

~~SECRET~~

CENTRAL INTELLIGENCE AGENCY

SOVIET MILITARY AND CIVIL
AVIATION POLICIES

CIA HISTORICAL REVIEW PROGRAM
RELEASE IN FULL

ORE 19-48

Published on
23 APRIL 1948

COPY NO. 78
FOR THE ASSISTANT DIRECTOR
FOR REPORTS AND ESTIMATES

✓
001

12-78

24

~~SECRET~~

310036

DISSEMINATION NOTICE

1. This copy of this publication is for the information and use of the recipient designated on the front cover and of individuals under the jurisdiction of the recipient's office who require the information for the performance of their official duties. Further dissemination elsewhere in the department to other offices which require the information for the performance of official duties may be authorized by the following:

- a. Special Assistant to the Secretary of State for Research and Intelligence, for the Department of State
- b. Director of Intelligence, GS, USA, for the Department of the Army
- c. Chief, Naval Intelligence, for the Department of the Navy
- d. Director of Intelligence, USAF, for the Department of the Air Force
- e. Director of Security and Intelligence, AEC, for the Atomic Energy Commission
- f. Deputy Director for Intelligence, Joint Staff, for the Joint Staff
- g. Assistant Director for Collection and Dissemination, CIA, for any other Department or Agency

2. This copy may be either retained or destroyed by burning in accordance with applicable security regulations, or returned to the Central Intelligence Agency by arrangement with the Office of Collection and Dissemination, CIA.

WARNING

~~This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U.S.C., 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.~~

SOVIET MILITARY AND CIVIL AVIATION POLICIES

FOREWORD

The studies contained in this volume were prepared at the request of the President's Air Policy Commission.

In order to maintain uniformity in preparation, the information was collected on the basis of questionnaires, copies of which are bound at the end of the volume. The questionnaires may be opened at the side of the volume and used concurrently in examining the reports. Omission in a report of an item included in the questionnaires indicates that the question was inapplicable or that satisfactory information is unavailable.

The two documents in this volume are based largely on data supplied from the Office of the Director of Intelligence, USAF. This material has been supplemented by additional information available to Central Intelligence Agency from other sources. The opinions expressed in this study, therefore, are not necessarily the views of the USAF.

CENTRAL INTELLIGENCE AGENCY
10 November 1947

~~SECRET~~

SOVIET MILITARY AIR POLICY

SUMMARY

AGENCIES INVOLVED IN MILITARY AIR POLICY

There are numerous agencies in the Soviet Union which participate in the formulation and implementation of military air policy, the most important of which are the Council of Ministers, the Ministry of Armed Forces, the Armed Forces General Staff, the Main Administrations of the Soviet Air Force and the Soviet Navy, and the Civil Air Fleet. The State Planning Commission and the Academy of Sciences of the USSR likewise exercise such functions, as also do a considerable number of the 58 ministries represented on the Council of Ministries. Since information as to the interrelationships among agencies involved in military air policy is almost completely lacking, what follows is primarily speculation.

Major policy decisions probably are made at the very top level, which would go beyond the Council of Ministers into the Politburo itself. Once decision had been reached in the Politburo, acceptance in the Council of Ministers would be a foregone conclusion. Each ministry would make note of the requirements which affect its particular operations, so that such matters as production of aircraft, electronics equipment, and any other materials needed by the air program could be included in the plans which each ministry must submit to the State Planning Commission (GOSPLAN). The GOSPLAN Commission is responsible for the preparation of quarterly, yearly, and five-year plans and for the supervision of the fulfillment of the plans after their approval by the Council of Ministers. This commission is believed to have a major role in implementing military aviation policy.

The Academy of Sciences, in general, governs science and research, and undoubtedly is a major factor in the implementation of air policy with respect to the research which must precede the development of new aircraft and related equipment.

Within the Ministry of Armed Forces, coordination of air policy with that of the military program as a whole is probably handled by the Minister in council with his deputies, who include the Chiefs of the Air Force, Ground Forces, Naval Forces, and Rear Services, in addition to the Chief of the Armed Forces General Staff. This latter officer functions as first deputy minister. In most respects, it is believed that the air arm remains subordinate to the ground force high command.

RELATIVE IMPORTANCE OF AIR IN NATIONAL DEFENSE

The Soviet high command appears to be putting principal reliance for defense on the mass strength of ground armies, which means that the air force will continue to have a major tactical role. During World War II the Soviet Air Force was organized and employed as an instrument for direct and immediate support of the ground forces. In this role, the air force was much larger and more important than the Soviet Navy, but still far less important in Russian military thinking than were the ground armies.

~~SECRET~~

~~SECRET~~

CURRENT TRENDS WITHIN THE AIR FORCE

Within the air force itself, it is believed first priority is being given to the development of an interceptor fighter force based on jet aircraft, and second priority to creation of an effective long-range bomber force.

MILITARY AIR IN FOREIGN RELATIONS

The Soviet Air Force has not been used in an "international" armed force in the true sense, although as a measure of control in satellite countries such as Poland, the occupying Soviet air units have operated with, but have always controlled, the satellite units. The Soviet Union does not coordinate its staff planning with other nations, nor did it do so with the Allies even during the war.

It is evident that the Soviets are exploiting to the maximum the aviation material acquired during the war and as a result of their occupation of Western Germany. Skilled German personnel have been recruited by the USSR to further its postwar program. The Soviet Union is in a position to take advantage of Swiss, Swedish, and Czech skills in the production of precision instruments. This is not to imply that the Soviet Union is dependent upon outside sources for the materials needed to support its air force. It will turn to these sources as necessary, however, while it improves its own aeronautical industry.

FISCAL

With regard to preparation of the military air budget, the State Planning Commission proposes the annual allocation of funds to the armed forces as a part of the over-all allocation of funds and resources under the Five-Year Plan. A detailed annual budget is prepared by the Minister of Finance under direction of the Council of Ministers for approval by the Supreme Soviet.

No information is available to indicate the extent to which expenditures for the military establishment are borne by other ministries, but the fact that this is done is inherent in the adjustment of the entire economy of the country to the requirements of national defense.

RESEARCH AND DEVELOPMENT

Research and development in the air force is carried out by the Chief Engineer of the Soviet Air Force who directs these research institutes. One of these develops new aircraft types and improvements on existing types, another is devoted to armament, and the third to aircraft materials. Research in addition to that conducted within the air force is controlled primarily by the Academy of Sciences, mentioned above. The Academy, which includes numerous installations, is concerned principally with problems of theoretical research and basic science. In most cases developmental work is turned over to the research institutes operated by the various industries. Emphasis on the furtherance of jet, turboprop, and rocket engine design continues unabated, as do research and production in the field of electronics.

~~SECRET~~

The Soviet aircraft industry is fully capable of building and maintaining a powerful air force, given appropriate priorities. The industry is supported by a strong economy which suffered substantially during the war, but which is fast recovering and will soon begin to expand beyond its prewar dimensions. In the past, development of the industry was hampered by inadequate supplies of aluminum. Soviet aluminum production rose, however, from 60,000 metric tons in 1940 to 86,000 metric tons in 1945. The goal of the Five-Year Plan is 172,000 metric tons in 1950.

ADEQUACY OF GOVERNMENTAL STRUCTURE IN MILITARY AIR POLICY MATTERS

In commenting on the over-all efficiency of the governmental structure in the establishment and implementation of military air policy, the absence of firm data requires that conclusions be based on conjecture.

Efficiency is a relative term, and in comparison with the best of American standards there are many aspects in which the Soviet governmental structure could be considered inefficient. What is involved is the type of inefficiency inherent in any highly centralized government which discourages initiative and necessitates that many minor as well as major decisions be made at the very top levels of government.

A highly centralized system of exercising governmental power gains in effectiveness, however, since it can channelize the amount of effort necessary to gain any desired objective. The decisions as to military air policy can be made in the Politburo, and the handful of men responsible for such decisions are in a position to see that the entire Soviet economy is organized to execute the policy decided upon, should such prove necessary.

While there may be considerable argument concerning the efficiency of the Soviet system, there is less dispute concerning the effectiveness of the Soviet Union in implementing its military air policy. The success with which the Soviet Air Force recovered from the brink of annihilation during the early part of World War II is evidence of this. In the midst of combat, the Soviet Air Force reorganized, re-equipped, and developed from a fighting force, which was markedly inferior to the German Air Force, to one which, by the close of the war, was not only markedly superior in numbers but was also fast approaching equal quality in both aircraft and crews.

Another indication of the effectiveness of the Soviet structure in the implementation of policy is the apparent success of a widespread program to develop and produce operational jet aircraft.

Soviet leaders demonstrated their ability to devise and adapt air policy to changing circumstances during World War II.

Since the war, a reorganization of the armed services has given the air force a more important position than it ever had previously, even though evidence to date does not indicate that this has meant complete independence of the air arm from ground force control.

Since 1945 the major operating problems facing Soviet air have changed materially. In view of the present world situation and demonstrated wartime weaknesses of the

~~SECRET~~

Soviet Air Force, Soviet military air policy should be oriented around the tasks of creating an interceptor force capable of coping with long-range strategic attack, and the development of a long-range striking arm of its own. Solution of both of these problems currently is being given high priority, it is believed, but the success achieved probably cannot be demonstrated by anything short of actual combat.

~~SECRET~~

MILITARY AVIATION POLICY

1. In general, the agencies of primary military interest are:

- Council of Ministers
- Ministry of Armed Forces
- Armed Forces General Staff
- Main Administration of Soviet Navy
- Air Arms of the Soviet Naval Fleets
- Civil Air Fleet
- Main Administration of Soviet Air Force
- Military Council
- Tactical Air Armies
- Military District Air Forces
- 18th Air Army
- Air Force of the Airborne Forces
- Fighter Air Defense Force

The State Planning Commission and the Academy of Sciences of the USSR exercise functions which relate to military air policy, as do also a considerable number of the 58 ministries represented on the Council of Ministries. To one degree or another, these could include the ministries of:

- Armaments
- Aviation Industry
- Chemical Industry
- Communications
- Communications Equipment Industry
- Construction Materials
- Light Industry
- Machine and Instrument Construction
- Machine Tools Construction
- Material Reserves
- Oil Industry, Eastern Regions
- Transport
- Construction of Military and Naval Enterprises
- Electrical (Equipment) Industry
- Heavy Machine Building
- Internal Affairs
- Labor Reserves
- Oil Industry, Western and Southern Regions
- Road and Construction Building
- Rubber
- State Security
- Transport Machine Building

2. Information as to the interrelationships among agencies involved in the formation and implementation of military air policy is almost completely lacking, and what follows is primarily speculation.

Major policy decisions probably are decided at the very top level, which would go beyond the Council of Ministers into the Politburo itself. Once decision had been reached in the Politburo, acceptance in the Council of Ministers would be a foregone conclusion.

Each ministry would make note of the requirements which affected its particular operations, so that such matters as production of aircraft, electronics equipment, construction materials, trucks, and all other materials needed by the air program could be included in the plans which each ministry must submit to the State Planning Commission.

Within the Ministry of Armed Forces, coordination of air policy with that of the military program as a whole probably is handled by the Minister in council with his deputies, who include the chiefs of the Air Force, Ground Forces, Naval Forces, and Rear Services, plus the chief of the Armed Forces General Staff. This latter officer functions as first deputy minister.

The scope of activities of the Armed Forces General Staff as regards military air policy is not known, but this staff, headed by its Chief of Staff, is responsible for overall planning and coordination within the Ministry of Armed Forces.

The Main Operations Administration of the Armed Forces General Staff is charged with the final preparation of strategic plans before their submission to the Chief of the General Staff and the Minister of Armed Forces, and thus is directly concerned with air policy.

Other agencies of the Armed Forces General Staff, most of which may have some relation to air policy are:

- Main Intelligence Administration
- Signal Communications Administration
- Organization and Mobilization Administration
- Fortified Areas Administration
- Topographic Administration
- Historical Administration
- Eighth Administration (Coding and Decoding)
- Affairs Administration

Within the Soviet Air Force the policy-making body is the Military Council, which includes the Commander in Chief of the Soviet Air Force, his Chief of Staff, the Chief of Rear Services, the Chief Engineer, and the Chief of the Political Administration.

The commander of the Naval Air Force is subordinate to the Commander in Chief of the Soviet Navy, who is one of the deputy ministers of the Ministry of Armed Forces. The generals commanding the air arms of the individual fleets are subordinate to the commander of the respective fleets to which they are assigned, and also to the Commander in Chief of the Naval Air Force, but information is lacking as to how these relationships work out in practice.

The Academy of Sciences, in general, governs science and research, and undoubtedly is a major factor in the implementation of air policy with respect to the research which must precede the development of new aircraft and related equipment.

Economic mainsprings of the Soviet economy is the State Planning Commission (GOSPLAN).

The Soviet Constitution of 1935 provides: "The economic life of the USSR is determined and directed by a State Plan of national economy with the aim of increasing the public wealth, of steadily raising the material and cultural standard of the working people, and of strengthening the independence of the USSR and its capacity for defense."

The GOSPLAN commission has 11 members elected from among the leading industrial workers, scientists, and specialists. Its task is to prepare quarterly, yearly and five-year plans and present them for approval to the Council of Ministers; to supervise fulfillment of the plans and to work out solutions to the practical and methodological problems involved in economic planning.

The principal task of the commission is the coordination of the different schemes and branches of the Soviet economy. While this commission has a major role in implementing military aviation policy, its complicated organization of more than 40 departments and bureaus apparently handles the problems involved on a piecemeal basis. There is a "Group of Aviotransport" in the "Department of Aviotransport and Motor Transport," but no other agency has "aviation" in its title. Presumably some of the military air policy matters are considered in the "Mobilization Department."

3. a. (1) Before and during World War II the Soviet Air Force was designed, organized, and employed as an instrument for direct and immediate support of the ground forces. In this role, the air force was much larger and more important than the Soviet Navy, but still far less important in Russian military thinking than were the ground armies.

The Soviet high command still appears to be putting principal reliance for defense on the mass strength of ground armies, which means the air force will continue to have a major tactical role.

Within the air force itself, it is believed first priority is being given to the development of an interceptor fighter force based on jet aircraft, and second priority to creation of an effective long-range bomber force.

(2) The Soviet Air Force has not been used in an "international" armed force in the true sense, although as a measure of control in satellite countries such as Poland, the occupying Soviet air units have operated with, but always controlling the satellite units.

The stumbling block in the formation of the air portion of the UN armed forces has been Soviet insistence on equal participation by each Security Council member, an important consideration in view of China's weakness and the current status of the French Air Force.

The Soviet Union does not coordinate its staff planning with other nations, nor did it do so with the Allies even during the war.

The Soviet Union recently planned a major reorganization of Rumania's armed forces without bothering to advise the Rumanian general staff as to what was in prospect.

The Soviet Air Force benefited to a major degree from foreign technical and material resources during World War II, not only from the thousands of aircraft furnished under the lend-lease program, but also from motor vehicles, explosives, electronics equipment, vast quantities of aluminum and petroleum products, including blending agents for aviation fuel.

Soviet development of improved postwar conventional type aircraft undoubtedly has been aided by the items of American equipment available for their use, including the two flyable B-29's which were interned in 1944.

The USSR obtained much that can be put to advantageous use as the result of its occupation of Eastern Germany. Captured items included new developmental and prototype models with which the Germans were experimenting, as well as research centers and aviation plants. Large numbers of skilled German aviation scientists, engineers, and technicians have been recruited by the USSR to further its postwar program.

The Soviet Union is in a position to take advantage of Swiss, Swedish, and Czech skills in the production of precision instruments required by the air force.

Considerable effort is being expended to develop sources of aluminum and enlarge the petroleum industry.

It is not to be implied from the above that the Soviet Union is dependent upon outside sources for the materials needed to support its air force. The Soviet Union will turn to outside sources as necessary, however, while it improves its own aeronautical industry.

The Soviet Union does not release any of its air designs to foreign nations, but it has a policy of equipping satellite countries with Russian aircraft, usually older models. The Yugoslav Air Force, however, has some of the newest of Soviet aircraft, which may indicate that the USSR is willing to provide effective support for an air force which is considered "thoroughly reliable."

There is no indication to date that Soviet aircraft are being manufactured in any of the satellite countries, except a few YAK's in Yugoslavia.

b. (1) On 25 February 1946, the People's Commissariat of Defense and the People's Commissariat of the Navy were combined in the People's Commissariat of the Armed Forces—which later was designated the Ministry of Armed Forces. As part of the reorganization it appears that the air, ground, navy, and rear services were given coequal administrative status. Prior to this, the Soviet Army Air Force had been subordinate to the ground forces, and each of the four major fleets of the Soviet Navy had its own fleet air arm.

During the balance of 1946 it became apparent that the Civil Air Fleet had been divorced from military control, directly responsible to the Ministry of Armed Forces, or, possibly, to the Council of Ministers itself.

There is still no positive evidence that the Soviet Air Force actually has achieved coequal status with the ground or naval forces. The air force may have

been granted some measures of autonomy, such as in the field of research and development, but it is believed that in most respects the air arm remains subordinate to the ground force high command.

The Naval Air Force continues to be an integral part of each of the four Soviet fleets — Pacific, Arctic, Baltic, and Black Sea.

(2) Since the air force, ground forces, and navy are all part of the Ministry of Armed Forces, it can be assumed that a measure of top-level coordination of air policy matters is achieved either among the deputy ministers or the Armed Forces General Staff.

Within the Soviet Air Force the Military Council is the advisory and policy-making body, but it has no naval air force representation.

The Soviet Navy has no aircraft carriers, and, for the most part, the Naval Air Force uses the same type equipment and has the same type organization as does the Soviet Air Force. Most of the Soviet naval air effort in World War II was expended in joint operation with the Soviet Air Force in tactical engagements with the German Army and German Air Force. It is believed, however, that an expanded role is in prospect for the Naval Air Force.

(3) As of 1 September 1947, the Soviet Air Forces included an estimated 450,000 personnel and 14,000 aircraft in operational units, of which 1,000 were noncombat types.

A total of 5,100 aircraft are stationed in Europe, outside the USSR; 1,150 in Korea and Manchuria; and 7,750 within the USSR, of which an estimated 1,150 are in the Far East.

The air strength is estimated to include 6,000 fighter types, 4,000 ground attack aircraft, and 3,000 bombers. These are divided by major command as follows:

Tactical Air Armies and Military District Air Forces	9,000 aircraft
18th Air Army (Long Range Force)	1,750 aircraft
Fighter Defense Force (PVO)	1,600 aircraft
Naval Air Force	1,650 aircraft

(4) No specific information is available to indicate that the USSR has a system of air training similar to that of the US Air National Guard and Air Reserves. Since a compulsory tour of service in the Armed Forces by all physically qualified men is a continuing Soviet military policy, the need for such a comprehensive reserve training program is partially removed. Nothing is known of refresher courses given to demobilized air force personnel for maintaining their military proficiency. In all probability there is some form of refresher training.

Indications are that a considerable number of former military pilots are currently working for the *Osoaviakhim* (Society for the Promotion of Aviation and Chemistry), an important subdivision of which is the Aero Club organization.

Details of the training given Civil Air Fleet personnel are not known, but the quality of training of flying personnel is thought to be the best in the Soviet Union.

c. (1) No specific answer to this question is possible because it is impossible to calculate the national income of the USSR in comparative monetary terms; because budget allocations to the armed services are not truly indicative of the amount of money which is spent on the military; and because no data are available to indicate what proportion of the armed services budget allocation is spent for military air.

In general, the 1947 Soviet budget, in billions of rubles, is as follows:

Planned state revenue	391.5	
Planned state expenditures	371.4	
National Economy		131.8
Social-cultural		107.1
Ministry of Armed Forces		67.0
Maintaining governmental organs		12.8
Payment on government loans		6.9
Scientific research institutions		6.5
Unaccounted for		39.3

When the 39.3 billion rubles unaccounted for in the expenditures budget are added to the 20.1 billion rubles surplus of planned revenues over planned expenditures, and the 18.6 billion rubles surplus of 1946, the USSR has a total of 78 billion rubles — more than the published budget for the Ministry of Armed Forces — for uses concerning which no information is available.

The Russian ruble has an "official" exchange of 5.3 to the US dollar, but the diplomatic rate is 12 rubles to the dollar. Both of these figures are purely arbitrary, as the ruble is not used in foreign exchange and thus its international value is undetermined. On the basis of prices which Russians must pay for imported goods sold in Soviet stores, it is estimated that the consumer's ruble is worth about 2 cents, or 50 to the dollar. Purchasing power of rubles expended by the government is considered to be much greater than the purchasing power of those spent by individuals, since the government is able to set cost prices on the materials it buys.

Basically, of course, the entire matter is a bookkeeping proposition, since the government pays a man his salary whether he is a metal worker in an aircraft plant or a sergeant in the air forces.

Decisions with respect to expenditures can be made on the basis of national policy without regard to monetary costs. The desired goals, plus availability of skilled workers and the necessary materials, are the important factors — not the bookkeeping "costs." Or, as the Soviets would put it, the public interest rather than cost or profit, is the guiding criterion.

(4) All funds for civilian research, educational institutions, and the aviation industry are provided by the government.

(5) The State Planning Commission, which coordinates the planned development of the economy of the Soviet Union, proposes the annual allocation of funds to the armed forces as a part of the over-all allocation of funds and resources under the Five-Year Plan. A detailed annual budget is prepared by the Minister of Finance under the direction of the Council of Ministers and is approved by the Supreme Soviet.

The funds as provided by the budget are made available by the Minister of Finance to the Minister of Armed Forces. Within the Ministry of Armed Forces, the Chief of the Main Finance Administration of the Armed Forces handles all fiscal matters.

No information is available to indicate the extent to which expenditures for the military establishment are borne by other ministries, but the fact that this is done is inherent in the adjustment of the entire economy of the USSR to the requirements of national defense.

Within the Soviet Air Force, the Main Administration of Rear Services (GUT) is charged with the administration of finance, as well as supply and construction. Within the GUT is a Finance Administration responsible for the payment of personnel and for the budget of supplies and materials used by the Soviet Air Force.

It may well be that the air force budget originally is worked out by the Finance Administration of GUT, then analyzed and approved by the Military Council of the Soviet Air Force, after which it is submitted to the Ministry of Armed Forces for approval and forwarding to the State Planning Commission.

d. (1) The Chief Engineer of the Soviet Air Force, one of five members of the Military Council of the Air Force, directs three research institutes through the Main Administration of Engineer Service (GUIAS). These are:

Scientific Research Institute of the Soviet Air Force, which conducts research for development of new aircraft types and for improvement of existing types.

Scientific Research Institute for Aircraft Armament.

Scientific Research Institute for Aircraft Materials.

The Chief Engineer also is responsible for an Inventions Administration, which inspects and studies inventions submitted to the Soviet Air Force, and maintains a construction bureau and experimental workshop for developmental work. Within the Administration of Repair Service is a Scientific Experimental Institute of Aircraft Repairs, which serves both the field repair and major repairs departments, and a Department for Research and Introduction of New Repair Methods.

No information is available to indicate whether the Soviet Navy conducts any research and development in military aviation.

For the most part, the Naval Air Force has employed aircraft of the same models and type as those utilized by the Soviet Air Force. It may thus be that development of new types and other research has been left largely to the Soviet Air Force.

(2) In order to answer this question it is necessary to examine the general organization of research in the Soviet Union.

Because of the centralized nature of the government of the USSR, it is possible that fixing of priorities between research on different problems of military significance may be resolved at the very highest level, perhaps even in the Politburo.

For most purposes, however, the controlling agency is the Academy of Sciences of the USSR, which is responsible for drafting a five-year plan listing the most important scientific problems to be solved. For each problem there is listed its history, its present status, proof of its importance to the national economy, a list of

subproblems which must first be solved in order to further solution of the basic problem, and the names of the scientists charged with working out this problem.

The Academy of Sciences, which includes more than 40 scientific institutes, plus a large number of commissions, laboratories, societies, museums, and libraries, is concerned primarily with problems of theoretical research and basic science. It handles some of the problems in its own institutes, while others are assigned to researchers in the institutions of higher learning.

In some instances, the Academy of Sciences carries the results of its experimentation through the developmental stage, but in many cases the developmental work as well as the actual testing is turned over to the research institutes operated by the various ministries.

The Ministry of Aviation Industry, for instance, has several institutes for aviation research and development. It is believed that these institutes are responsible for the technological work necessary to develop practical application of the results of research conducted under direction of the Academy of Sciences.

Research institutes of the aircraft industry can be divided into five categories. In the first category are the principal scientific research institutes. These include, in addition to the institutes of the Soviet Air Force already mentioned, the following:

Central Aero-Hydro-Dynamic Institute (TsAGI), which deals with all questions of aircraft design (air frames and engines) especially from an aerodynamic point of view. It has an experimental factory attached to it and claims to have one of the world's largest wind tunnels.

Central Aircraft Engine Institute (TsIAM)

Soviet Union Aircraft Building Material Institute (VIAM), which studies materials for air frames and engines. It may be closely associated with, or perhaps the same agency as the Scientific Research Institute for Aircraft Materials of the Soviet Air Force.

Scientific Research Institute of the Civil Air Fleet (NiiGVF). There are additional institutes dealing with such problems as instrument construction, labor utilization in factories, etc.

In the second category are the experimental design bureaus directed by the principal Soviet aircraft designers— Lt. Gen. Ilyushin, Lt. Gen. Yakovlev, Major General Lavochkin, and Major General Tupolev. Aero-engine design bureaus are directed by such engine designers as Major Gen. Mikulin, Major Gen. Shvetsov and Major Gen. Klimov.

The research laboratories attached to the higher aviation training establishments, such as the Moscow Aviation Institute, compose the third category.

Every large aviation factory has an experimental laboratory. These laboratories vary in size and importance, but together they comprise the fourth category.

The fifth category includes other research institutes, principal function of which is to modify and perfect existing basic aircraft models. There have been ten modifications, for instance, of the YAK-9. These research institutes also design

and turn out, in small experimental series, new aircraft types for series production when and as the industry can accept them.

A "Bistrop" Commission is reported to be the supreme Soviet organization in Germany on matters of scientific research, the evacuation of technicians and scientists, and the further development of V-weapons. This commission is under charge of a major general and probably represents a coordinated effort. No information is available as to which Soviet ministry or research agency controls the "Bistrop" Commission.

(3) Considering the type of political and economic organization which exists in the Soviet Union, there is no purely private research and development.

(4) With the possible exception of fundamental research in institutions of higher learning, it is believed that centralized control in this field is complete. General priorities probably are laid down by the highest authority.

The Academy of Sciences determines priorities in basic and theoretical research. Priorities for development of new models and equipment probably are recommended by the Ministry of Armed Forces and issued as orders by higher authority to the various industrial ministries concerned.

e. (1) Firm data on this subject are lacking, but some evidence is provided by the recent appearances of jet aircraft in the Soviet Air Force. One jet fighter was seen in the August 1946 Moscow Air Show, and 100 jet fighters of two types performed in the May Day parade of 1947. Considering that the one seen in August 1946 was a prototype, the Soviet Union went into production rapidly, and immediately began to equip its fighter regiments with jet aircraft.

On the basis of World War II experience, once the first experimental aircraft had been produced, the time taken to prepare it for the state test, and, therefore, for series production, was usually fairly short. The average time for fighters was from three to six months and for bombers from five to ten months. In the case of the YAK-3, for instance, there was an interval of one and a half months from the production of the first experimental aircraft to its state test, then an interval of three months until the production of the first series. With the IL-10, six or seven months elapsed between the production of the first experimental aircraft and that of the first series. In the case of the TU-29 and ER-4 aircraft, however, production of each of these twin-engine bombers was held up for many months because of engine difficulties.

A considerable number of Soviet air regiments currently are believed to be operating with obsolete or obsolescent aircraft, long after improved types are known to have been developed. This may be a matter of policy rather than necessity, however, since there is evidence to indicate the Soviet Union tends to build reserves of its more modern types, withholding them from operational use while older models are being used by tactical units. This policy was noted on occasion in the closing period of World War II.

(2) The Soviet aircraft industry is fully capable of building and maintaining a powerful air force. The industry is supported by a strong economy which suffered substantially during the war, but which is fast recovering and will soon begin to expand beyond its prewar dimensions. The USSR possesses sufficient skilled man-

power, materials, and equipment to satisfy the requirements of the aircraft industry at a high rate of operation over an extended period, given appropriate priorities.

Estimated total aircraft production in the USSR between 1938 and 1946 is compared with US production below:

	USSR	US
1938	6,000	3,623
1939	9,000	5,856
1940	12,000	12,781
1941	14,796	26,134
1942	25,622	48,858
1943	37,079	85,946
1944	39,926	96,369
1945	34,200	47,713
1946	16,500	1,728*

* Military aircraft and commercial transport types (DC-3 and larger) only. Total US output in 1946 was 36,482, broken down as follows: Military, 1,643; commercial transport, 139; two-seater planes, 30,604; 3- and 4-place planes, 3,756; 5- to 10-place planes, 340.

During the war years combat types represented about 85% of total aircraft output in the USSR.

In the past, development of the Soviet aircraft industry was hampered by inadequate supplies of aluminum. Lend-lease aluminum was an important factor in Soviet wartime aircraft production. Soviet production of aluminum was 60,000 metric tons in 1940, 86,000 metric tons in 1945, and the goal of the Five-Year Plan is 172,000 metric tons in 1950.

Considering the planned expansion of aluminum capacity and the possibility of employing substitute materials, it is believed that, if a wartime production program were begun today, the Soviet Union could manufacture aircraft at the rate of 50,000 to 55,000 a year in 1950, assuming the same composition of output as existed at the close of World War II.

(3) Procurement is considered to be centralized to a marked degree.

Control and planning of all Soviet Air Force activities, including those relating to logistics, are vested in the Commander in Chief of the Soviet Air Force, who is chairman of the Military Council, composed of chiefs of the major administrations of the Soviet Air Force.

The Main Administration of Rear Services of Soviet Air Force headquarters probably obtains all standard supplies from the major command known as Rear Services, which has the same organizational position as the army, air force, and navy under the Ministry of Armed Forces. The air force is believed to deal with the Main Administration of Intendance in Rear Services headquarters on matters of quartermaster supply.

Definite information is lacking, but it is possible that the Soviet Air Force deals directly with the various production ministries for procurement of purely air equipment, including aircraft and engines.

During the past war, the Soviet Air Force maintained two types of centralized rear-area stores: Special Air Force Stores, which were stocked with aircraft engines, spare parts, ammunition, and other types of specialized equipment used solely by air force units; and General Stores, from which the air force was supplied with food, clothing, and other nonspecialized supplies.

No information is available to indicate the extent to which Air Armies or Military District Air Forces may be authorized to obtain certain supplies on a local basis. Considering transportation difficulties, local supplies are obtained where possible, but it is considered that the administrative work connected with such procurement still may be quite centralized.

f. (1) The USSR is convinced of the highly important part played by training in the development and sustained operation of an efficient air force. The quality of air training has been low in comparison with US standards because of a certain amount of lag behind the Western Powers in development and utilization of the highly technical aspects of an air power. However, this situation is showing signs of steady improvement. Confirmed reports indicate that the Soviets are using German military and technical personnel as advisers and instructors in the use of captured German equipment.

The Soviet air training system at the close of the war conformed substantially to that of the other major powers. By far its outstanding quality is its flexibility. This quality will prove most valuable now that the Soviet Air Force, and thus its training program, must be designed for possible future war.

Compared with the Western Powers, flying training in the Soviet Air Force is weakest in the techniques of bad-weather flying, aerial gunnery, formation flying, and high-level precision bombing. Soviet training is probably stronger in operations under poor field conditions, although this has, in the past at least, probably been due to necessity rather than design. It is significant that the Soviets have demonstrated the ability to accomplish much under highly adverse conditions.

Among service schools concerned with military aviation are two Academies of the General Staff, three branch air academies, three higher military schools (for advanced pilot training), and seven officer candidate schools which cover pilot training, technical specialties, and aerial reconnaissance.

(2) Paramilitary training, as exemplified by that conducted in the "Aero Clubs," seems to be as vigorous as it was before the war. Aero Clubs formed, prior to the war, the most important subdivision of the *Osoaviakhim* (Society for the Promotion of Aviation and Chemistry). Outwardly, this is an independent civil body, but it is actually paramilitary in nature. Practically all candidates for Aero Club membership come from the industrial working class and are members of the *KOMSOMOL* (Communist Youth Organization).

(3) "Izvestiya," 13 September 1947, announced the opening in Moscow of a new high-level aviation academy with three departments: Aircraft, power plants, and instruments. The list of faculty members included Ilyushin, Klimov, Lavochkin, Nikoyan, Tupolev, Yakovlev, and Zhukovsky. Students qualified to take the training at this academy must be college graduates with seven years' experience in the aviation

industry, including at least two years in executive positions. The faculty members are top-flight aircraft and engine designers of the USSR. The caliber of these men, plus the impressive entrance requirements, indicate that the Soviet Union is planning an intensive campaign to improve the civilian element of the aviation industry. This may indicate further intensified effort on the part of the Russians to improve both design and production methods in the Soviet aviation industry.

g. (1) Some indication of the degree to which the USSR emphasizes security is given by two decrees promulgated in June 1947 by the Supreme Soviet providing punishments for the disclosure of any Soviet state secrets—military, scientific, economic, or political.

The prescribed penalties, confinement in labor correction camps for varying periods, are more severe for responsible citizens than for ordinary Soviet citizens.

Among information classified by the decrees as "state secrets" are: Any facts or figures concerning the size, strength, or dispersal of armed forces or reserves; plans concerning exports or imports of certain goods; production of nonferrous and rare metals and earths; "information concerning negotiations, relations, and agreements of the USSR with foreign states," and advances "in all spheres of science, technology, and national economy."

Disclosure of any of this information by officials in circumstances that "cannot be qualified as treason to the motherland or espionage is punishable by imprisonment in a labor concentration camp for a period of 8 to 12 years," the decree said.

Betrayal of military secrets by servicemen, if not treason, is punishable by imprisonment of 10 to 20 years, while ordinary citizens disclosing state secrets may be punished by labor camp terms of 5 to 10 years. Disclosure of scientific data can lead to a term of 10 to 15 years.

"State secrets" are defined so broadly that it would appear that these decrees—coupled with the activities of the secret police—provide a comprehensive program for protection of the security of military data and the results of research and development.

4. Since data on these subjects are almost completely lacking, any answer can be little more than conjecture.

Efficiency is a relative term, and in comparison with the best of American standards there are many aspects in which the Soviet governmental structure could be considered inefficient. What is involved is the type of inefficiency inherent in any highly centralized government which discourages initiative and necessitates that many minor as well as major decisions be made at the very top levels of government.

A highly centralized system of exercising governmental power gains in effectiveness, however, since it can channelize the amount of effort necessary to gain any desired objective.

The decisions as to military air policy can be made in the Politburo, and the handful of men responsible for such decisions are in a position to see that the entire Soviet economy is organized to execute the policy decided upon, should such prove necessary.

While there may be considerable argument concerning the efficiency of the Soviet system, there is less dispute concerning the effectiveness of the Soviet Union in implementing its military air policy. The success with which the Soviet Air Force recovered from the brink of annihilation during the early part of World War II is evidence of this. In the midst of combat, the Soviet Air Force reorganized, re-equipped, and developed from a fighting force, which was markedly inferior to the German Air Force, to one which, by the close of the war, was not only markedly superior in numbers but was also fast approaching equal quality in both aircraft and crews.

Another indication of the effectiveness of the Soviet structure in the implementation of policy is the apparent success of a widespread program to develop and produce operational jet aircraft.

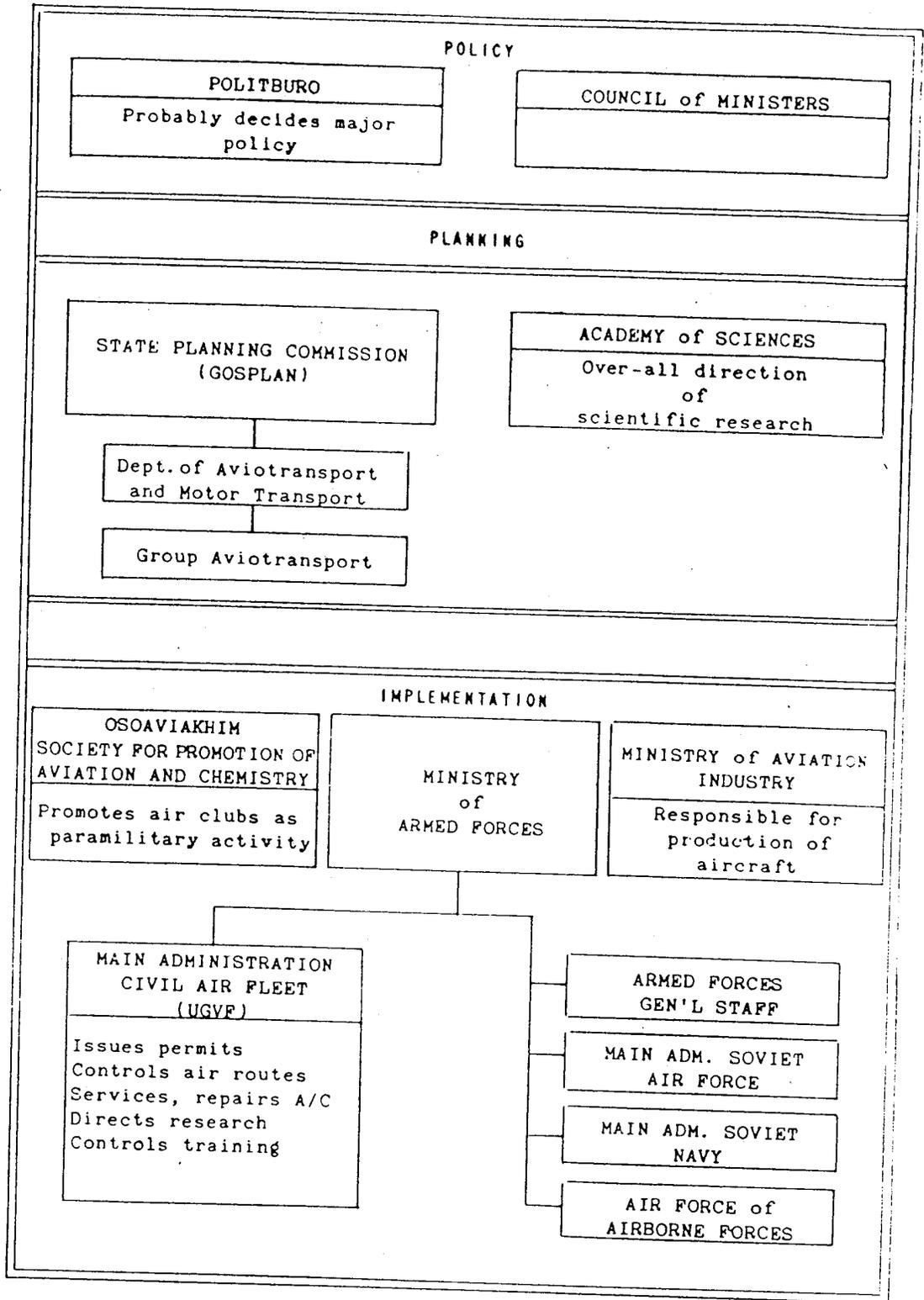
Soviet leaders demonstrated their ability to devise and adopt air policy to meet changing circumstances during World War II.

Since the war, a reorganization of the armed services has given the air force a more important position than it ever had previously, even though evidence to date does not indicate this has meant complete independence of the air arm from the ground force control.

Since 1945 the major operating problems facing Soviet military aviation have changed materially. In view of the present world situation and demonstrated wartime weaknesses of the Soviet Air Force, Soviet military air policy should be oriented around the tasks of creating an interceptor force capable of coping with long-range strategic attack, and the development of a long-range striking arm of its own. Solution of both of these problems currently is being given high priority, it is believed, but the success achieved probably cannot be demonstrated by anything short of actual combat.

There is no basis for a discussion of "economical use of funds," both because of lack of detailed information on "expenditures," and because the Soviet economy is not based on "money" in the conventional sense.

CIVIL AIR POLICY
U S S R



CIVIL AVIATION POLICY

A. CIVIL AIR POLICIES.

1. Basic policy of the USSR as regards civil aviation is to create a large and efficient air transport system, which will not only enable rapid communication among widely separated sections of the Soviet Union and with satellite countries, but will also act as a reserve organization ready to augment Soviet military air power. Soviet basic air policy, furthermore, sacrifices the development of world-wide air transport operations to the immediate military and civil needs within the USSR. Determination of policy and complete control of all civil aviation are vested in the government. Government control is effected through three independent organizations, each controlling some aspect of Soviet nonmilitary aviation. These organizations are:

Upravleniye Grazhdanskovo Vozcushnovo Flota (JGVE — Main Administration of the Civil Air Fleet) under the Minister of Armed Forces;

Central Soviet Council of the *Osoaviakhim* (Society for the Promotion of Aviation and Chemistry);

Main Administration of the *Glev Sevmorput* (Main Administration of the Northern Sea Route).

The use of Soviet civil aviation as an instrument of national policy is evident in many ways. One typical example is provided by the postwar civil air agreements between the USSR and the Soviet satellite countries. (A discussion of these agreements is contained in the reply to question A.3.h. of this report.)

2. The Soviet Government controls all aspects of civil aviation.

a. The government plans and controls the development and expansion of scheduled air transport. The Fourth Five-Year Plan calls for 175,000 kilometers (108,900 statute miles) of air routes by 1950 (an increase of approximately 25% over 1940). The most important lines are to be equipped for year-round and night flying. Sixteen airports will be reconstructed for use by heavy high-speed planes. Twenty air stations are to be built or rebuilt. The Chief of the Civil Air Fleet has announced that an attempt will be made to increase passenger and freight traffic within the next two or three years to eight to ten times the prewar figure. It is estimated that in 1940 civil aviation had a turnover performance of 34,000,000 ton-kilometers (21,150,000 ton-miles), carried 49,000 metric tons of freight and baggage and 309,000 passengers. This would indicate an annual goal for the near future of more than 300,000,000 ton-kilometers (186,500,000 ton-miles), nearly 500,000 tons of freight and baggage, and approximately 3,000,000 passengers.

b. Control of nonscheduled air transport is maintained by the government through all three civil aviation organizations. The small aircraft units of the various ministries, which perform nonscheduled operations, are detailed to these various ministries from the UGVF and the *Osoaviakhim* and are considered to be actually a part of their parent organizations. The majority of the air operations undertaken by the Northern Sea Route are probably nonscheduled in character.

c. Private flying, as it is known in the US, is nonexistent in the USSR. There is, however, a system of flying clubs controlled by the *Osoaviakhim*, which might be compared with the Civilian Pilot Training Program of the US.

d. All aircraft manufacturing in the Soviet Union is controlled by the Ministry of Aviation Industry. A certain amount of supervisory control of the aircraft industry is also maintained by the Ministry of Armed Forces, State Planning Commission, and Academy of Sciences, and the Main Administration of the Civil Air Fleet. The degree and scope of the control exerted by these agencies, however, is unknown. The industry, which had expanded to the maximum possible degree during World War II, has gone through a period of readjustment. The industry has probably reduced its production quantitatively and is now operating at peacetime levels. The design and production of large and medium-size air transports is progressing.

e. An extensive research program is quite evidently in progress. Large numbers of German scientists and technicians, together with German research facilities, have been integrated in this program. The program is directed by the leading Soviet scientists. There is evidence of emphasis on jet and rocket propulsion. (Eight different postwar types of jet aircraft have been identified.) Principal control of all basic scientific research in the Soviet Union rests with the Academy of Sciences. This organization is responsible for formulating the Five-Year Plan as it affects scientific research. (In addition, the Main Administration of the Civil Air Fleet is specifically charged with the development of all nonmilitary aircraft, and has its own aeronautical research institute.) The Academy of Sciences is also responsible for determining the relative priority of all scientific development. A considerable amount of this research actually is carried out by the research institutes of the Ministry of Aircraft Industry. Aeronautical research is also carried out by institutes subordinate to the Ministry of Armed Forces.

f. Aeronautical engineering education is probably controlled by the Ministry of Higher Education.

g. The training of pilots and technicians for the GVF is undertaken in schools of the Civil Air Fleet. The following list shows the location of Civil Air Fleet Schools in 1944. It is not known whether all these schools are now in operation.

Location of Civil Air Fleet Schools in 1944.

Alma Ata	Kupino
Baku	Moscow
Khabarovsk	Moscow-Pushkino
Dzhizak	Novosibirsk
Frunze	Penza
Gorki	Sterlitamak
Issyk-Kul	Sverdlovsk
Syr-Darinskaya	Tashkent

Training of foreigners is limited to those of proven "political reliability" from the Soviet satellite countries.

h. Control of all export and import trade is exercised by the Soviet Government through the Ministry of Foreign Trade, which coordinates this activity with the State Planning Commission and the Ministry of Foreign Affairs. Imports are of two types: (1) standard electronic equipment for use in aerial navigation is required in quantity and obtained under trade treaties; and (2) advanced models of aircraft and power units are required in limited quantity for experimental purposes: they are obtained under individual contracts. Export of aeronautical equipment is extremely limited. Transport aircraft and spare parts have been authorized for export only to the dependent satellite countries and only in negligible quantities.

i & j. The government controls and promotes the development of all airports and air navigational facilities. An ambitious program of airport construction, including the installation of navigational aids, is contained in the current Soviet Five-Year Plan. (See subparagraph *a.*) Most of the airports of the Soviet Union are controlled by the military forces; however, there are airfields of a purely nonmilitary nature which are controlled by the Civil Air Fleet, *Osoaviakhim*, and the Northern Sea Route. Air navigation facilities are believed to be a primary responsibility of the Main Administration of the Civil Air Fleet. Some navigation facilities may be controlled by the Soviet Air Force and the Soviet Naval Air Force, but the extent of these holdings is not known. The Main Administration of the Northern Sea Route undoubtedly is responsible for the air navigation facilities in the Arctic regions.

3. *a.* All aircraft in the Soviet Union are owned by the government. Primary air carrier in the Soviet Union is the Civil Air Fleet, which operates the majority of the scheduled air lines. In addition, there is the Main Administration of the Northern Sea Route which operates some scheduled, but for the most part nonscheduled, flights in the Arctic regions. There is no competition between these two organizations and the USSR can be considered to have one government-owned air carrier. No foreign capital is invested, except in air lines jointly owned by the USSR and certain foreign countries. These include the Soviet-Rumanian air line TARS, the Soviet-Hungarian air line *Mazovlet*, the Soviet-Yugoslav air line JUSTA, and the Sino-Soviet Aviation Corporation. None of these joint air lines, however, operates within the USSR.

b. The aircraft industry of the Soviet Union is government owned and directed. Control of this industry is maintained through the Ministry of the Aviation Industry.

c. No competition exists between the UGVF and the Administration of the Northern Sea Route.

d. Complete protection of Soviet civil aviation is afforded by prohibiting entry of foreign air lines into the USSR. A Soviet air policy in the satellite countries, however, involves relations with other countries. The joint Soviet-satellite air lines, while not permitted to operate into the USSR, have been authorized to seek air agreements with air lines of certain Western countries and to exchange services on a restricted or flight-for-flight basis with such countries.

e. As Soviet civil aviation is government owned, operating expenses are provided and income is absorbed by the government. It is probable, however, that the air lines are not operated at a loss, since salaries paid employees are low and facilities

provided are far below US (Western) standards. Flight frequencies are regulated to insure full loads and fares charged (twice as much as those for rail travel) are high enough to cover operating costs. Ordinary passengers are required to buy their transportation for cash and the cost of travel for officials traveling on government business is charged to the agency they represent. Soviet policy since the end of World War II has been to promote actively all phases of civil aviation. The current Soviet Five-Year Plan includes objectives to be met in the production of new aircraft, construction and improvements of airports, and airport facilities, and the training of pilots, navigators, and technicians in night and instrument flying. The plan also calls for an extension of the domestic air network to approximately 110,000 route miles (a 27% increase over prewar mileage). This ambitious program has been adopted in order to link remote areas of economic importance to the main traffic arteries and to further the realization of the Five-Year Plan as a whole.

f. The Soviet objective is to replace its obsolete transport aircraft with modern types comparable to the postwar types produced by the US. A new twin-engine airplane (IL-12) has appeared and is destined to replace the lend-lease and Soviet built DC-3's, while two four-engine transports (IL-18) and (TU-29) have been built which have characteristics of the DC-4 and the B-29. These aircraft, which have not yet appeared in quantity, are intended for service on the main trunk lines throughout the USSR. The development of all aircraft is controlled by the government, primarily through the Ministry of Aviation Industry; though some phases may be supervised by the Main Administration of the Civil Air Fleet.

g. Foreign transport aircraft in use by the USSR, as far as known, consists principally of large numbers of US lend-leased DC-3's. While Soviet representatives have visited US aircraft manufacturers and expressed interest in purchasing a number of Constellations, no firm orders have been placed since Soviet policy is to effect such purchases only through the medium of a comprehensive trade treaty, and the US has indicated that a settlement of the US-USSR lend-lease account is the prerequisite to such an agreement.

h. Soviet policy requires that all foreign air lines be excluded from Soviet territory in the interest of national security. On the other hand, the USSR has been instrumental in organizing, equipping, and controlling civil air lines in Rumania, Hungary, and Yugoslavia, and in aiding the reestablishment of the prewar Polish air line. This has been undertaken (a) in order to impose a continuing Soviet control over air communications in areas contiguous to the USSR, and (b) by promoting interlocking air agreements between these satellite countries to stimulate trade and to encourage political and economic integration.

Soviet bilateral air agreements permitting Soviet air access into other countries are unilateral in application, as foreign air lines are not permitted to enter the USSR. When the USSR encounters opposition to this type of agreement by a country with which it desires air relations, a point is selected in a nearby country to which both parties have access for an exchange of traffic on mutually agreed terms.

While Soviet policy requires scrupulous observance by foreign air lines of Soviet territorial integrity, the USSR nevertheless permitted its own air lines to operate

~~SECRET~~

an illicit commercial service in northern Iran after the withdrawal of Soviet troops. This operation was terminated only recently following a formal protest from the Iranian Government. Another example of indifference to the rights of other countries is apparent in the present organization of the Sino-Soviet air line. The formation of this air line in 1939 resulted from a Sino-Soviet agreement providing for a jointly owned monopoly of air services between a point in the USSR and Sinkiang Province, China.

In practice, however, the company appears to be completely dominated by the USSR with a single Chinese holding the title of Chairman of the Board, but lacking any authority. Chinese pleas for company reorganization to give China a fair share in the air line have gone unanswered.

The USSR has entered into no multilateral air agreements and is not likely to do so in the foreseeable future except on terms consonant with Soviet national policy. Although a seat on the ICAO Council has been held in reserve for the USSR since formation of this organization, the USSR has declined membership. This is quite understandable, for present Soviet air policy would not permit the USSR to comply with ICAO principles or regulations.

4. Soviet civil air policy is definitely influenced by military air requirements. The reorganization of Russia's military forces in 1946 is believed to have placed the Main Administration of the Civil Air Fleet under the Ministry of Armed Forces. In this position, it is independent of the Soviet Air Force and Soviet Naval Air Force, but remains under the control of the military authorities.

Soviet civil air transport is certainly regarded as a military air asset. It is equally important in time of peace as an essential transport service, and a commercial activity of economic and political value. For this reason, Soviet civil air transport does more than merely justify the maintenance of a manufacturing industry.

5. The purely internal civil air policy of the USSR is in no way influenced by any foreign country. For the most part the international air policy of the USSR is also not affected by foreign influences, but the increasing resistance encountered by the USSR and Soviet satellites in their attempts to negotiate air agreements with nonsatellite countries is definitely affecting the implementation of Soviet policy. Western European countries have refused to sign air agreements with satellite countries and the USSR, which do not provide reciprocal rights.

6. No detailed information is available on this subject. The budget for civil air is, however, believed to be included in that of the Ministry of Armed Forces, since this agency controls the UGVF.

7. See par. 4.

8. All institutions of higher education, including those dealing with aeronautics, are believed to be operated or controlled by the Ministry of Higher Education. Political indoctrination undoubtedly holds a high place in the list of subjects. The formation of a high-level aviation academy, to be located near Moscow, has recently been reported. The faculty list includes almost all the important aircraft and aircraft-engine designers of the USSR.

~~SECRET~~

9. The government owns and operates its own aeronautical research and development facilities. Government control of these facilities is maintained through the Academy of Sciences, Ministry of Aircraft Industry, and the Ministry of Armed Forces. Although there is no specific information, it is known that the government program is extensive. At present the greatest emphasis is believed to be centered on jet fighters, long-range bombers, and long-range heavy transports. This view is supported by the new aircraft seen at the recent Aviation Day and May Day air shows. Believed to be of secondary importance is the development of radar and other ancillary equipment. The degree of latitude given to research is not known. Control of theoretical research is maintained through the Academy of Sciences, which allocates the priority on all basic projects. Control of development research in aeronautics is probably vested in the Ministry of Aircraft Industry and the Ministry of Armed Forces. Under the political and economic system which exists in the Soviet Union, freedom of private research, in the Western sense, does not exist.

10. Complete control of aircraft development, including financing of manufacturing facilities, is vested in the government through the Ministry of Aircraft Industry.

Certain factories of the aircraft industry are believed to have research facilities which are carrying out development projects, but the majority of the factory research is believed to be restricted to the development of new and better production methods.

B. CIVIL AIR ORGANIZATIONS.

1. In all, there are 58 ministries in the Soviet Government, and nearly all of these ministries are to some degree interested in civil aviation. The degree of interest varies from those ministries which merely use civil aircraft for passenger travel and freight transportation to that of the Ministry of Armed Forces, which actually has complete control of the Main Administration of the Civil Air Fleet. Governmental agencies and ministries which have a substantial interest in Russian civil aviation are believed to be as follows:

- State Planning Commission
- Council of Ministers
- Academy of Sciences
- Ministry of Aviation Industry
- Ministry of Armed Forces
 - Armed Forces General Staff
 - Main Administration of the Soviet Air Force
 - Main Administration of the Soviet Navy
 - Main Administration of the Civil Air Fleet
 - Air Force of the Airborne Forces
- Main Administration of the Northern Sea Route
- Osoaviakhim

To a lesser degree the following agencies and ministries have interests in Russian civil air:

- Ministry of Construction Materials
- Ministry of Communications
- Ministry of Higher Education
- Ministry of Heavy Machine Building
- Ministry of Machine and Instrument Construction
- Ministry of Oil Industry, Eastern Regions
- Ministry of State Security
- Ministry of Transport
- Main Administration of the Combined Sea and Land and Meteorological Service
- Ministry of Foreign Trade
- Ministry of Foreign Affairs
- Ministry of Military and Naval Enterprises
- Ministry of Electrical (Equipment) Industry
- Ministry of Light Industry
- Ministry of Machine Tool Construction
- Ministry of Road and Construction Machine Building
- Ministry of Transport Machine Building

2. Only a partial answer can be given this question. Answers given are incomplete and are based, in general, on deduction rather than on definite information.

Politburo — Major policy decisions affecting Soviet civil aviation are probably decided at the very top level in the Politburo, which, although not an actual part of the Soviet Government structure, is the Communist Party organ for the direction of the government. Acceptance of Politburo policy is a foregone conclusion.

Council of Ministers — This body is responsible for the implementation of the over-all policy of the USSR, which includes civil aviation. Major policy decisions are given this organ by the Politburo.

State Planning Commission (GOSPLAN) — The economic mainspring of the Soviet economy is the State Planning Commission, which has 11 members, elected from among the leading industrial workers, scientists, and specialists. Its task is to prepare quarterly, yearly, and five-year plans, and present them for approval to the Council of Ministers; to supervise fulfillment of the plan, and to submit solutions for the practical and methodological problems involved in economic planning.

Principal work of the Commission is to coordinate the various plans with the numerous branches of Soviet economy involved.

While this Commission has a major role in implementing military and civil air policy, its complicated organization of more than 40 departments and bureaus apparently handles its problems on a piecemeal basis. There is a "Group aviotransport" in the "Department of Aviotransport and Motor Transport," which apparently has a major interest in the development of civil aviation.

Academy of Sciences — This organization is responsible for the over-all direction of scientific research in the Soviet Union. In the fulfillment of this mission, the

Academy of Sciences must to a certain degree direct the development of civil aircraft. Just how much control this organization exerts on the scientific institutes of the Aircraft Industry and the Main Administration of the Civil Air Fleet is not known.

Ministry of Aviation Industry — This organization is responsible for the production of all aircraft in the Soviet Union. Considerable liaison obviously exists between the aircraft industry and the Academy of Science, the Soviet Air Force, Soviet Naval Air Force, and the Civil Air Fleet. The exact degree of control exercised by the Main Administration of the Civil Air Fleet over the Ministry of Aircraft Industry is not known.

Ministry of Armed Forces — This is the ministry to which the Main Administration of the Civil Air Fleet is believed to be subordinated. It is, therefore, probably responsible for general over-all supervision and control of the Civil Air Fleet.

Armed Forces General Staff — This body is responsible for military planning for the Ministry of Armed Forces, of which the Civil Air Fleet is a part.

Main Administration of the Soviet Air Force — Although this agency does not have direct control of the Civil Air Fleet, it does to a certain degree influence UGVF policy. Just how this influence is effected is not known. During the last war the Soviet Air Force (then the Red Army Air Force) had control of the GVF to the extent that directives as to the use of UGVF units could be given the Chief of the Civil Air Fleet by the Chief of the 18th Air Army (then designated the Long Range Force). Civil Air Fleet personnel could be withdrawn for use in the 18th Air Army.

Main Administration of the Soviet Navy—This body influences UGVF policy to a certain degree but UGVF units are not known to have been subordinated to the Navy. Navy interest in the Civil Air Fleet is probably centered in the Naval Air Force.

Main Administration of the Civil Air Fleet (UGVF)—Although there are three agencies responsible for Soviet civil aviation, the Main Administration of the Civil Air Fleet is the chief motivating agency. It is the largest of the three and is actually responsible for the implementation of Soviet civil air policy.

The organization of the Main Administration of the Civil Air Fleet is not known in detail, but it is believed to be similar to the organization of the Main Administration of the Soviet Air Force. The following directorates of administration are known to exist:

- Political
- Technical Matters
- Repairs
- Construction
- Foreign Lines
- Medical
- Cadres
- Inspector
- Legal
- Editing and Publishing
- A scientific research institute

The UGVF is specifically charged with the following:

- Control of servicing, repair, and spare parts for all aircraft of the UGVF;
- Control of all air routes;
- Survey, planning, and construction of new routes and airfields;
- Direction of operations with economic objectives;
- Planning future developments;
- Direction of research and developmental work in civil flying;
- Control of equipment and technical training;
- Registration of aircraft;
- Issue of permits to use civil aircraft;
- Issue of permits for flights outside the Soviet Union;
- Ratification of construction programs of subordinate territorial directorates;
- Control of experiments in new types of transport aircraft, engines, balloons, gliders, and the organization of series production of nonmilitary aircraft on government order, including technical control of special productive activity;
- Organization of necessary signal communications;
- Direction of training for flying and technical ground personnel;
- Organization of medical services;
- Organization of fire-fighting services;
- Control of matters involving foreign air traffic.

Air Force of the Airborne Forces — This organization is a part of the Soviet Air Force. As the name indicates, it is responsible for the planning and execution of all Soviet airborne operations. In the performance of its duties in war time, the Air Force of the Airborne Forces must draw some of its aircraft from the UGVF. The exact extent of liaison in peace time is not known, but a close tie is undoubtedly maintained.

Administration of the Northern Sea Route — This organization is one of the three independent organizations within the Soviet Union concerned with civil aviation. It employs civil aircraft for ice reconnaissance and exploration of the Arctic region. In addition, it is responsible for air transport throughout the Soviet Arctic. While separate from the UGVF, it must operate closely with the Civil Air Fleet, and the UGVF is believed to be responsible for the general direction of its over-all policy as well as inspection of Northern Sea Route aircraft.

Osoaviakhim (Society for the Promotion of Aviation and Chemistry) — This organization is the third organization which is considered to have a primary interest in civil aviation. The *Osoaviakhim* has its own aircraft, which are used by aero clubs for private flying, or rather the nearest approach to such activity, in the Soviet Union. The *Osoaviakhim* can be considered a paramilitary organization for the promotion of flying among Soviet youngsters before they are of military age.

3. This question is not believed applicable to the Soviet Union. The Soviet Government controls and operates all civil aviation and extragovernmental opinions on the adequacy of civil aviation or its relation to the public interest would have no material

influence on civil air administration. An objective analysis of Soviet civil aviation, however, clearly indicates that it is inefficient in many respects. It can only be said to serve the public interest within the Communist concept of this purpose.

4. From the standpoint of the known and probable functions of these many agencies concerned with civil air, it appears that considerable overlapping and duplication exist. The resulting conflicts are probably solved by the State Planning Commission, the Academy of Sciences, or the Council of Ministers. If settlement cannot be effected at this level, the problem is probably referred to the Politburo for decision.

C. PROCEDURES AND REGULATIONS.

1. *Air Routes.*

These questions are generally inapplicable to Soviet civil air. The entire civil aviation program is a government monopoly. No competition between carriers for air routes can exist. The decision to inaugurate a new air route could possibly arise in a number of agencies, such as the State Planning Commission, Ministry of Armed Forces, Ministry of Foreign Affairs, Council of Ministers, or in the Main Administration of the Civil Air Fleet itself. Any new air route would probably have to be approved by the State Planning Commission, but the actual implementation of this policy decision would be the responsibility of the Main Administration of the Civil Air Fleet.

2. *Rates.*

a. All rates on Soviet civil air lines are fixed by the UGVF, and thus are fixed by the government. At the official exchange rate of 20 cents per ruble, rates on Aeroflot are approximately double the US commercial air-line rates of 5.1 cents per mile. If the so-called "diplomatic rate" of exchange is used (12 rubles per dollar) Soviet rates are comparable to US domestic rates.

Both the above exchange rates are purely arbitrary, as the ruble is not used in foreign exchange; therefore, its international value is undetermined. On the basis of prices which Soviet citizens must pay for imported goods sold in Soviet stores, it is estimated the consumer's ruble is worth about 2 cents. Purchasing power of rubles expended by the government is considered to be much greater than the purchasing power of those spent by individuals, since the government is able to set cost prices on the materials which it buys. In view of the above, it is impossible to compare realistically rates on Soviet air lines with US commercial rates, since the comparison would be based on a nonexistent international exchange rate of the ruble.

b. Rates are believed to be based primarily on economic considerations; however, political factors sometimes affect rates. During the operation of the illicit air line in Iran, for example, rate-cutting tactics were employed in an attempt to force the government-owned Iranian Air Lines into bankruptcy.

d. No specific information is available on this subject. There is not believed to be any such thing as a discriminatory rate policy as such. High ranking members of the Communist Party, government, and armed forces, however, are believed to have priority in riding UGVF aircraft. These individuals are not believed to pay money for

their passage, although the cost is probably charged to the government agency which the travelers represent. It is also probable that the USSR occasionally grants preferential rates to individuals or groups of workers, in order to capitalize on the propaganda value of such paternalism. How the bookkeeping is handled is of little importance, since the government in any case pays for the operation of civil air lines.

3. *Safety.*

a. Although no specific information is available regarding safety regulations, it is probable that whatever regulations are in effect are issued by the Main Administration of the Civil Air Fleet. Responsibility for enforcement probably is delegated to the Inspectorate of the Main Administration of the GVF.

b. According to numerous foreigners who have traveled in Soviet aircraft, the regulations are either inadequate or are not enforced. Because in the USSR orders of the state are usually strictly enforced with punishment for violations, it is believed that adequate safety regulations have not been promulgated. A complete ignorance of scientific loading (such as lashing cargo in the aircraft prior to take-off) is evident. It is definitely known that Soviet authorities are alarmed at the accident rate of USSR aircraft.

4. *Inspection.*

a. The following is a summary of the types of inspections laid down in air force regulations. As it is believed that UGVF regulations are similar, this digest provides a possible indication of Civil Air Fleet directives on the subject.

Preflight Inspection—All aircraft to be inspected before flight by the aircraft mechanic, technician, and crew. The flight technician to examine at least two aircraft daily, chosen at random. The regimental engineer and armament and special equipment engineer to inspect at least fifteen aircraft monthly, chosen at random.

Interflight Inspection—In cases of repeated operations, to be carried out by the crews and ground technical personnel.

Inspection after Landing—(Considered the most important since all deficiencies and damage occurring during flight need to be established.) To be carried out by technical crew members and technical ground personnel under the supervision of the squadron technical officer.

Periodic Inspection—To be carried out only in units in rear areas, in flying schools and training establishments. In front-line formations only regulation jobs are to be done, the period of which is laid down in instructions for technical maintenance of the different types of aircraft.

Inspection of Aircraft and Engines which Have Reached Regulation Limit of their Life or Become Unusable because of Damage—(The purpose of this inspection is to determine whether the aircraft in question, on the basis of its actual condition, is still capable of further use.) The degree of repair to be established as well as the necessity for transfer to a maintenance unit. It is also to be decided whether the aircraft should be rejected. For the purpose of such inspections a commission, with the regimental engineer as chairman, is to be established by regimental order. When

the examination has revealed that the aircraft, despite the lapse of regulation number of flying hours, is still not in need of repair, the commission has authority to prolong the regulation overhaul period of an aircraft by 30% and of an engine by 20%. This decision, however, must be confirmed by the Chief Engineer of the Air Army.

b. If the above listing of inspections is complete, it is apparent that Soviet directives on this subject would be considered inadequate by US standards.

c. See b.

5. *Airports and Communications.*

a. Aircraft of the Civil Air Fleet appear to use either military or civil airfields. There are, however, airfields in the Soviet Union that support strictly civil activity.

b. These airfields are operated and maintained by the three Soviet civil air organizations.

D. GENERAL EVALUATION.

1. Despite the paucity of detailed information, it seems clear that the civil air policies of the USSR are closely geared to the economic capacities, political aims, and military requirements of the country.

It is reasonable to conclude that Soviet planning for civil aviation is farsighted and well conceived, but that the implementation of this leaves much to be desired. While the future will see a considerable expansion of Soviet civil aviation, this development probably will fall short of planning estimates.

2. The principal points of strength in Soviet civil aviation can be summed up as follows: (a) adequate manufacturing facilities to satisfy aircraft production needs of the expanding domestic air network; (b) a large war-trained reserve of pilots and technicians upon which to draw as need arises; (c) training establishments for new personnel, refresher courses and technical schools for advanced training adequate to meet Soviet standards; and (d) finally, perhaps the greatest source of strength, the ability inherent in the Soviet system of control to allocate skills and direct available resources solely toward the objectives of Communist national policy.

Serious weaknesses, however, characterize the Soviet civil air establishment. These are: (a) lack of experience in commercial operating techniques as practiced by the leading Western air carriers, which results in poorly executed scheduled operations with low safety standards; (b) lack of experience in long-range operations; (c) lack of sufficient modern aids to navigation (such as electronic equipment required for night flying and bad weather operations) for general use; (d) lack of trained operators for such equipment, resulting in reduced operating efficiency; and (e) obsolete equipment still in use over most of the Soviet air network.

There undoubtedly lies, in the vast extent and regional isolation of the Soviet Union, a challenge and a compelling incentive to Soviet civil aviation. The widely dispersed, yet economically important population centers, together with a deficient surface transportation system, present an obvious mission for civil aviation, and explain the high priority given to it in the Fourth Five-Year Plan.

QUESTIONNAIRE ON MILITARY AVIATION

TO BE USED IN CONJUNCTION WITH THIS STUDY

PROBLEM:

1. To list all governmental agencies and other organizations which participate in the formulation and implementation of policy concerning military aviation.*
2. To analyze, for each agency:
 - a. Exact functions pertaining to military aviation,
 - b. Motivating circumstances under which these responsibilities were originally assigned or assumed (this is not applicable in all cases),
 - c. Degree of adequacy with which the responsibilities have been discharged,
 - d. Extent of duplication or overlapping of functions with other agencies,
 - e. Conflicts, if any, which have arisen out of (d), and the success in resolving such conflicts,
 - f. Machinery for lateral coordination with other agencies, with a statement of its effectiveness.
3. To analyze Soviet policy with respect to military aviation, as well as the machinery for establishing and implementing it, from the following points of view:
 - a. Over-all national considerations:
 - (1) Strategic doctrine on the importance of military air in national defense, both (a) absolute and (b) relative to ground and naval arms.
 - (2) Military air in foreign relations, including:
 - (a) Its use in international armed forces (UN),
 - (b) Coordination of staff planning with other nations,
 - (c) Its dependence on foreign technical and material resources,
 - (d) The release of military air designs or equipment to foreign nations.
 - b. Armed forces (to be covered very briefly):
 - (1) Degree of independence of air arms from ground and naval forces,
 - (2) Extent of integration of naval and military air policy,
 - (3) Proportionate distribution of air strength between home command and overseas (between main areas),
 - (4) Organization of air reserve and role of civil aviation in the air reserve.
 - c. Fiscal:
 - (1) Proportion of national income allocated to military air,
 - (2) Proportion of total budget of the armed forces allocated to military air,
 - (3) Proportion of military air appropriations allocated to operational units, training, procurement, research and development, etc.,
 - (4) Subsidization (direct and indirect) of civilian research, educational institutions, and the aviation industry,

* Military aviation in the sense of this study includes the naval air arm.

- (5) Agencies responsible for preparation and presentation of the military air budget.
- d. Research and development:
 - (1) Extent of research and development carried out by the armed forces, and degree of interservice coordination in this activity,
 - (2) Extent of government-sponsored or supported research and development in the field of military aviation,
 - (3) Extent of purely private research and development in the field of military aviation,
 - (4) Extent of centralized control in the establishment of priorities for research and development.
- e. Procurement and production:
 - (1) Speed with which operational units are re-equipped with newly developed types of equipment,
 - (2) Capability of aircraft industry to expand for production on wartime basis,
 - (3) Degree of centralized control of procurement.
- f. Training and specialized education:
 - (1) Service schools,
 - (2) Participation by the military in the aeronautical education of civilians,
 - (3) Use of civilian educational institutions for the training of military specialists.
- g. Security:
 - (1) Measures employed to protect the security of (a) classified military data which must be revealed to civilian agencies and private industry, and (b) the results of private research and development.
- 4. To determine whether the present governmental structure is able to establish and implement military air policy with:
 - a. Efficiency and effectiveness,
 - b. Rapid adaptability to changed circumstances,
 - c. Economical use of funds.

QUESTIONNAIRE ON CIVIL AVIATION

TO BE USED IN CONJUNCTION WITH THIS STUDY

I. AIR POLICIES.

What are the basic policies of the country with regard to civil aviation? Is civil aviation regarded as an instrument of national policy? To what degree does the state determine policy with respect to it?

To what extent, by what means, and for what reasons does the government promote (or restrict) the development and expansion of (a) scheduled air transport, (b) nonscheduled air transport, (c) private flying, (d) aircraft manufacturing, (e) research, (f) aeronautical engineering education, (g) the training of pilots and other technicians, including grants to foreigners, (h) export and import of aeronautical equipment, (i) airports, (j) air navigation facilities.

Indicate policies, and reasons therefor, with regard to:

- a. Ownership of air carriers: Is private or government ownership favored, and for what reasons? Are foreigners permitted to own controlling or minor interests?
- b. Ownership of aircraft manufacturing industry;
- c. Competition among national carriers;
- d. Protection of national air lines against competition with foreign carriers;
- e. Subsidization of air carriers, manufacturing, airports, education, and training;
- f. Development of transport aircraft;
- g. Use of foreign transport aircraft;
- h. Operations of foreign air lines, bilateral and multilateral agreements, international organizations.

Is civil air policy influenced by military air requirements? To what extent do the armed forces control civil aviation? Is civil air transport regarded *primarily* as (a) a reinforcement of the military air potential, (b) a justification for the maintenance of a manufacturing industry, or (c) a commercial activity of economic and political value? If the answer is (c), to what extent do (a) and (b) receive consideration?

How are the country's civil air policies related to or influenced by those of other countries? Is the country closely associated with, or dominated by, any foreign power in matters of civil aviation?

What are the current government and private expenditures for each of the activities mentioned in (2), and what is the relationship of these expenditures to (a) the national income, (b) the national budget, and (c) the military air budget?

- . What vested interests exert influence on civil air policy and what is the nature of such influence? Are any agencies of the government dominated by these interests?
- . Does the government sponsor, control, or subsidize aeronautical education? If so, does it operate or control the institutions in which the education is given? Is the number of students determined by the government, or left to the initiative of the students themselves? To what extent are the students self-supporting or supported by the government? What is the total enrollment in such studies? On what phases of aeronautical education does the government lay greatest emphasis? What is the situation with respect to aeronautical engineering education specifically from the foregoing points of view?
- . Does the government operate its own aeronautical research and development facilities, or subsidize private organizations? How extensive a research program does the government support? How much money is appropriated for such purposes? Are such appropriations increasing? To what phases of aeronautical research is greatest emphasis given? To what extent do private institutions engage in aeronautical research on their own initiative?
- 1. Is the development of new types of aircraft and equipment by manufacturers subsidized or financed by the government? If so, what control does the government have over manufacturers, and in what manner is the financial aid granted? To what extent do manufacturers engage in research on their own initiative?

VII AIR ORGANIZATIONS.

List all agencies of the government concerned with civil aviation, including legislative and judicial, as well as executive and military agencies, and agencies connected with manufacturing, research and scientific development, exports and trade, procurement, education, training, airports and communications, and appropriations, as well as agencies related directly to scheduled and non-scheduled air transport and private flying.

- a. Describe the functions of each of these agencies as they relate to civil aviation.
- b. Indicate when and by what legislative or administrative actions these agencies came into being.
- c. Indicate the reasons for the establishment of civil air agencies in the manner in which they are now organized, and the circumstances under which civil air functions were assigned to, or assumed by agencies not directly or exclusively concerned with civil aviation. Show the influence of historical, political, and economic conditions and of vested interests (private, official, military) on the determination of the existing organizational structures, and indicate the reasons for the abandonment or revision of previously existing organizations.

To what extent are each of these agencies considered to be fulfilling a useful function efficiently and in the public interest, or the contrary, by (a) aviation

- interests, (b) competitive forms of transportation, (c) political parties, (d) the armed forces, and (e) the general public?
4. To what extent do these agencies duplicate or overlap each other? How are resulting conflicts resolved? Are their activities coordinated on a higher level by any central group?
 5. Is any consideration being given at present to abolishing, reorganizing, or combining existing agencies, or creating new ones? If so, what are the objectives of such proposed changes?

PROCEDURES AND REGULATIONS.

1. *Air routes.*

- a. What agency (if any) awards particular air routes to designated carriers?
- b. What considerations determine the granting of a route to a particular carrier?
- c. What conditions are imposed on the carrier in the operation of the route?
- d. What freedom do carriers have to determine the routes they will or will not operate?
- e. Are new routes established on the initiative of the government or the carrier?
- f. Are all carriers entitled to apply for any proposed new route?
- g. Is competition permitted over identical or similar routes?
- h. Under what circumstances can the carrier's certificate be revoked or revised?

2. *Rates.*

- a. Are rates fixed by the government or the carriers?
- b. Are rates based on economic, competitive, political, or social considerations?
- c. If rates are fixed by the government, what procedures and methods are followed, and by what agencies?
- d. Are discriminatory rates permitted among carriers, or among classes of travelers or freight?

3. *Safety.*

- a. How and by what agencies are rules and regulations concerning safety issued and enforced?
- b. Are such regulations adequate? Are they competently and strictly enforced?
- c. Are safety regulations enforced impartially, or are they used as a means of showing favoritism to certain carriers?

4. *Inspection.*

- a. What regulations and procedures govern the inspection of equipment, personnel, and accidents?
- b. Are these regulations adequate? By whom, and to what degree are they enforced?
- c. What penalties are imposed for failure to obey regulations?

. *Airports and Communications.*

- a. What regulations govern the use of airports?
- b. What organizations operate airports?
- c. What procedures are followed with regard to communications?
- d. What organizations operate the communications systems?

. *Reports and Forms.*

For the purpose of administering civil air policies, enforcing regulations, granting financial aid, and assuring adequacy, safety, and efficiency of operations, what types of periodic or special reports, examinations, or forms does the government require concerning:

- a. Traffic;
- b. Expenses, revenues, and rates;
- c. Educational standards and accomplishments;
- d. Research activities and technical development;
- e. Physical and mental condition of pilots and other employees;
- f. Technical qualifications of pilots and other employees;
- g. Aircraft flight operations (including required meteorological reporting);
- h. Aircraft inspections;
- i. Accidents;
- j. Others.

To what agencies are the reports submitted? How are they processed and what uses are made of them?

GENERAL EVALUATION.

1. Are the government's civil air organizations, policies, rules, and procedures generally considered to be sound, progressive, equitable, honestly administered, and well adapted to the capacities, aims, and requirements of the country's commerce, industry, and security? If there are marked differences of opinion in this regard, what is the nature of, and the reasons for disagreement?
2. What are the principal points of strength and weakness in civil aviation? To what extent are they due to conditions over which the country has no control, or to conditions for which the government and/or industry are responsible?

DISTRIBUTION

The President
Secretary of State
Chief of Staff to Commander in Chief
Secretary of Defense
Secretary of the Army
Secretary of the Navy
Secretary of the Air Force
Executive Secretary, National Security Council
Chairman, National Security Resources Board
Chief of Staff, US Army
Chief of Naval Operations
Chief of Staff, US Air Force
Director of Plans and Operations, General Staff, US Army
Deputy Chief of Naval Operations (Operations)
Director of Plans and Operations, US Air Force
Special Assistant to the Secretary of State, Research and Intelligence
Director of Intelligence, General Staff, US Army
Chief of Naval Intelligence
Director of Intelligence, US Air Force
Secretary, Joint Chiefs of Staff
Secretary, Joint Intelligence Group
Secretary, State-Army-Navy-Air Force Coordinating Committee
Executive Secretary, Military Liaison Committee to the Atomic Energy Commission
Director of Security and Intelligence, Atomic Energy Commission
Chief, Acquisition and Distribution, OICD, Department of State

~~SECRET~~