consistently been a supplier of important quantities of aircraft and aircraft engines, a subcontractor for major components and assemblies for other military producers, and its facilities and talents in research and development fields results in a paradox which causes concern. The Defense Materials System (DMS) replaced the Controlled Materials Program (CMP) when most controls were removed in July 1953. Under CMP, the requirements of general aviation were recognized as being essential and defense supporting in character, and materials were allocated on a basis of demonstrated need. However, with the abandonment of the CMP system and its replacement by DMS, priority has been denied the non-carrier industry. Although material availability is not a current problem, Utility Airplane Council members feel DMS assistance, or other defense related support, should be made available to the non-carrier industry and should be considered essential in mobilization planning.

## *Market and Production*

The present status and future potentials of the light aircraft industry are illustrated by current industry statistics. During the calendar year 1955 the industry will deliver about 4,000 units having a retail value approximating \$75,000,000 compared to 1954 deliveries of 3,057 units having a retail value approximating \$54,500,000. Increasing sales of twin-engine aircraft are reflected in the industry's sales figures. During the first nine months of 1955, 576 twin-engined executive aircraft were shipped as compared to 354 for the entire year 1954.

The acceptance of the utility airplane as a useful tool for business, industry, and agriculture is constantly broadening the industry's present and future markets. Though a large number of American corporations, businessmen and agricultural operators are using these aircraft as a routine adjunct to the conduct of day-to-day business, there are literally tens of millions of people who have yet to experience their first flight.

## *Aircraft Utilization*

Statistics published by the Civil Aeronautics Administration also point up the strong growth trend in general aviation. They reveal that various kinds of commercial and business flying have grown from about 2½ million hours in 1946 to an estimated 6 million today. These CAA data also report that during the year 1954, a total of 8,772,000 hours was logged by civil aircraft of all types. Of this total, according to the Air Transport Association, the domestic scheduled airlines and the large irregular air-carriers of the nation flew about 3,100,000 hours, and

the CAA reports that business flying alone accounted for 3,918,000 hours or some 800,000 more hours than were flown by the nation's airlines.

A CAA forecast of air traffic in 1960 suggests that general aviation flying is likely to increase at a rate of 400,000 hours annually for the next several years.

As of July 1, 1955 the Civil Aeronautics Administration records indicate there were 59,619 active civil aircraft of which 1,495 comprised the nation's airline fleet; the balance composed the fleet of general aviation. Of these it is estimated that about 22,000 are used for the transportation of businessmen including farmers and ranchers. About 6,000 units are engaged in agricultural crop dusting and spraying, principally by for-hire specialists. Agronomists of the federal government estimate that one in every twelve acres of land now under cultivation in the nation has been treated in some way from the air. The application of chemical fertilizers, hormones, and insecticides now adds as much as three billion dollars to farm income annually and protects hundreds of thousands of acres of timberland from insect infestation.

#### *Basic Reason for Strong Growth Trend*

The industry feels the year 1947 saw the first significant evidence of sound and steady growth in the acceptance of airplanes as an everyday tool of business, industry, and agriculture. Three principal factors probably account for this:

- (1) the ability of the industry to prove to the user what an airplane will do for him;
- (2) the great improvement in the aircraft itself; and
- (3) the user's ability to obtain greater aircraft utilization.

The industry now offers airplanes priced within the reach of every businessman. When properly used, these aircraft are proving to be profitable business tools. In fact, they add a new dimension to business activity which brings a most satisfying return in improved efficiency and service.

#### *Advisory Role and Liaison Activities*

In its search for information and in its dissemination of the facts of general aviation, the Council advises with other aviation organizations and with many agencies of government—federal, state, and local. During the past year the Council Manager served as a member of a Committee, established by the Administrator of the CAA to advise on a policy to administer the new Federal Airport Act. The Council Manager also is a member of the Manpower Working Committee of the Defense Air Transportation Administration, and has served as a member of the Civil Aviation Advisory Committee of the Joint USAF-CAA Air Defense Planning Board since the committee was organized several years ago. The Council Manager is Secretary and a Director of the NAEC and a member of the Board of Directors of the National Aeronautic Association.

During the year the Council advised the Aviation Facilities Study Group, established by the Director of the Bureau of the Budget, on government responsibilities in planning for and providing aviation facilities, and expressed views to the Under Secretary of Commerce and other interested government officials on the DME-VHF and the TACAN systems of air navigation. The Council through its members and staff, constantly monitors the general aviation situation and takes an active part in those activities in which it is able to be service to the industry.



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