

PLANES

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VOL. III

NO. 4

Early Action on Air Policy Is Basic to U. S. Stability

Livelihood of many thousands of Americans and the stability of scores of communities hinge upon early action on recommendations of the air policy studies now being conducted by the executive and legislative branches of the government.

Where a few years ago aviation was a scientific novelty, today it not only exerts a powerful influence on the national economy but has become the deciding factor in war. This, despite the fact that today aviation activities are only a fraction of war-time.

Thirty years ago there were no airlines, no air mail service, and less than a dozen airports in the U. S.

Many Employed

By contrast, employment in 1947 tops 1,100,000. This includes 750,000 civilian and uniformed personnel in the United States Air Force and Navy and about 30,000 other employees in civil aviation. In addition, approximately 225,000 people are turning out planes, engines, propellers, and related items; about 130,000 are employed by scheduled airlines and non-scheduled operators; and another 15,000 are working in various sales capacities. Additional thousands might be added to include firms supplying materials, parts and services.

As for dollar volume, the operating expenses of the Air Force and the Navy air arm will amount to a little over four billion this year. Civil government expenditures, including federal, state, and local, will total about \$200,000,000. Gross sales of the manufacturing industry will reach about one billion and the scheduled airlines will gross about \$350,000,000.

Because aviation has become such a great economic and political force, government leaders are alarmed by the serious financial plight of the air transportation and manufacturing industries, two of the most vital elements of the nation's air potential.

Industry Problems

Almost without exception the scheduled domestic airlines are losing money this year. Aircraft manufacturing, with its related lines, is the nation's largest industry since World War II. This year its output is less than one-sixtieth the wartime peak and eight of the 12 major producers are reporting heavy financial losses.

In two wars the U. S., with several years warning, built practically from

scratch victorious armed forces and the industry to back them up.

Such developments are causing official concern for it has become crystal clear that an aggressor would strike America first in a future war and that aviation's speed would reduce the warning time possibly to hours.

Inside Planes

Review of Major U. S. Air Policy Problems

Because of the vital necessity for clear public understanding of the problems involved in establishing a national air policy for the United States, this issue of PLANES is devoted to an explanation of the major aviation questions facing the current air policy investigations.

A series of simple but fact-filled stories, charts and spot drawings outline America's aviation situation today. Mats of all illustrations on request.

... Like Topsy!

















Aviation's amazing growth since the 1925 Morrow Board report on air policy provides a yardstick of the importance of today's U. S. air policy investigations.

Here's the picture — airline fares down 67 per cent; 4,000 times as many passengers; 1,000 times the pilots, 10 times the airports, and planes nearly three times faster than 1925.

Today we have about 500,000 pilots, 6,000 airports and speed of 650 mph. About 16,000,000 people will pay 4.7 cents per mile airline fare in 1947.

U. S. FACES FOUR MAJOR PROBLEMS IN BOLSTERING ITS AIR DEFENSES

PRESIDENT, CONGRESS SEEK ANSWERS TO THESE AIR POWER QUESTIONS

	SITUATION TODAY	REQUIRED FOR SECURITY
1 How to Guarantee ADEQUATE AIR-FORCES STRENGTH U.S.A.F.: 55 GROUPS NAVY: 5700 LARGELY OBSOLETE MODERNITY	 55 GROUPS  RE-EQUIPPED EVERY 10 YEARS	 AT LEAST 70 GROUPS 8000 MOSTLY JETS  RE-EQUIPPED EVERY 5 YEARS
2 How to Maintain EXPANDABLE AIRCRAFT INDUSTRY 	 U. S. WOULD REQUIRE 3 YEARS TO REACH VOLUME OUTPUT	 AN INDUSTRY CAPABLE OF VOLUME OUTPUT IN 1 YEAR OR LESS
3 How to Develop TRANSPORT RESERVE 	 U. S. AIRLINES HAVE 1000 PLANES LARGE AND SMALL	 U. S. NEEDS 5000 LARGE PLANES 
4 How to assure U. S. Lead in Research AIRCRAFT SPEEDS LONG-RANGE GUIDED MISSILES (+ PROBLEMS OF PROPULSION, CONTROL, AND HUMAN ENDURANCE) 	 650.6 MILES PER HOUR  300 MILE MISSILES	 1000 MILES PER HOUR  5000 MILE MISSILES

Ways Sought to Bolster Air Transport System

America's peacetime commercial air network proved such a vital element in World War II that air policy planners view with great concern the air transport picture today. It is a maze of uncertainties, worldwide in scope.

Government concern stems partly from recent studies showing that national security requires a reserve of 5,000 large-capacity transports. Fleets of all U. S. scheduled carriers don't total 1,000 planes and the majority of them are small-capacity, obsolete, two-engine type.

In addition, with the politico-economic tempo of the world being geared ever closer to the speed of air movement, the stability of our national economy may well depend upon how thoroughly government and business are adapted to air transportation.

National Security

From the security standpoint, the question is one of how to maintain an adequate air transport reserve. Closely allied with this, on the economic level, is the problem of how to encourage the maximum growth of a self-supporting air transport system.



Since a fleet of 5,000 large transports would have little peacetime utility if operated by the armed forces, perhaps the government can give additional jobs to civil airlines to keep such a fleet busy. If all first class mail were sent by air, domestic fleets would expand, but not to the extent of 5,000 huge transports. A special parcel post rate would stimulate merchandizers' use of air transport.

Cargo people point out a tremendous freight potential can be tapped if the government will revise its design requirements to encourage development of purely cargo craft. They feel present models, designed primarily to passenger standards, are not economical.

Dense Traffic

Technical and economic problems threaten growth of our air transport system. Steady increases in air travel—1947 showing an increase over 1946 of several million passengers—has taxed both air and ground facilities. Traffic on United States airports was expected to exceed 15,000,000 landings and takeoffs in 1947.

Jet transports will mean further complication—they can't dawdle with slower traffic, may need separate handling. Even to handle today's traffic, Congress has been asked for \$13,400,000 for additional radar and radio aids.

Economic impact of these problems is reflected in a net operating loss of \$22,419,575 for 16 domestic airlines during fiscal 1947. In contrast, these carriers showed a net operating income of \$12,675,129 for fiscal 1946. Suggestions for alleviating this situation include: development of an equipment interchange system similar to the railroads, stepped up coordination with surface motor transport, and merger of smaller lines.

Foreign Red Tape

With nearly 50 countries involved, such problems are multiplied on the international level. More than 60 international airlines operating 2,000 craft, employing half a million people, nevertheless flew nine billion passenger miles in 1946. Among their problems are currency restrictions, travel red tape such as visas, customs and immigration clearances, and need for navigational and weather facilities.

Troops By Air?

How to expedite development of completely airborne armies is one of a myriad of questions facing air policy investigators.

The Army has a 25-ton tank, is working on redesigning infantry and artillery equipment for air operations, and the Air Force is acquiring a sizeable number of "flying box-car" troop-cargo planes.

Among the problems is that of coordinating the design and procurement of equipment for air and ground forces.

Airborne operations require special devices to protect jumpers, and chutes that will stand the shock of plus 500 mile-per-hour leaps. Ultra-strong personal body armor also is needed. The versatile helicopter likely will be fitted into the picture.

Airborne divisions of 17,000 men, including tank and artillery battalions, are planned. Recently the Air Force estimated its existing troop carrier units would need more than a year to carry such a force across the Pacific and back. Military experts say a major emergency would require 5,000 large planes on short notice.

U.S. Agencies Being Surveyed

When a new air policy is drawn for the U. S., it is expected to call for some changes in emphasis, direction, and a streamlining of government aviation machinery.

Late in 1947 there were 28 Federal agencies and bureaus, 17 Congressional committees and sub-committees, and 47 state agencies set up to supervise aviation.

National security-wise, the principal problem is how to modernize military procurement practices. Our air forces have been tied to 1925 procurement legislation, which requires that new contracts be drawn each year. Procurement of new equipment is costly and difficult because it takes five years to bring a new combat plane from the design to production stage. Many people feel that like naval ship construction, aircraft practices need to be geared to the long-range problem of production.

Over-regulation?

Air policy investigators also are reviewing the impact the recent armed services unification has exerted on the overall aviation picture.

From the civil standpoint, plane producers and owners feel that airworthiness regulations are too detailed. Mass production and ownership is being held back, they claim, by stringent requirements that extend down to nuts and bolts. Producers point out that a company can't stay in business with unsafe planes so why duplicate precautions necessarily taken.

A great need is seen for closer coordination and cooperation be-



tween federal and state agencies. A problem of multiple taxation and duplication of safety regulation has arisen between federal and state governments. And the states feel that federal agencies don't consult them enough.

Pending Legislation

Many people believe a long-range air policy requires much greater federal emphasis on promotion of aviation education in the nation's schools. A staff of nine Civil Aeronautics Administration men thus far has helped 23 states to develop statewide aviation education programs.

Pending bills would empower the eight air transportation; allow sur-Civil Air Board to fix rates for for-face carriers to operate air services; provide an independent safety agency; place aviation regulation under the Interstate Commerce Commission; create an overall inspection agency; separate CAB from Commerce Department; place CAB wholly under Commerce; and provide higher salaries for top CAA and CAB jobs.

PLANES QUIZ

A 70 per cent score on this quiz is excellent. Sixty per cent is good. Answers on page 4.

1. When was the first flight by a regularly scheduled U. S. international airline? (a) 1923; (b) 1927; (c)

2. Although the first helicopter license was issued in March 1946, basic design for this type aircraft goes back (a) 72 years; (b) 600 years; (c) about 400 years.



3. The world's international scheduled airlines are operating over a route network totaling (a) 94,000 miles; (b) 500,000 miles; (c) 158,000 miles.

4. First year that five cent air mail was in effect, approximately (a) 900,000 lbs.; (b) 78,000,000 lbs.; (c) 2,600,000 lbs. of it were dispatched.

5. True. False. The following are all products turned out since VJ Day by U.S. aircraft manufacturers: canoes, washing machines, artificial limbs, motor scooters, and caskets.

6. Aviation's apparent impact on human society has convinced how

many states of the need for statewide aviation education programs? (a) 45; (b) 48; (c) 23.

7. At sea level the speed of sound is 761 mph. At 40,000 feet it is (a) greater by 62 mph; (b) less by 98 mph; (c) increased in direct ratio to drop in temperature.

8. Figuring 40 letters to a pound, postage for a ton of air mail letters sent from New York to Paris would cost (a) \$3,700; (b) \$4,100; (c) \$12,000.

9. The National Aviation Clinic is (a) a non-profit foundation for study of aero medicine; (b) a home for retired pilots; (c) an annual meeting of experts from all branches of aviation to exchange views and develop unity of action in promoting U.S. aviation.

10. There are (a) between 7,000 and 8,000; (b) approximately 900; (c) nearly 1,400 shops in the U.S. devoted to maintenance and repair of aircraft.



U.S. Studies Air Power Impact on Defense Setup



Faced with the question of how best to maintain adequate air forces, air policy investigators are finding that air power requirements have changed the thinking of the entire defense establishment.

The record shows appointment of many air trained men to top posts in the new Department of Defense.

Navy plans are said to be reshaping the fleet with emphasis on guided missile development, the ships to be replaced with guided-missile ships. There is talk of replacing the conventional aircraft carriers with speedy pilot-less aircraft ships. One admiral has suggested special submarine aircraft launchers.

Air Forces Main Concern

The ground forces are headed for complete mechanization, with the emphasis in design of new equipment on light, compact materiel that can be transported by air. The ground forces also are doing extensive experimentation with light reconnaissance planes and helicopters. Time tables for tactical planning also are being drawn to air speeds.

The government in its air policy studies, however, is mainly concerned with equipping and manning air forces capable of immediately striking back any possible aggressor.

Among the questions are the size of such air forces; what sort of industrial program is needed to guarantee a constant supply of the world's most advanced equipment; and how to recruit and train adequate personnel for the air forces.

Equipment, Personnel

Both the U.S.A.F. and the Navy's air arm are undermanned. Neither is equipped to the

strengths considered necessary.

The U. S. Air Force sees 70 groups as essential. It now has 55 groups. The Navy needs 3,000 new planes. Our air forces have about 14,000 operating planes. Output of military planes this year, about 1,800, is much less than the 25% annual replacement needed to keep these air forces equipped. At this rate, normal attrition will skeletonize them in a few years.

Military and naval planners are hoping for a "go ahead" signal on a long-term program to build the air forces up to required strength and keep them there.

Other Nations Out to Build Air Power

While the U. S. government is studying the pros and cons of promoting aviation's growth, reports from abroad show what action other countries have taken.

Among the countries already embarked on broad programs to develop their air potential are Britain, Canada, France, Russia, Czechoslovakia, Italy, Denmark, Sweden, the Netherlands, Belgium, Uruguay, Argentina, Peru, Brazil, India, China, Australia, the Philippine Republic, and New Zealand.

On the question of how much emphasis should be given to aviation research—Britain's defense establishment, reorganized in 1946, put Sir Henry Tizard, a leading air authority, in charge of all research. Britain also has taken initiative toward standardizing her air weapons and munitions to U. S. sizes and patterns.

Russia has announced a five-year research program, aimed primarily at aviation, to cost hundreds of millions of rubles.

On the question of government support for personal flying activities—movies arriving in 1947 show Eastern European states now provide flight training to civilians. South American countries long have subsidized flying clubs.

The U. S. is wondering how to encourage wider introduction of aviation into curricula of United States schools. At the same time, aeronautics has been a basic course in Russian elementary schools for years.

How Air Policy Is Developed

Serious need for revamped U. S. air policy is illustrated by the fact that both Congressional and Executive branches of the government are conducting special studies of the problem. A Presidential five-man commission has been instructed to report on or before January 1, 1948. A 10-man joint Senate-House Board, reports by March 1, 1948.

The last such thorough-going review was made in 1925 by President Coolidge's Morrow Board. Morrow Board findings gave us our first Army and Navy air forces, and also provided for development of today's system of airlines, airports and airways.

Scope of Inquiry

Scope of inquiry of both groups is the same, including such questions as utilization of aircraft by the Armed Forces; nature, type and extent of aircraft and air transport industries; how to encourage development of these industries; and how to expedite government organization and procedures.

The two groups do not duplicate each other. Testimony and exhibits submitted to the Presidential Commission are studied by the Congressional Board, which, aided by an advisory committee of industrial and business leaders, then reviews the entire field. Any citizen is free to submit his or her views to either group.

The two groups don't rely entirely upon verbal testimony but visit laboratories, airports, factories and flight test centers before sitting down to work out their reports.

Findings of these two air policy studies are expected to provide blueprints from which the White House and Congress can build a strong program of aviation development.

Two Groups

Members of the President's Commission are Thomas K. Finletter, New York attorney, Chairman; George P. Baker, Harvard transportation professor; John T. McCone, West Coast industrialist; Palmer Hoyt, Denver publisher; and Arthur D. Whiteside, who heads a N. Y. business research firm.

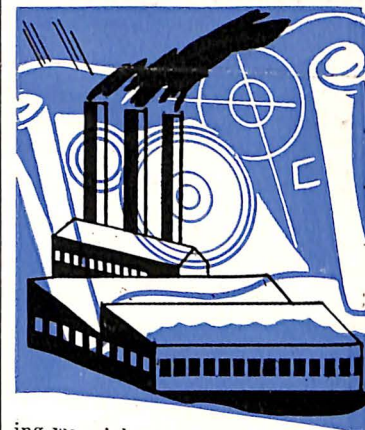
The Congressional Board includes: Senators Owen Brewster, R., Me.; A. W. Hawkes, R., N.J.; H. E. Capehart, R., Ind.; E. C. Johnson, D., Colo.; E. W. McFarland, D., Ariz.; Representatives Carl Hinshaw, R., Calif.; C. A. Wolverton, R., N.J.; Karl Stefan, R., Nebr.; A. L. Bulwinkle, D., N.C.; P. J. Kilday, D., Tex.

Plane Output Under Study

One of the basic questions to be resolved by current federal air policy studies is that of how to maintain an aircraft industry ready at all times to spring into volume production.

One Year Warning

Because national security planning must be based on the assumption that America would be the first target of any future aggressor, the problem is one of providing for expansion of plane output to volume proportions within a year. One year is believed to be the longest warn-



ing we might expect. In World War II we had at least three years to mobilize our industry and our efforts never were hampered by aerial attack.

Experience of two wars shows we must be ready to reach in a hurry an output that will meet combat attrition rates, which hit 25 per cent during World War II. A much higher rate might be required immediately to thwart an all-out attack against our centers of population.

Not Subsidy

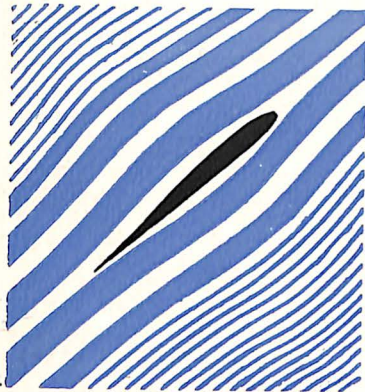
Present annual output of about 1,800 military planes is not enough to support an industry capable of rapid expansion for such an emergency. Neither is this output adequate to meet normal peacetime replacement needs of the air forces.

As industry leaders point out, the question is not one of subsidy but—what kind of industry in size and number of units is required to support our national defense? It is a problem of maintaining the minimum industry required by defense mobilization plans. Aircraft producers ask that if the nation decides not to maintain this minimum industry that the decision be made not as a matter of default but as a result of deliberate national policy.

The government of Australia is planning to send all first class mail by air.

Average hourly earnings in airframe plants are more than 80% higher than 1939.

U.S. Faced by Shortages In Science Leadership Race



With the world at the threshold of great developments in aeronautical science — supersonic speeds, flight above the atmosphere, pilotless aircraft and missiles, atomic powered aircraft, inter-spacial travel—government air policy investigators find the U. S. lacking in many things.

Intensive war research so far accelerated our technology that not only do we find ourselves near the limits of present knowledge, but we also are short on equipment and personnel to meet today's challenges.

Tunnel Shortage

Nearly 100 wind tunnels, built before or during the war, have been obsoleted by the advent of jet and rocket propulsion. A few new tunnels are under construction, designed to accommodate supersonic testing. The Air Force is developing a large rocket-testing center in California.

Such efforts do not compare with foreign research drives nor do they satisfy the magnitude of the aeronautical problems facing the U. S.

To remedy our shortcomings, just in the field of supersonic flight, a billion-dollar, 100-square-mile development center is under consideration by the government. This would be a joint undertaking of the Air Force, Navy, and the National Advisory Committee for Aeronautics.

Much more emphasis must be placed on development of fuels and propulsion equipment if we are to advance further in this field. Fuels for super-speed planes now cost up to \$10 per gallon. The rocket-propelled XS-1, America's first supersonic design, burned about a ton of fuel a minute on its first test flight.

National security requires that we stay out front in the race for

guided missile development. This means lots of study in the control of fast planes and missiles, and special facilities for flight-testing them. Despite the impetus of the German V-1 and V-2 development, U. S. experts say we are at least five years away from a practical short-range guided missile for combat use. Long-range missiles are still further away.

Need Personnel

Several years away from possessing such vitally-needed research facilities, we also are some distance from obtaining scientists and technicians in sufficient numbers to operate such projects. The wartime draft and voluntary enlistments caused irrecoverable loss of young science talent. A National Science Foundation has been proposed as a general approach to this personnel shortage. The challenges of aeronautical science, however, are believed by many sufficiently important to the nation's existence to warrant specialized treatment.

Arguing for a careful analysis of the existing research organization, both government and private, is the urgency of solving such problems and the possibility that air leadership may cost billions of dollars over a period of years. Estimates for initial production quantities of a supersonic rocket, for example, run as high as three and a half billion dollars over a period of more than 15 years.

Reams of Air Data

Thoroughness of the U. S. air policy studies is demonstrated by the fact that in five months the Presidential Air Policy Commission accumulated approximately 4,000 pages of testimony from more than 100 people.

The list of witnesses in one six-week period of hearings included 22 from different airlines, and one private citizen, eight from railroads and freight handling agencies, and two bankers. Eighteen top civil and military government officials testified, as well as 26 aircraft and equipment manufacturing experts, and scientists, educators and labor unions.

National Aeronautics Association, Air Reserve Association, Veterans of Foreign Wars and American Legion also appeared.

AIR PROGRESS

1922

AIRLINE AD

A lot of them have acquired judgment; some have but don't know how to use it.

5¢ FOR 1/8 AIR MILE 5¢

BAKERSFIELD TO
SAN FRANCISCO

Fare \$102 Time 4 hrs. 15 min.

STOCKTON TO
SAN FRANCISCO

Fare \$26 Time 1 hr. 5 min.

WALTER VARNEY

Aeroplanes

SAN FRANCISCO

prone safety will not begin with the safe

1947

AIRLINE AD

BAKERSFIELD TO SAN FRANCISCO

FARE | \$11.85
TIME | 1 HR. 15 MIN.

STOCKTON TO SAN FRANCISCO

FARE | \$3.10
TIME | 45 MIN.

"PLANES"

Wanted—Air Minded Public

With surveys showing nearly half the people never have flown, U. S. air policy studies will look into ways of promoting greater public air-mindedness.

Suggestions include waiver, for student and educational travel, of the 15 per cent federal transportation tax, or setting of a flat three cents per mile rate for such travel. Other possibilities are government sponsorship of flying, gliding and model-building clubs, and a civilian pilot training program.

Much of the emphasis of any such studies is expected to be directed toward Air ROTC units in colleges, the Air Reserve, State Air Guards, and Civil Air Patrol.

Facts and Figures

Great Britain has placed contracts for eight jet propelled and turbo-prop transport type aircraft. No contracts for either type have been reported here.

Roger Wolfe Kahn, one-time big-name band leader, now is test pilot and service manager for an aircraft manufacturer.

Procurement of aircraft for our peacetime air forces now is covered by the Air Corps Act, and the Naval Air Corps Act, which were written in 1926.

Russia claims firsts for length of airlines and for air freight tonnage. She allows herself a second place rating for passenger traffic.

During 1946, personal fliers and non-scheduled commercial pilots in the U. S. flew 9,800,000 hours.

No matter of conjecture, if the U. S. were thrust into war the production of aircraft would have to expand 1000% literally over night.

Based on scientifically-measured public interest in flying, CAA sees a possible 2,700,000 pilots in the U. S. by 1950.

During the first six months of 1947 U. S. scheduled airlines used \$23,301,560 worth of gas and oil.

Answers to Planes Quiz

- (b) First flight by a U.S. flag airline, Pan American Airways, was from Key West, Fla. to Havana, Cuba October 28, 1927.
- (c) Design of rotary wing aircraft traces back to Leonardo da Vinci more than 400 years ago.
- (b) International Air Transport Association, representing 63 airlines in 40 countries, reports 2,000 planes flying this route network.
- (b) It was inaugurated October 1, 1946.
- True. Awaiting government decision on the requirements for national security, manufacturers have turned to such products to keep productive facilities intact.
- As of August, 1947, CAA's aviation education division reported 23 states had published programs covering elementary, secondary and higher institutions.
- (b).
- (c). At 1947 rates, an individual would receive \$2,738 for this ton of letters.
- (c) The 1947 meeting scheduled for the Illinois Senate Chamber, Springfield, November 19-22.
- (a).