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Economic Intelligence Memorandum

ANNUAL REVIEW OF CIVIL AVIATION
IN THE SINO-SOVIET BLOC
1960

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CENTRAL INTELLIGENCE AGENCY
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FOREWORD

This memorandum is one in a series of annual publications that are designed to present in summary form the significant developments in transportation in the Sino-Soviet Bloc during each preceding calendar year.

In addition to the present memorandum on civil aviation, the series includes two other annual publications, one on developments in inland transportation in the Sino-Soviet Bloc and another on merchant shipping in the Bloc.

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ANNUAL REVIEW OF CIVIL AVIATION IN THE SINO-SOVIET BLOC*
1960

I. Introduction

The fairly substantial expansion of civil aviation in the Sino-Soviet Bloc during 1960 was attributable almost entirely to the civil air carriers of the USSR and Czechoslovakia. In spite of this expansion, however, the USSR at the end of the year was further behind the US in the numbers of high-performance jet and turboprop civil aircraft than at the beginning. The USSR, whose inventory of such aircraft was about 20 fewer than that of the US at the beginning of the year, had about 60 fewer aircraft at the end, as follows:

Units		
<u>Type of Transport Aircraft</u>	<u>USSR</u> <u>(Estimated)</u>	<u>US</u> <u>(Actual)</u>
Four-engine jet	0	202
Two-engine jet	190	0
Four-engine turboprop	180	181
Two-engine turboprop	0	46
Total	<u>370</u>	<u>429</u>

In volume of passenger-kilometers and freight ton-kilometers** flown during 1960, Aeroflot, the civil air carrier of the USSR, continued to maintain its position as second in the world only to the combined operations of US civil air carriers. US operations were 4.6 times those of Aeroflot measured in passenger-kilometers and 1.5 times in freight and mail ton-kilometers. Aeroflot during 1960 increased its passenger-kilometers by 45 percent and its freight and mail ton-kilometers by 26 percent. By far the greater part of these gains took place in domestic operations, in view of the fact that Aeroflot did not initiate any new international routes during the year and operations along existing scheduled international routes increased only slightly.

* The estimates and conclusions in this memorandum represent the best judgment of this Office as of 1 May 1961.

** Tonnages are given in metric tons throughout this memorandum.

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Operations of the civil air carriers of the European Satellites and the Communist Far East were minor in comparison with those of Aeroflot. The gap between traffic carried by Aeroflot and that carried by the rest of the Sino-Soviet Bloc continued to widen. The USSR increased passenger-kilometers by more than 4 billion during 1960, whereas the rest of the Bloc is estimated to have increased its traffic by less than 175 million passenger-kilometers.

Scheduled air operations of the civil air carriers of the Sino-Soviet Bloc were augmented chiefly by the addition of Soviet flights along existing routes and by the extension of services by the European Satellites to the Middle East, the Far East, Africa, and the Scandinavian countries. Czechoslovakia, in the forefront, added 11,370 route-kilometers to its international network by inaugurating services to Conakry, Guinea, via Zurich and Rabat, and by an extension of the Bombay route to Rangoon and Djakarta. These new routes were flown by Tu-104A (Camel) and Il-18 (Coot) aircraft.

Production of commercial aircraft within the Sino-Soviet Bloc was almost wholly within the USSR, with only liaison and light trainer types being manufactured in Czechoslovakia and China. Somewhat surprisingly, in view of its poor operating efficiency, variants of the two-engine jet transport (Camel) continued to be manufactured throughout the year at the rate of about five aircraft per month. Two prototypes each of the new two-engine transports, the Tu-124 (Cookpot) and An-24 (Coke), were completed and submitted for testing, but apparently neither aircraft emerged from series production during the year. Production of all types of high-performance transport aircraft in the USSR is estimated to have decreased slightly from 1959 to 1960.

Utilization of the inventory of high-performance transport aircraft remained low throughout the year. Major difficulties with the powerplant of the Il-18 resulted in the grounding of this aircraft for a period of nearly 2 months. The An-10 (Cat) was seldom observed in passenger service during the year, probably also because of engine problems. Continuing trouble with the Tu-114 (Cheat) kept this large aircraft from scheduled service during the year. On the few long-distance flights that the Tu-114 made outside the USSR, it was reported to have undergone special preflight maintenance and testing and to have carried large stocks of spare parts.

The utilization rate of high-performance transport aircraft in the USSR remained low in terms of US economic concepts but did give the USSR a continuing large reserve of transport aircraft. If the total inventory of aircraft had been mobilized, the potential airlift capacity of the high-performance transport aircraft at the end of the year would have been sufficient to enable the USSR to move, at relatively

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short notice and without modification of aircraft, almost 30,000 seated passengers, and 30,000 additional seated passengers could have been airlifted with piston types of transport aircraft. In the US the comparable figures for commercial aviation would be 40,000 passenger seats for high-performance aircraft and 80,000 for piston aircraft.

Reductions in fares of from 10 to 15 percent were announced on selected routes during the year. The reductions usually were made on those routes traversing areas where competition existed from other modes of transport, particularly the railroads. At the end of 1960, all fares were changed to conform to the revaluation of the ruble,* as were wages and other expense items.

On the basis of scattered announcements, long-distance and middle-distance air passenger travel continued to increase more rapidly than comparable rail travel. Several new long-distance routes were placed on the Aeroflot schedule toward the end of the year in regions where rail connections are roundabout or do not exist at all. Air freight service, often by helicopter, of both a regular and an emergency nature has become particularly effective in remote regions as new airfields have been constructed.

During the year the program to develop 90 modern airfields with suitable terminals and maintenance systems continued, but few were open to inspection by foreign visitors, and none is known to have been completed. Installation of new communications systems and facilities apparently went forward on a large scale and at a fairly rapid pace.

Sales of high-performance transport aircraft during the year, with the exception of one Tu-104A delivered to Czechoslovakia in January, were confined to Il-18 aircraft, some 20 sales of which were negotiated. Four of the Il-18 aircraft sold went to Ghana, and 10 are for civil carriers in the European Satellites and will raise their total inventory of high-performance aircraft to 16. At the end of the year, negotiations were underway with India for the sale of approximately eight An-12 aircraft, with delivery scheduled for early 1961.

Airline service in the European Satellite areas during 1960 was extended and improved to some extent, chiefly by Czechoslovakia. Development of air facilities in these areas coincided with the acquisition of, or plans to acquire, high-performance transport aircraft.

* Ruble values throughout this memorandum are expressed in current new rubles and may be converted to US dollars at the rate of exchange of 0.90 ruble to US \$1.

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International jet terminals have been placed under construction, and there has been a general trend toward the addition of hangars and the installation of communications equipment standardized throughout the Sino-Soviet Bloc and compatible with Western equipment.

Civil aviation in the Communist Far East made little progress during the year. No new air agreements were concluded, and there was no expansion of international operations. Domestic operations, which had been emphasized in the "leap forward" program from 1958 to 1960, were curtailed to a near standdown of transport flights at the end of 1960. Policy statements indicated that there will be a consolidation of achievements before other "big leaps forward" are attempted in civil aviation.

Coordination of civil air operations throughout the Sino-Soviet Bloc was again extended in 1960. Since the session of the Council for Mutual Economic Assistance (CEMA) in July 1960, more of the coordination work formerly left to the member states has been brought under central control. In addition to increased CEMA activity, meetings on civil aviation, formerly held twice a year in the various European Satellites, are now held in Moscow, and the Communist Far Eastern countries are included.

As in 1959 the Sino-Soviet Bloc continued to apply pressure on foreign countries to permit overflights, to provide technical landing rights on existing fields (some built by the US and still used as military bases), to permit special flights, and to enter into commitments for extension of regular service. In the European Satellites, new air agreements signed in 1960 on the part of Czechoslovakia included agreements on the governmental level with Italy, Burma, India, and Indonesia. Hungary signed bilateral agreements with Italy, the UK, and France; Poland, with the Netherlands and France; and Rumania, with Greece and Switzerland. Iran, Turkey, and Sudan were placed under particularly strong pressure from the USSR.

Scheduled negotiations for a New York - Moscow reciprocal air service were canceled by the US because of the generally unsatisfactory political and economic relations between the two countries. Toward the end of 1960 the USSR undertook to negotiate a reciprocal air agreement with Iceland, apparently designed to give Aeroflot a stopping point between Moscow and New York, with no particular advantage to Iceland. In view of the unsatisfactory performance to date of the Tu-114, landing rights at Keflavik could be of considerable advantage to the USSR in the implementation of a through-service agreement to the US.

During 1960, Aeroflot transports undertook a number of nonscheduled flights outside the USSR. These included publicized support missions to the UN in New York and to a number of other countries and unpublicized missions in support of friendly factions in Laos and the Congo.

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II. USSR

A. Domestic Developments

1. Administration

In the spring of 1960 the Administration of Polar Aviation (UPA), which had previously operated its own aircraft under the direct control of the Main Administration of the Northern Sea Route and which was in no way a part of Aeroflot, was merged into Aeroflot with a status equivalent to that of a territorial administration. Besides operating two main-line routes on a daily basis, UPA carried out ice surveys, supported Soviet stations on the polar ice cap, and provided logistical support and medical aid to numerous isolated outposts.

2. Performance and Operations

The passenger-kilometer performance of Aeroflot in 1960 is estimated at 13.5 billion, an absolute gain of 4.2 billion passenger-kilometers above the total for 1959 and the largest for any year of Aeroflot's history, as shown in Table 1* and in the chart, Figure 1.** By way of comparison with all US-scheduled civil air operations, the US registered a net gain of 4.05 billion passenger-kilometers in 1960. In freight and mail movement, Aeroflot is believed to have achieved 874 million ton-kilometers, a gain of 182 million ton-kilometers above 1959. This gain is in excess of a US gain of about 142 million. Both comparisons suffer from the fact that US data omit a substantial increment of carriage performed by contract carriers, an omission that is particularly serious in the freight comparison. The Soviet data are consistent with the rate of increase required to fulfill the Seven Year Plan (1959-65) for freight and mail movements.

Although many on-the-spot observers report that Aeroflot has an unusually large inventory of inactive transports, the normal load factor on internal flights nevertheless is high in comparison with the West. On the 14 flights per day of Tu-104B (Camel B) aircraft in each direction between Moscow and Leningrad during the summer, a factor of from 90 to 100 percent loaded seems to have been achieved in the hauling of passengers. In 1959, there had been only six such flights each way per day.

During 1960 the Trans-Siberian services from Moscow and Leningrad to the Soviet Far East consisted of 10 flights daily in each direction. The average load factor on these routes is judged to be of

* Table 1 follows on p. 6.

** Following p. 6.

Table 1

USSR: Performance of Aeroflot
Selected Years, 1945-60, and 1965 Plan

Year	Passenger Traffic		Freight Traffic	
	Thousand Passengers Carried	Million Passenger-Kilometers	Thousand Metric Tons of Freight and Mail Carried	Million Freight and Mail Metric Ton-Kilometers
1945	441	500	69	100
1950	1,117	1,180	146	214
1955	1,854	2,800	223	396
1956	2,280	3,150	273	510
1957	3,858	4,600	329	546
1958	6,174	6,500	394	619
1959	9,114	9,300	481	692
1960	11,760	13,500	599	874
1965 (estimated plan)	42,100	45,000	1,800	2,600

the same magnitude as that on the Moscow-Leningrad route. The Tu-114 made a few experimental flights on the Trans-Siberian route but was not placed in regular scheduled service anywhere during the year.

Air passenger travel within the USSR continued to be handled entirely as tourist class. On most international flights, first-class accommodations also were provided to enable Aeroflot to offer the same service as the foreign airlines serving Moscow under bilateral treaty arrangements. Aeroflot continued the practice of previous years of making seasonal fare reductions of from 10 to 15 percent for particular domestic routes.

Reports of visitors who have traveled on Soviet internal and international flights in 1960 show, as a rule, less annoyance with the dependability and comforts of the service than was prevalent in 1959. The safety factor apparently was high, although there were at least three fatal accidents, one involving an international flight on an Il-18. Accidents continued to be treated as classified information

unless circumstances such as location and the deaths of foreigners obliged publicity.

3. Inventory and Types of Aircraft

The inventory of high-performance transport aircraft assigned to Aeroflot increased by approximately 90 units in 1960, or considerably less than the gain of 165 of such aircraft experienced in 1959,* as shown in Table 2.** No new types were introduced to service, but prototypes of the Tu-124 and the An-24 are reported to have been completed and to be undergoing testing. The former is a two-engine turbojet transport capable of carrying from 44 to 68 passengers at speeds of up to 900 kilometers (km) per hour for distances of 1,500 km. The latter has twin turboprop engines and is designed to move from 32 to 42 passengers at 500 km per hour nonstop for about 1,800 km. In spite of optimistic predictions the Tu-114 failed to enter scheduled services during the year, but about 10 more of these large aircraft are believed to have been manufactured.*** Aeroflot officials have stated that the Tu-114 is intended primarily for special purposes, but this explanation is believed to be an excuse for nonoperation of the aircraft because of frequent maintenance problems. Difficulties were still being encountered with the counter-rotating propellers and the associated gearing system, which appear to be hard to maintain.

On 26 August 1960, following the crash near Kiev on 17 August of an Il-18 aircraft on a flight from Cairo to Moscow, all Il-18 aircraft were temporarily grounded to undergo a fleet retrofit program. The crash of the Il-18 at Kiev is reported to have been one of a series of at least four crashes of this aircraft, all of which were caused by engine fires in flight. The retrofit program included replacement of high-pressure pipes and insulation of the lubrication system of the rear turbine bearings, inasmuch as some of the crashes have definitely been attributed to failures in the engine fuel injection system. For a period of about 6 weeks, there was a complete standdown of Il-18 aircraft. During this period, Aeroflot had to draw on its reserves of jet Tu-104 aircraft and piston-engine Il-12 (Coach), Il-14 (Crate), and Li-2 (Cab) aircraft to maintain its

* US civil airlines in 1960 increased their ownership of high-performance jet and turboprop transport aircraft by 130 units. At the end of the year, there were on order 221 more high-performance transports for delivery between 1961 and 1963. Thus 1960 evidently was a peak year of the changeover from piston to jet in the US.

** Table 2 follows on p. 8.

*** Not all of the 10 Tu-114 aircraft manufactured in 1960 are believed to have been delivered to Aeroflot by the end of the year.

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Table 2

USSR: Inventory of Civil Aircraft Held by Aeroflot
1957-60

Type of Transport Aircraft	Units			
	End of 1957	End of 1958	End of 1959	End of 1960
Jet				
Tu-104 (Camel)	35	75	155	190
Turboprop				
Il-18 (Coot)	0	35	75	100
An-10 (Cat)	0	5	45	70
Tu-114 (Cheat)	0	0	5	10
Two-engine aircraft, piston	1,520	1,550	1,500	1,500
Helicopter				
Light	N.A.	10	40	125
Medium	35	40	100	225
Light aircraft, one- engine and two-engine	N.A.	1,800	1,900	2,000

domestic and international schedules. Both Tu-104 and Il-14 aircraft were used on formerly scheduled Il-18 international routes. The Il-18 constituted more than 25 percent of the total high-performance civil air fleet. In view of this situation the ability of Aeroflot to perform reasonably adequate air movements of cargo and passengers while the Il-18 was grounded has been of significance in showing its reserve strength. Furthermore, because the An-10 is equipped with the same engine as the Il-18 and therefore is subject to the same engine trouble, Aeroflot could not consistently draw on its large park of An-10 aircraft. Observers reported that whereas numerous An-10 aircraft were seen in flight in August, no An-10 aircraft were noted in flights after the Il-18 aircraft were grounded, and there is strong reason to believe that the An-10 has been undergoing a retrofit program similar to that of the Il-18.

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The increased use of helicopters, both for special purposes and on scheduled routes, indicates that helicopters are beginning to have an essential role in civil air transport. It is estimated that Aeroflot ownership of helicopters has increased from 140 in 1959 to a minimum of 350 in 1960.

4. Expansion of Routes

The Soviet Civil Air Fleet in 1960 provided service on more than 350 scheduled routes of national importance with an estimated length of 195,000 km, as shown in Table 3. In addition, there were about 125,000 km of feeder lines and 55,000 km of international lines, making a total network of 375,000 km.

Table 3

USSR: Length of Scheduled Domestic Routes
of National Importance Operated by Aeroflot
Selected Years, 1940-60

<u>Year</u>	<u>Thousand Kilometers</u>
1940	70
1950	147
1953	158
1955	173
1956	175
1957	177
1958	177
1959	182
1960	195

During the year, Aeroflot placed great emphasis on proving flights over an alternate, or northern Trans-Siberian, route from Moscow to Magadan. The northern route, to be inaugurated in early 1961, is above the Arctic Circle, touching at Amderma, Dickson Bay, and Tiksi, and shortens by more than 2,000 km the distance from Moscow to Petropavlovsk, the longest route in the USSR. When fully operational, the new route will provide "double tracking" of the existing Trans-Siberian air route, making it possible for planes

flying on either route to shift north or south to bypass closed airports and to use alternative stops or interlinking corridors, such as Noril'sk-Yakutsk-Magadan (see the map, Figure 2*).

The growing park of high-performance transports and the increasing use of them on long-distance routes have made it possible to transfer more piston-engine aircraft to shorter and less traveled routes. New feeder-line routes therefore have been opened in territorial administrations in Siberia and in the southwestern areas of the USSR. Many routes, formerly operated with small aircraft, such as the An-2 (Colt) and the Yak-12 (Creek), are now being operated with Il-12, Il-14, or Li-2 aircraft.

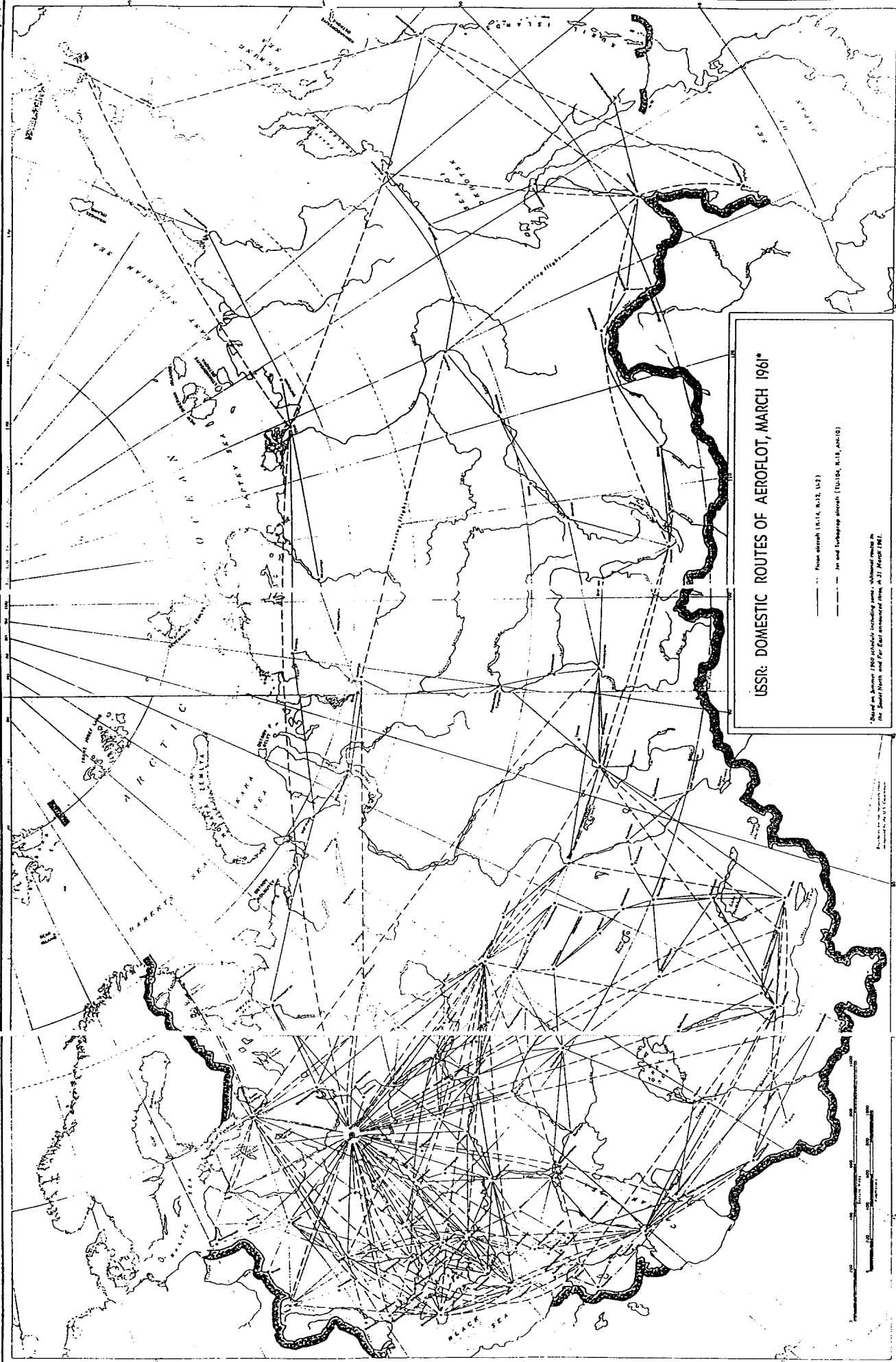
The year 1960 also marked a considerable expansion of helicopter routes. From a total of only about 10 such routes in 1959, it was planned to increase helicopter routes to about 200 in 1960. Most of these routes are in the northern and northeastern sections of the USSR, 20 routes alone, with a total route length of 3,000 km, being located in the Far East. Helicopters provided the main means of transport in newly developed areas. They also served resort traffic in the Crimea and the Caucasus and provided transport between airports and city centers, principally in the environs of Leningrad and Moscow.

5. Air Facilities

There has been little publicity on the progress of construction of airports in accordance with the Seven Year Plan, which calls for completion of 90 modern airports capable of handling high-performance aircraft on mainline civil air routes by the end of 1965. In some areas, military airfields were used in 1960, while new civil airfields were under construction or old airports were being modernized. Observers report that runways are being made of portland cement and appear to be adequate, but other airport facilities are decidedly marginal. Planning with respect to the terrain of individual sites seemed unrealistic in certain cases, a probable result of the effort to conform to standardized specifications regardless of natural obstacles. Construction of hangars was underway at several main airports but was evidently far below current requirements.

During 1960, all international flights emanating from Moscow were shifted from Vnukovo airport to Sheremet'yevo. Construction was started on a new Moscow airport known as Domodjedovo, which may be more elaborate than any of those presently existing. Other cities at which airports were being renewed, added, or modified for

* Following p. 10.



USSR: DOMESTIC ROUTES OF AEROFLOT, MARCH 1961*

*Based on Figure 1959 of the International Civil Aviation Organization, *World Air Services Manual*, Vol. 1, Part 1, 1961.

jet aircraft include Kiev, Tashkent, Frunze, Klaypeda, Osh, Karaganda, Stalinabad, Kishinev, Turukhansk, Alma-Ata, Sverdlovsk, Magadan, Pavlodar, Novosibirsk, and Baku.

At Moscow the old central airport was being modified for helicopter service to connect with the three principal airports now in use.

B. International Developments

1. International Network

During 1960, Aeroflot international operations amounted to about 210 million passenger-kilometers to the Satellites and Communist China and about 215 million to non-Bloc countries, a total of 425 million passenger-kilometers* for all international operations.

During 1960, Aeroflot provided service to 21 foreign capitals in the Sino-Soviet Bloc and the Free World. No new international routes were inaugurated during the year, but the USSR has been able to improve service on many lines by replacing piston-engine aircraft with jet or turboprop aircraft. During the year, Il-18 aircraft were put into operation on the routes from Moscow to Helsinki, Stockholm, Berlin, Warsaw, Bucharest, and Sofia, and Tu-104 aircraft were placed in service on the Moscow-Vienna route (see the map, Figure 3**).

There also was an increase in the number of scheduled flights per week on many routes. For instance, the number of scheduled Tu-104 flights from Moscow to Budapest was increased from one flight per week in June 1959 to three flights per week in June 1960. The number of flights to Cairo was increased from two to three, and the use of the Il-18 aircraft has made nonstop service possible on this route. A separate twice-weekly service to Tirana was inaugurated using Tu-104 aircraft.

In April 1960, there was a significant change on the Moscow-Copenhagen-London route when nonstop Moscow-London service was

* These figures were based on a load factor of 58.6 percent, which was the over-all intra-European factor for the year ending 30 September 1960. The USSR has claimed a probable Tu-104 international load factor for the year 1960 of 73.6 percent. The use of the latter factor would give a total of 563 million passenger-kilometers. Figured as a percentage of total passenger-kilometers flown by Aeroflot in 1960, the two estimates would be 3.1 percent and 4.2 percent, respectively. Based on a number of individual sightings, the lower figure is regarded as the more accurate.

** Following p. 12.

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scheduled. In addition, a weekly Moscow-Copenhagen service was started. Also in April 1960 the frequency of scheduled flights from Moscow to New Delhi was increased from one to two flights per week. The many changes early in 1960 in the frequency of flights on scheduled international routes indicate that the USSR has been attempting to adjust schedules to the demands of traffic.

2. Negotiations

Negotiations with countries of the Free World did not result in the opening of any new international routes during 1960. The groundwork was laid for new routes in a few cases, however, and agreements of other types were entered into or discussed.

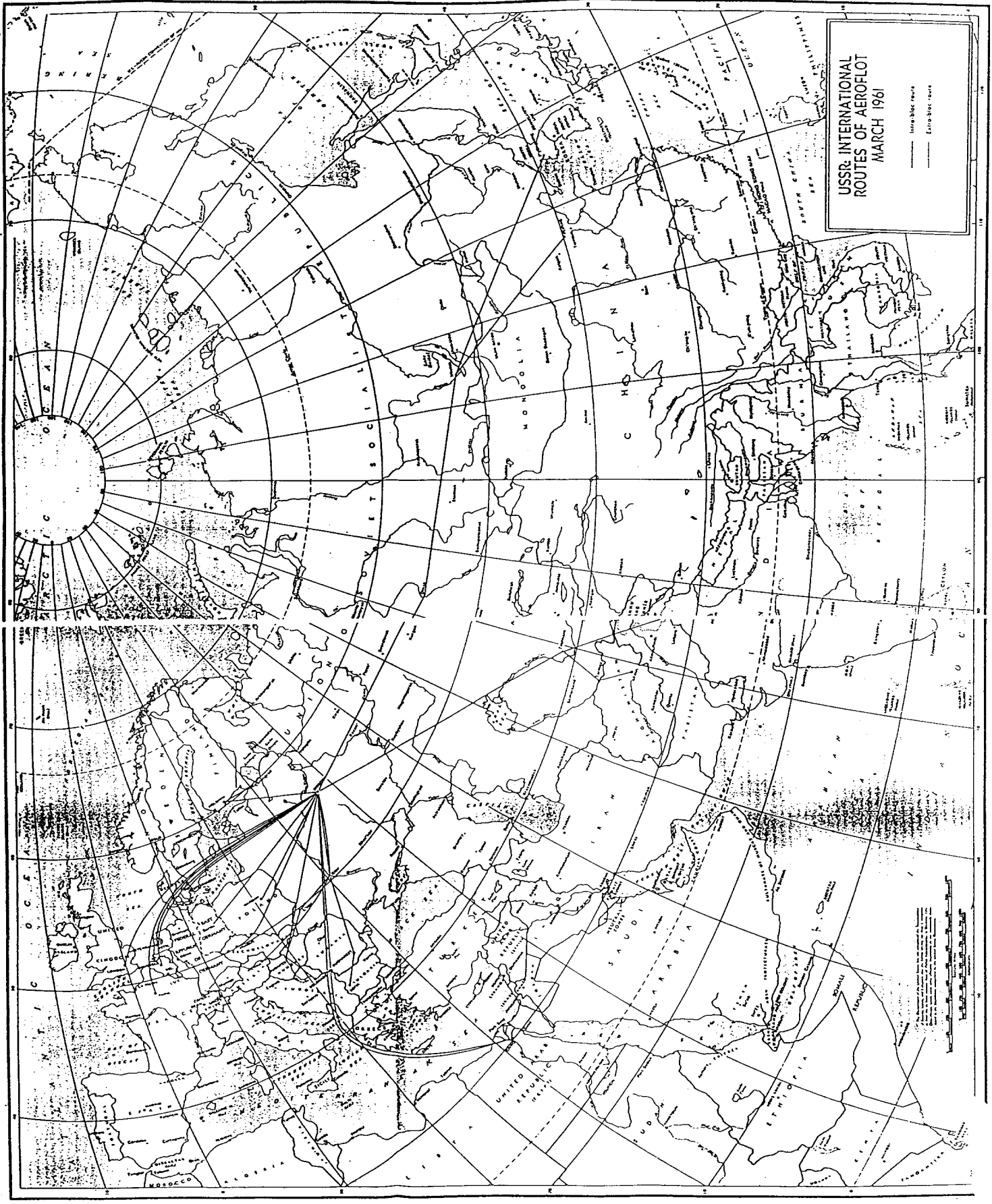
Negotiations with Japan in August resulted in the continued deferment of a Tokyo-Moscow service, for the USSR openly stated its objections to the intelligence opportunities that the Japanese flights would afford. The Japanese did at one point propose as a substitute the establishment of a "local" bilateral service, with the Japanese restricted to Khabarovsk and the USSR to an airfield on the Japanese coast near Niigata. No definite agreement was worked out during the year, however, and the impression is that the Japanese were only trying to keep the conversations alive, with the Moscow route as their ultimate aim.

Aeroflot and BEA (British European Airways) signed an agreement in the early autumn that provided for the pooling of London-Moscow services beginning in May 1961. The agreement provides for pooling the revenues of the two airlines and permits some rationalization of schedules by permitting the carriers to make adjustments in the weekly schedules. BEA, which had been conducting night operations with Comet jets, will revert to daytime flying.

Although no air agreement exists between the USSR and Lebanon, the USSR has been attempting since 1956 to obtain operating rights into and through Beirut. For such a route to be operated most economically, overflying of Turkey by Aeroflot would be necessary. In the last quarter of 1960 the USSR brought heavy pressure to bear on Turkey to grant overflight rights and emergency landing privileges for commercial aircraft. Turkey, however, did not grant such rights, nor did Turkey approve a similar request from Czechoslovakia. However, the reciprocal advantages that Turkey may have been offered in exchange for overflight rights are not clear at the moment. The Lebanese Civil

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Figure 3



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Aviation council is believed to be considering renewed requests of the USSR and Czechoslovakia to negotiate civil air transport agreements.*

Following the purchase of Il-18 aircraft, Ghana announced that the aircraft would be used on an Accra-Moscow route. Although no air agreement per se is known to have been signed by the two countries, an accord was possibly made or implied when the purchase agreement was signed.

From all indications the USSR has worked itself into a position where it can wield considerable influence over the operations of Air Guinea. Aeroflot Il-18 aircraft, now at the disposal of Air Guinea, have made numerous nonscheduled flights to points in North Africa and to Moscow. An agreement to operate an international service between the USSR and Guinea, possibly in coordination with Ghana, is no doubt an immediate objective as soon as a route with the necessary stops can be worked out. In this connection the USSR has recently been conducting talks on mutual cooperation with Morocco.

Discussions between the US and the USSR on a possible bilateral agreement to provide service between Moscow and New York were scheduled for the summer of 1960 but were halted by the US as a result of the shooting down of a US Air Force RB-47 over the Barents Sea on 1 July 1960. The USSR, however, has continued to express enthusiasm for the renewal of negotiations. In July, Soviet representatives began to put pressure on Iceland for an agreement whereby the civil airline of the latter country would extend its weekly Helsinki service to Moscow, with Aeroflot in return receiving stopover rights at Keflavik, Iceland. The advantage to the USSR of this type of exchange is obvious, but Iceland has shown little interest. Latest advices are that Iceland would be interested in an air agreement only if Leningrad were to be the point of destination in the USSR rather than Moscow. Still another action on the part of the USSR has indicated a desire to remove all possible obstacles to the opening of Aeroflot service to North America. In December, according to Danish press reports, the USSR gave permission to SAS (Scandinavian Air System) to fly one DC-6B from Moscow to Bangkok, via Stalingrad, Tashkent, and New Delhi. SAS hopes for obtaining a scheduled route across the USSR were revived by this action. If permission for such a route were granted (and actually no new air corridor would need to be opened to foreign aircraft for the purpose), Scandinavian objections to overflights of Soviet aircraft operating to and from New York would be nullified.

* Since the drafting of this memorandum, Lebanon has signed a bilateral agreement with Czechoslovakia and an interline agreement with East Germany, including the right to fly to Beirut on a short-term basis.

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3. Sales of Aircraft

The year 1960 marked the first success of the USSR in selling high-performance transport aircraft to countries outside the Sino-Soviet Bloc. In August, Ghana Airways purchased four Il-18 aircraft, and these aircraft have already been delivered. Ghana reportedly is planning to buy two more Il-18 aircraft to be delivered in 1961. The total payment for the first four Il-18 aircraft amounted to approximately \$7 million to be paid over an 8-year period, with a 1-year grace period, and at an interest rate of 2.5 percent. The sales agreement includes the cost of training Ghanaian crews in the USSR and provides for Soviet crews to fly the aircraft in the interim. About 80 Soviet airmen, technicians, and maintenance personnel are now in Ghana.

In October 1960, Guinea purchased an undetermined number of Il-18 aircraft, probably between four and six. In December, two Aeroflot Il-18 transports, which may be on loan under the terms of the aid agreement with the USSR, were placed at the disposal of Air Guinea and have been operated in nonscheduled international services within Africa.

The government of India in November signed a contract with the USSR to purchase eight An-12 transports plus spare parts and ground equipment. The sale price of each aircraft is believed to be about \$2 million. The aircraft were scheduled to be delivered early in 1961. Whereas these aircraft are military transports and are to be assigned to the Indian Air Force, the sale of this type, the first to be sold to any foreign country, crowns with success a persistent effort to sell aircraft and other equipment to India. The suspicion that these aircraft were bought by India with the intent of using them against Communist China on the northern frontier may tarnish this success in time.

In August 1960, India considered buying about eight Mi-4 (Hound) helicopters, also for use in the high-altitude regions along the Himalayan border. One Mi-4 was purchased for use as a demonstrator. The purchase of additional helicopters has been delayed, however, pending further tests, because of the failure of the Mi-4 to meet the performance requirements at high altitudes.

During 1960 the USSR sold four Il-18 transports to Czechoslovakia, three to East Germany, and two to Hungary. Czechoslovakia also purchased one more Tu-104 aircraft from the USSR.

III. European Satellites

A. Domestic Developments

Domestic development of civil aviation in the European Satellites during 1960 was highlighted by the acquisition of high-performance transport aircraft, an intensification of service on existing routes, and the modernization of air facilities. There was virtually no expansion of the domestic air network in any of the Satellites. The domestic route structures of the Satellite civil air carriers are shown on the map, Figure 4.*

Czechoslovakia, East Germany, and Hungary received new high-performance transport aircraft during the year (see Table 4). Deliveries of new Il-18 aircraft from the USSR included four to Czechoslovakia, three to East Germany, and two to Hungary. In addition, Czechoslovakia purchased a fourth Tu-104A from the USSR. Bulgaria, Poland, and Rumania all announced that they would receive Il-18 aircraft early in 1961. For the most part the high-performance aircraft received during 1960 were put in service on international rather than on domestic routes. The other major increases in the inventories of civil aircraft consisted of 18 Il-14 aircraft.

Table 4

European Satellites: Inventory of Civil Aircraft
as of 31 December 1960

Country ^{a/}	Units						
	Li-2	Il-12	Il-14	Tu-104A	Convair	Il-18	Total
Bulgaria	10	0	5	0	0	0	15
Czechoslovakia	4	0	40	4	0	4	52
East Germany	0	0	25	0	0	3	28
Hungary	15	0	10	0	0	2	27
Poland	20	5	20	0	5	0	50
Rumania	15	0	20	0	0	0	35
Total	<u>64</u>	<u>5</u>	<u>120</u>	<u>4</u>	<u>5</u>	<u>9</u>	<u>207</u>

a. Excluding Albania.

* Following p. 16.

The most impressive gain in domestic performance was made by Czechoslovakia, which now accounts for more than 50 percent of the total passenger-kilometer performance of the European Satellite air carriers (see Table 5*). The primacy of Czechoslovakia is apparent when the performance of Czechoslovakia is compared with the performance of Poland, the second ranking carrier in Satellite civil aviation. Since 1956, when Poland and Czechoslovakia were relatively coequal in performance, the passenger-kilometer share of Poland has declined from 29 percent of the total to only 16 percent in 1960.

Domestic air services in Czechoslovakia were intensified considerably during 1960. The current schedule lists 59 round-trip flights weekly between Prague and Bratislava and 46 round-trip flights weekly between Prague and Brno. In most of the other Satellites the frequency of service from the capital to each of the cities served is about six round-trip flights weekly.

The performance gains registered in the other Satellites approximated the gains made in 1959 with the exception of Bulgaria and Rumania, where the rate of increase declined considerably.

Performance figures for air freight traffic show the same dominant position of Czechoslovakia (see Table 6**). The share of Czechoslovakia in the total ton-kilometer performance amounted to 64 percent in 1960, a slight increase above that in 1959.

A fairly extensive program for the modernization of air facilities to accommodate the jet age is underway in the European Satellites. Several international jet terminals have been established; new hangars are being constructed; and new communications equipment, compatible with both Bloc and Western standards, is being installed. Major runway construction is underway at the Sofia/Vrazhdebna and the Stalin/Topoli airfields in Bulgaria, the Bucharest/Baneasa airfield in Rumania, and the Berlin/Schoenefeld airfield in East Germany. Modern electronic and communications aids are being installed at the Warsaw/Okecie airfield in Poland and the Ferihegy/Vecses airfield in Hungary. Finally, a new international jet terminal building is under construction at Prague.

B. International Developments

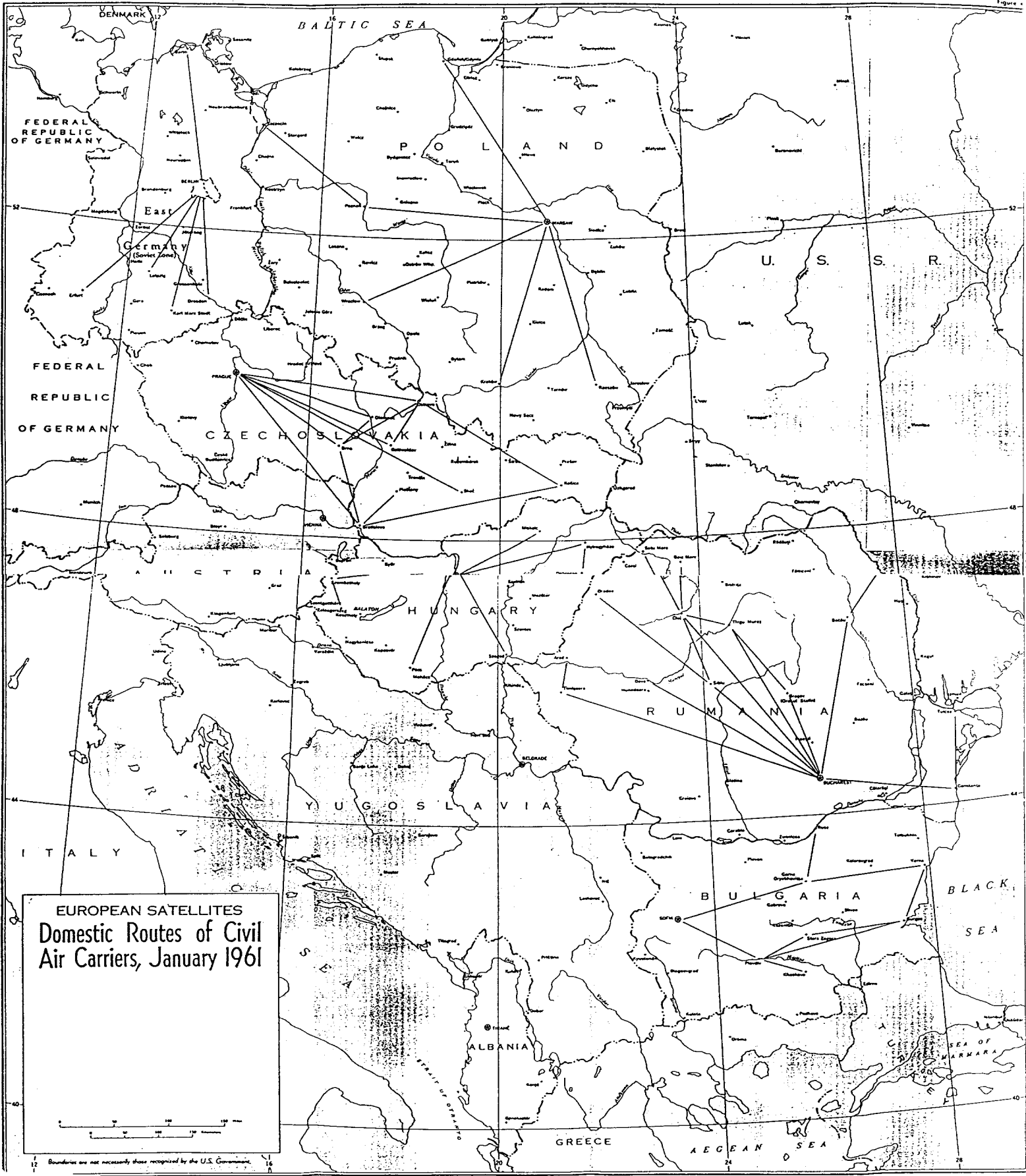
All the expansion of international air routes by the civil air carriers of the Sino-Soviet Bloc during 1960 -- a total of more than 16,000 route-kilometers -- was accounted for by the European Satellites.***

* Table 5 follows on p. 17.

** Table 6 follows on p. 18.

*** Text continued on p. 19.

Figure 1



EUROPEAN SATELLITES
Domestic Routes of Civil
Air Carriers, January 1961

Boundaries are not necessarily those recognized by the U.S. Government.

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Table 5
European Satellites: Passenger Traffic Performance
by Major Civil Air Carriers
1956-60

Country a/	Thousand Passengers Carried					Million Passenger-Kilometers				
	1956	1957	1958	1959	1960	1956	1957	1958	1959	1960
Bulgaria	87	91	112	148	170	28	31	44	64	75
Czechoslovakia	252	294	408	568	755	117	135	193	280	385
Hungary	74	91	114	145	180	19	22	36	44	54
Poland	200	224	132	156	176	89	101	75	94	113
Rumania	135	161	110	120	130	51	65	63	80	94

a. Excluding Albania and East Germany.

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Table 6

European Satellites: Freight Traffic Performance
by Major Civil Air Carriers
1956-60

Country ^{a/}	Thousand Tons Carried					Million Ton-Kilometers				
	1956	1957	1958	1959	1960	1956	1957	1958	1959	1960
Bulgaria	1.60	1.19	1.15	0.94	0.64	0.45	0.39	0.45	0.42	0.26
Czechoslovakia	5.85	8.22	9.21	11.93	15.75	3.57	4.61	6.84	9.00	12.00
Hungary	1.42	0.63	0.78	1.00	1.20	0.36	0.51	0.69	0.90	1.10
Poland	3.33	3.80	2.78	3.10	3.50	1.97	2.50	2.25	2.60	3.10
Rumania	4.40	1.70	2.70	3.00	3.50	2.07	0.87	1.67	2.00	2.40

a. Excluding Albania and East Germany.

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Czechoslovakia was again in the forefront, adding 11,370 route-kilometers to its international network. The Czechoslovak carrier inaugurated two major routes: the first to Conakry, Guinea, by way of Zurich and Rabat, and the second to Rangoon and Djakarta through an expansion of the Prague to Bombay route. In addition, Czechoslovakia added new routes from Prague to Milan and from Prague to Rome (see the map, Figure 5*).

Other new routes added by Satellite civil air carriers in 1960 included an East German route from Berlin to Budapest, Belgrade, and Tirana and a route from Berlin to Prague to Vienna. Hungary added a route from Budapest to Frankfurt-am-Main to Paris. The Polish air carrier added a new route, extending its Warsaw-Vienna service to Rome.

Several new civil aviation agreements were signed during the year, including agreements between Czechoslovakia and the governments of Italy, Burma, India, and Indonesia. Hungary signed bilateral air agreements with Italy, the UK, and France; Poland, with the Netherlands and France; and Rumania, with Greece and Switzerland. Although an unrecognized East Germany was unable to negotiate air agreements with most non-Bloc countries, its international air company, Interflug, continued to negotiate interline agreements with non-Bloc carriers. By the end of 1960, there had been negotiated some 36 of these agreements, many of which included provisions for the chartering of East German aircraft.

The international expansion of the European Satellite air carriers is to continue in 1961. Late in 1960, Czechoslovakia obtained a route to Havana, Cuba, and early in 1961 also extended its Prague-to-Conakry route to the Republic of Mali. The Czechoslovaks also have announced their intention to extend their African services to Brazil.

Poland has announced that it will soon receive three Il-18 aircraft to be used on international routes. The Polish announcement also stated that in 1961 Poland would extend its Warsaw-to-Gdansk service to Stockholm and subsequently to Helsinki. The Poles indicated that during the next few years they intend to open services to nine countries in the Middle East, Africa, and the Far East.

IV. Communist Far East

The few significant developments noted in civil aviation in the Communist Far East during 1960 were confined to Communist China.

* Following p. 20.

The civil aviation networks of the Far Eastern Satellites remained rudimentary, and the carriers performed limited services only (see the map, Figure 6*). The aircraft inventories of these small carriers remained substantially unchanged from 1959 (see Table 7). An announced expansion of the Chinese domestic network is believed to apply to provincial networks.

Table 7

Communist Far East: Inventory of Civil Aircraft
as of 31 December 1960

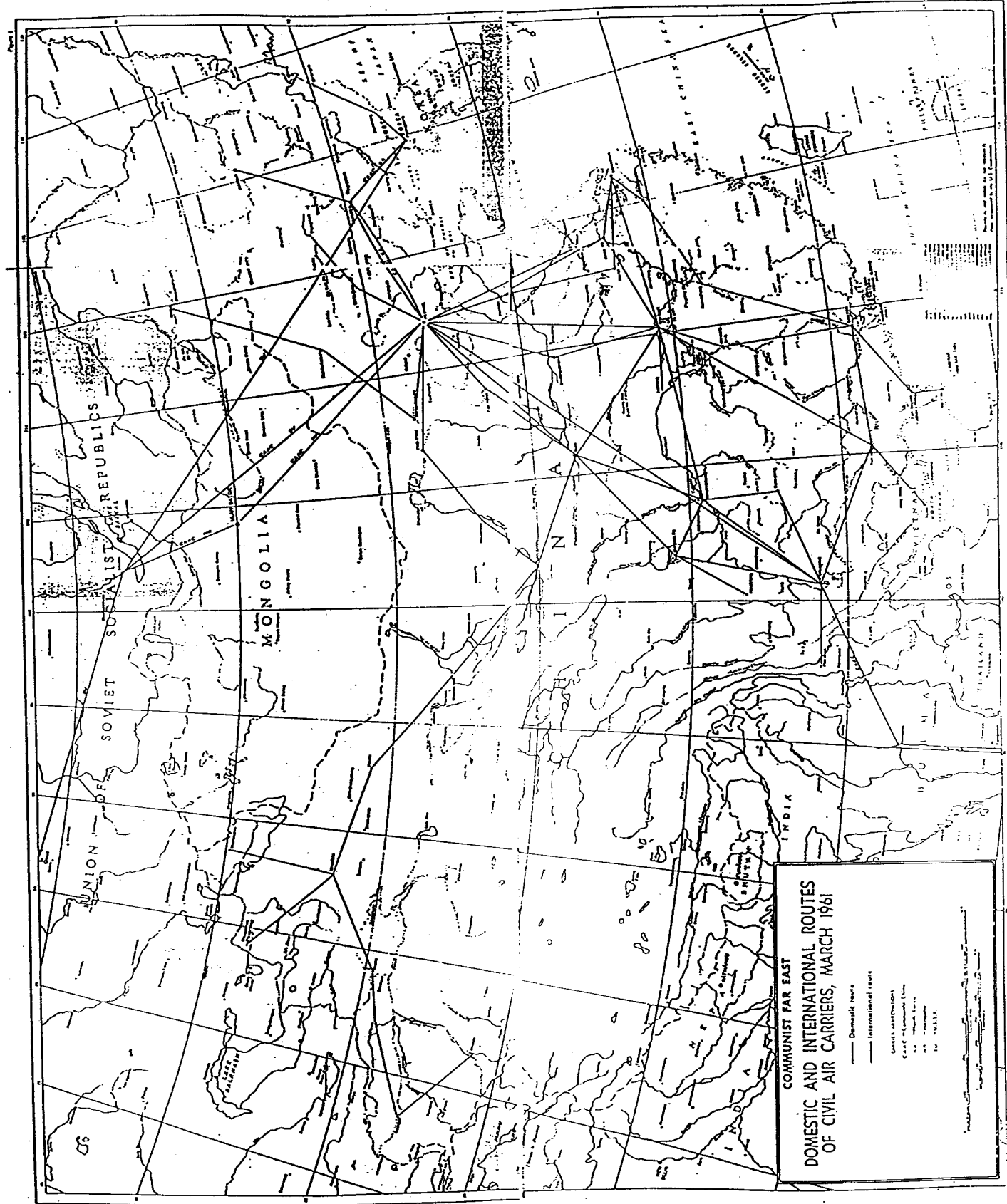
Country	Li-2	Ts-62	Il-12	Il-14	C-47	Il-18	Units Total
Communist China a/	25	5	4	55	0	3	92
North Korea	4	0	0	1	1	0	6
North Vietnam	4	0	0	4	0	0	8
Outer Mongolia	0	0	0	6	0	0	6
Total	<u>33</u>	<u>5</u>	<u>4</u>	<u>66</u>	<u>1</u>	<u>3</u>	<u>112</u>

a. There are varying numbers of small liaison aircraft in the inventories of the countries listed. The types include the Aero-45, the Yak-18 (Max), the Yak-12 (Creek), and the An-2 (Colt). The An-2 accounts for approximately 250 aircraft in Communist China and 10 aircraft in Mongolia. There is a scattering of An-2 and other types of small aircraft in North Vietnam and North Korea.

The Chinese Communists made no effort to expand their international air services during 1960. The air agreement of 1959 with Ceylon has not been implemented, and isolated reports of negotiation for an air agreement with Cambodia cannot be substantiated.

Domestic development of civil aviation in Communist China was retarded by shortages of gasoline and lubricants, which also had an adverse effect on other modes of transport. Beginning in August 1960, there was a drastic curtailment of transport flights throughout the country. At the end of the year, normal service had not been restored. As a consequence, the Chinese failed to achieve gains in performance as

* Following p. 20.



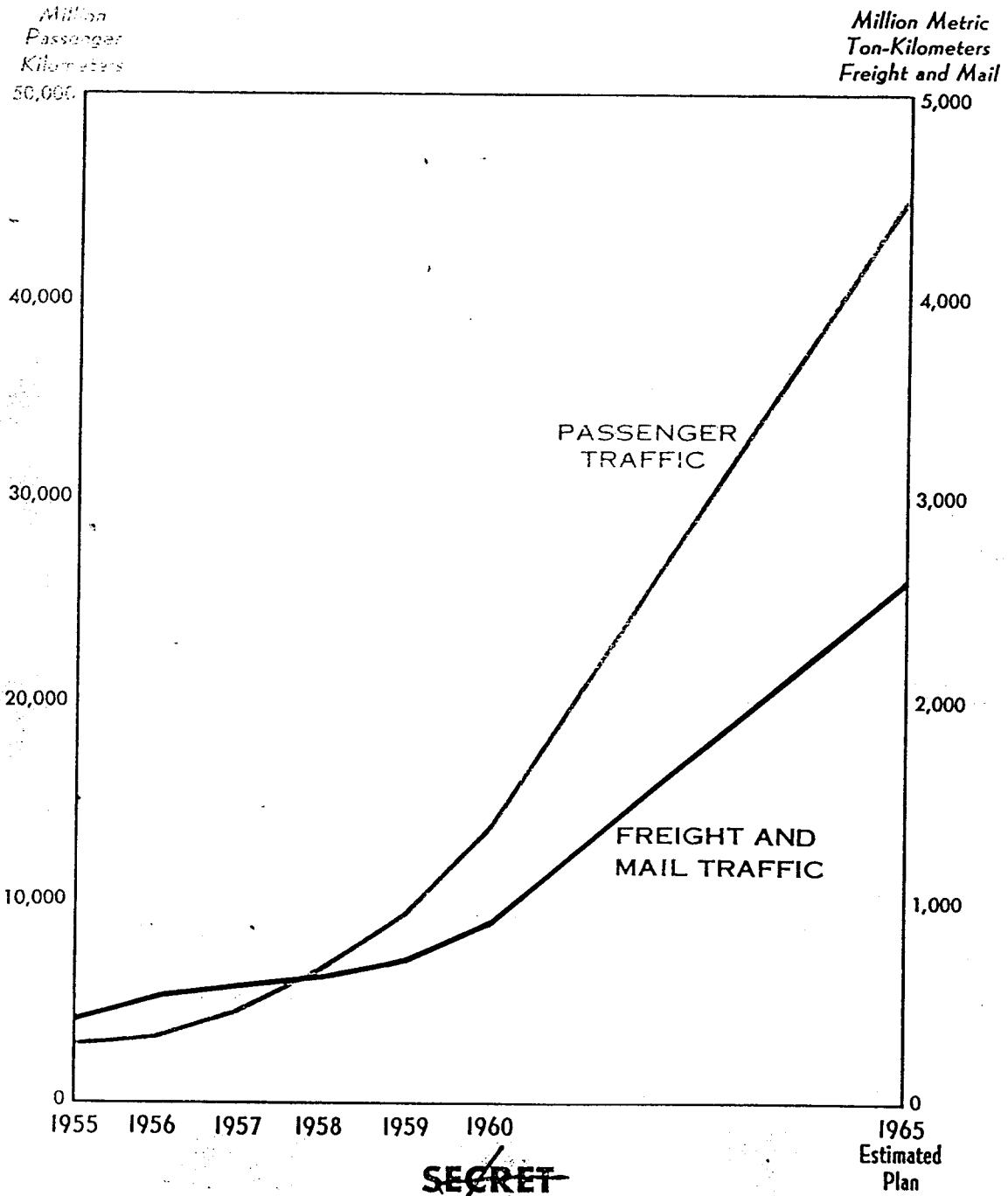
COMMUNIST FAR EAST
DOMESTIC AND INTERNATIONAL ROUTES
OF CIVIL AIR CARRIERS, MARCH 1961

— Domestic route
 — International route
 Solid line
 CAAC - Communist China
 Aeroflot
 DCA
 etc.



USSR

PERFORMANCE OF AEROFLOT 1955-65



large as in the past few years, as shown in Table 8. Another contributing factor to the smaller increase in performance in China was the grounding in August of the three Il-18 aircraft received from the USSR in 1959. These aircraft had been used on the long-haul routes in China, and on their return to service in November they were returned to the Peking-to-Canton route.

Table 8

Communist China and North Korea
Civil Air Passenger Traffic
1956-60

<u>Country</u>	<u>Million Passenger-Kilometers</u>				
	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Communist China	N.A.	79.9	108.9	127.5	140.0
North Korea	4.2	4.5	4.5	5.5	5.5

A fairly minor program for the expansion of air facilities is underway in the Communist Far East. The Chinese Communists are expanding runways at the airfields at Kunming and Wu-wei. A former military airfield at Chengtu is being reconstructed for joint military and civil use. The North Koreans have limited the use of the main airfield at Pyongyang, which is in the city, and have transferred civil air traffic to Sunan field, which will accommodate jet aircraft.