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ECONOMIC INTELLIGENCE REPORT

POST AND TELECOMMUNICATIONS SERVICES
IN COMMUNIST CHINA
1950-57



CIA/RR 135

13 June 1958

CENTRAL INTELLIGENCE AGENCY

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FOREWORD

This report is concerned with those post and telecommunications facilities and services in Communist China which are operated and controlled by the Ministry of Posts and Telecommunications. Other ministries operate functional post and telecommunications systems such as those serving the armed forces, shipping, railroads, and the state police. These independent post and telecommunications systems are not covered in this report. It must be pointed out, however, that, although the facilities and services covered here are confined to those under the jurisdiction of the Ministry of Posts and Telecommunications, their use is not so restricted. The armed forces make abundant use of this system, as do all the ministries.

This report is one of a series on post and telecommunications services of the various countries of the Sino-Soviet Bloc.

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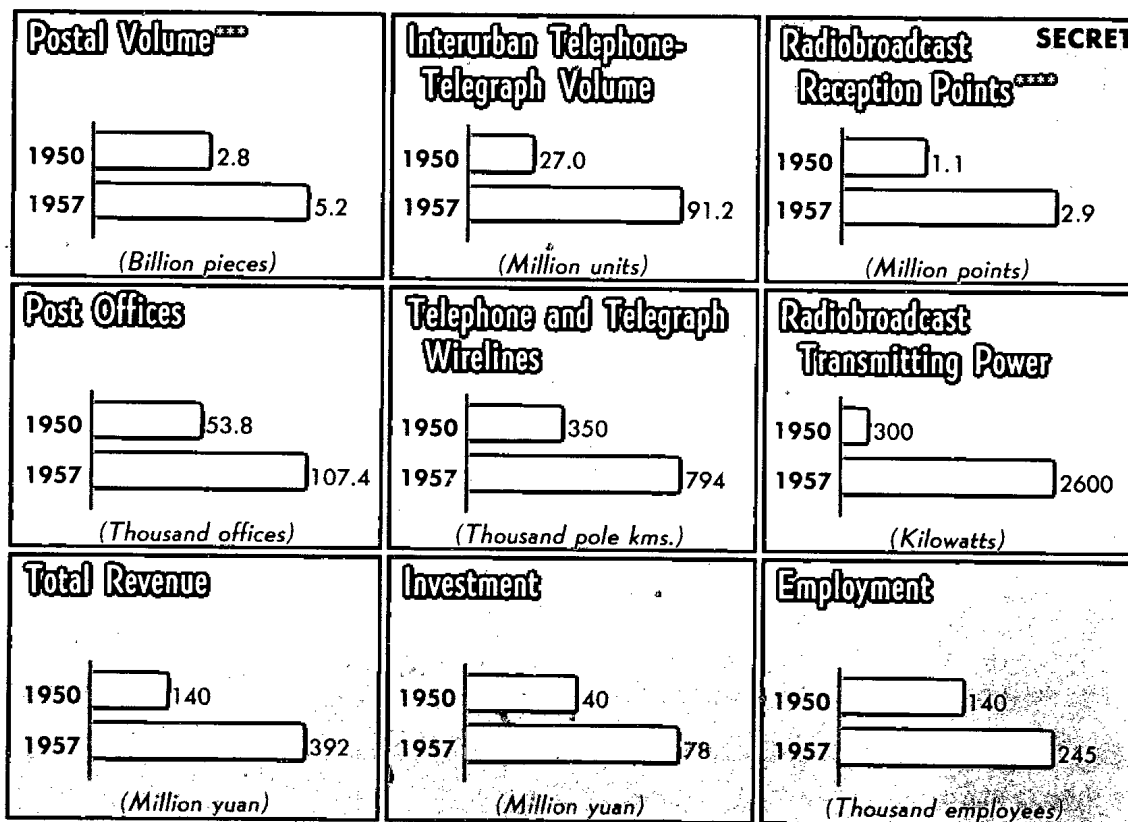
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POST AND TELECOMMUNICATIONS SERVICES IN COMMUNIST CHINA*
1950-57

Summary and Conclusions

Communist China has made significant progress in developing the public** post and telecommunications sector of the economy since late 1949. Although rates of growth varied among components of the sector, substantial absolute growth occurred in all components. A summary of this progress is as follows:



* The estimates and conclusions contained in this report represent the best judgment of ORR as of 15 March 1958.

** The term public in this report refers to the facilities and services under the control of and operated by the Ministry of Posts and Telecommunications. It does not refer to functional systems such as those serving the armed forces, the state police, or the Ministries of Commerce and of Railroads.

*** Letters, packages, and the like.

**** Receivers, loudspeakers, and monitoring points.

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In 1949 the public post and telecommunications sector of the economy was poorly equipped to fulfill the announced goals of the Communist regime. Service was mainly available in Manchuria, the coastal areas, and the major cities of the interior. Facilities were either old and in need of repair or badly damaged by the civil war. Capacity was extremely limited, and service was slow and unreliable.

Development of public post and telecommunications resources, which required a strong effort, was assigned to the Ministry of Posts and Telecommunications at the end of the civil war in 1949. Its tasks included extension of service coverage, expansion and improvement of service, modernization of facilities, and training of desperately needed technicians and skilled workers.

In spite of the indicated progress, which depended on technical and material assistance from the Soviet Bloc, present service capacities are hardly adequate to meet current needs of government activities. Little capacity exists for private use.

It is expected that demand for service from this sector of the economy will continue to grow, probably at an accelerating rate. The growing demand will come not only from the government and the military but also from the private consumers to the extent that their standard of living is raised. Acceleration in the growth of the whole economy will clearly impose a need for acceleration in the growth of the post and telecommunications sector.

Planning by the Ministry of Posts and Telecommunications reflects both an awareness of growing demand for service and an intention to meet it. Plans call for extending the use of underground cable and carrier telephone equipment, establishing a microwave network, expanding the use of automatic and semiautomatic telephone-telegraph exchange facilities in key telecommunications centers, enlarging the capacity of intracity telephone facilities, and increasing the number of point-to-point radio facilities.*

Based on past performance, it is estimated that Communist China has the intention and the capability to effectuate these plans, given continued material and technological support from the USSR and other Bloc countries, thus going a long way toward the provision of an adequate, mature post and telecommunications resource.

* See Appendix A, Glossary of Technical Terms.

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I. Introduction.

The purpose of this report is to present in a consolidated form all economic information available on public post and telecommunications services and facilities in Communist China. The primary emphasis is placed on the presentation of data in tabular, graphic, and map form, with a minimum of textual discussion consistent with clarity of presentation. Data presented are evaluated and interpreted to yield their intelligence significance.

The scope of this report is limited to information on the public post and telecommunications sector of the economy, which is under the operation and control of the Ministry of Posts and Telecommunications. Other ministries operate independent, functional post and telecommunications systems which are not covered here.

Three basic types of post and telecommunications services and facilities are treated in this report: postal, telephone and telegraph, and broadcasting. Wherever possible, each of these is treated separately; otherwise, aggregates for all post and telecommunications services and facilities are presented.

II. Ministry of Posts and Telecommunications.

The public post and telecommunications sector of the economy of Communist China is operated and maintained by the Ministry of Posts and Telecommunications, which provides postal, telephone and telegraph, and broadcasting service. The telecommunications portion of this sector of the economy is used primarily by the government, government enterprises, and the armed forces, with private consumer use restricted primarily to postal service. Measurement of the proportional usage of the post and telecommunications sector by each of these consumers is not possible at this time. For this reason, the data presented in this report are composed of aggregates for the entire sector regardless of use.

A. Organization.

The Ministry of Posts and Telecommunications was established in Communist China in October 1949. Patterned after the general administrative organization of the Central Peoples (Communist) Government, the line of authority passed from Ministry headquarters through

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national, regional,* and provincial bureaus to the lowest organizational unit, the local bureaus. 3/




The national bureaus in Peking, comprising the administrative and operational structure of the Ministry, are organized as follows 6/:

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Secretariat
 Personnel Bureau
 Planning Bureau
 Supply Bureau
 Labor Material Bureau
 International Relations Bureau
 Electrical Commodities Technical Laboratory
 Postal Service Bureau
 Wireless Bureau
 Long-Distance Telegraph Bureau
 City Telephone Bureau
 Radio Engineering Bureau

Regional, provincial, and hsien (county) and shih (municipality) bureaus perform functions similar to those of the national bureaus. 7/ The lower the unit, however, the greater the tendency to combine the functions of several national bureaus into one unit. For example, a hsien or shih bureau might have the following sections 8/:

Financial Planning
 Labor Plans and Provisions
 Postal Service
 Long-Distance Telecommunications
 Radio Telecommunications
 Local Telephone Service

* Regional bureaus were originally located in North China, East China, Central-South China, Northeast China, Southwest China, and Northwest China. 1/  Since 1949 the North China and Central-South China regions have been combined and are now called Middle-South China. 2/

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Within the described organizational framework, post and telecommunications offices are divided into classes on the basis of volume of business handled. 9/ The classification of offices in 1956, by volume of business handled, is shown in the following tabulation 10/:

<u>Class</u>	<u>Annual Revenue (Million Yuan)</u>
Special	6 and above
1st	3 to 6
2d	1.5 to 3
3d	Below 1.5

Table 1* shows a further breakdown of specific types of offices and the average number of employees in each office.

B. Offices.

The Ministry of Posts and Telecommunications in Communist China operates two types of offices: offices that provide telephone and telegraph service and offices that provide postal service. It was announced that in 1955 there were 12,780 offices in Communist China which provided telephone and telegraph service 11/ and that by the end of 1956 this number was to have increased to 21,000. 12/ Original plans called for only 13,700 offices providing telephone and telegraph service by the end of 1957. 13/ The 21,000 offices subsequently planned to be in existence at the end of 1956 therefore represent a considerable increase over the original plans for the expansion of this type of office.

Data are available for the number of telephone and telegraph offices in Anhwei, 14/ Heilungkiang, 15/ Hunan, 16/ Kwangsi, 17/ and Shansi 18/ Provinces in 1956 and for the increases in the number of offices in 1956 above the level of 1955 in Anhwei, 19/ Fukien, 20/ Heilungkiang, 21/ Hopeh, 22/ and Hunan 23/ Provinces and in the Inner Mongolian Autonomous Region. 24/ These data show that there were in 1956 about 38 telephone and telegraph offices for each million people in these areas. If those areas were representative of the entire country, there would have been about 23,000 telephone and telegraph offices throughout Communist China in 1956. Furthermore, the increases in the number of telephone and telegraph offices in those areas in 1956 above the level of 1955 indicate that for the country as a whole there would have been about 14,000 such offices in 1955.

* Table 1 follows on p. 6.

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Table 1

Types of Post and Telecommunications Offices and Associated Personnel
in Communist China a/
1956

Type of Office	Classification	Average Personnel Complement
Post office	1st	31
	2d	25
	3d	18
Municipal telephone office	1st	24
	2d	20
	3d	16
Long-distance telephone office	1st	20
	2d	17
	3d	14
Telegraph office	1st	25
	2d	21
	3d	17
Telecommunications office		21
Post and telecommunications bureaus	1st	25
	2d	19
	3d	14
	4th	8
	5th	4 to 5
	6th	3 to 4
	7th	2 to 3
Municipal branch telephone office		3
Branch offices and agencies	1st	3
	2d	2
	3d	1
	4th	1
	5th	1
	6th	1

a. 25/

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Consequently, the data on those areas tend to validate the announced figures of 12,780 and 21,000 telephone and telegraph offices in Communist China in 1955 and 1956, respectively.

The total number of offices operated by the Ministry of Posts and Telecommunications in Communist China is the sum of its offices providing telephone and telegraph service and its offices providing postal service. Almost all telephone and telegraph offices provide postal service, but the majority of post offices, mainly those in rural areas, do not provide telephone and telegraph service. It would not be acceptable, therefore, to add the number of telephone and telegraph offices to the number of post offices to arrive at the total number of post and telecommunications offices in Communist China. The total number of post offices in the country should represent, however, the minimum total number of post and telecommunications offices in the country. The addition of the number of telephone and telegraph offices to the number of post offices should represent the maximum number of post and telecommunications offices. The following tabulation gives these summations:

<u>Post and Tele-</u> <u>communications Offices</u>	<u>1955</u>	<u>1956</u>
Minimum number	91,800	104,600
Maximum number	97,900	118,900

C. Revenue.

Little information is available on revenue performance of the Ministry of Posts and Telecommunications in Communist China. Considerable price data are available, but it is not possible at this time to refine the estimates of service volumes sufficiently to permit calculation of revenue totals by the application of price data to service volumes. There are, however, some data available on total revenue for the Ministry. These data have been used to derive estimated total revenues for 1950-57, as shown in Table 2.*

D. Investment.

Investment in post and telecommunications in Communist China has shown a steady growth from an amount estimated to have been 40 million yuan in 1950 to 92 million yuan in 1956. There was nevertheless a decline in investment in 1957 to 78 million yuan, a decrease

* Table 2 follows on p. 8.

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Table 2

Estimated Revenue from Post and Telecommunications
in Communist China a/
1950-57

	Million Current Yuan <u>b/</u>							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Total								
revenue	145 <u>c/</u>	189 <u>c/</u>	212 <u>c/</u>	264 <u>c/</u>	288 <u>d/</u>	328 <u>e/</u>	388 <u>f/</u>	392 <u>g/</u>

- a. All data are rounded to three significant digits.
 b. Yuan values reflect the 1955 revaluation.
 c. 26/. Computed by applying the 1954-56 ratio of revenue to total expenditures to the data on expenditures for 1950-53.
 d. 27/
 e. 28/
 f. 29/
 g. 30/

of 15 percent from the 1956 level. Table 3* shows estimated investment during 1950-57.

The cutback in investment in 1957 was in line with the general curtailment of investment throughout the economy. It is believed that this cutback in the post and telecommunications sector of the economy is temporary and that the future growth in the level of investment will be similar to that of 1950-56. This assumption is based on the following factors:

1. The estimates of existing post and telecommunications facilities indicate that present facilities are barely adequate to meet minimum current economic needs. If general economic activity is to expand to any significant degree in the future, expansion of post and telecommunications resources will be inevitable. Although the rate of expansion cannot be predicted, it appears reasonable to assume that the future rate of growth will parallel that of 1950-56.

* Table 3 follows on p. 9.

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Table 3

Estimated Investment in Post and Telecommunications
in Communist China a/
1950-57

	Million Current Yuan <u>b/</u>							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Total investment	40 <u>c/</u>	48 <u>c/</u>	53 <u>c/</u>	62 <u>d/</u>	77 <u>d/</u>	80 <u>d/</u>	92 <u>e/</u>	78 <u>e/</u>

a. All data are rounded to two significant digits.

b. Yuan values reflect the 1955 revaluation.

c. 31/. [redacted] expenditures for 1950-52. Investment was assumed to be 25 percent of total expenditures during this period, based on the relationship in 1955 and 1956. 50X1

d. 32/. Computed by applying the percentages of fulfillment of the First Five Year Plan (1953-57) for 1953-55 to the aggregate planned goals for 1953-57.

e. 33/

2. The public post and telecommunications sector of the economy serves military as well as private consumers. It is expected that the increasing demands by the military for more secure, reliable, high-speed telecommunications services will be reflected in expansions in public telecommunications resources.

3. The achievement of the goals of the Second Five Year Plan (1958-62) for post and telecommunications, including the introduction of microwave radio relay and television, will require a continuing increase in the level of investment.

Allocation of investment in the post and telecommunications sector to specific facilities cannot now be reconstructed, but it is believed that the major portion of past investment went into telephone and telegraph and broadcasting facilities and that only a small portion of past investment went into postal facilities. This apportionment of investment should continue.

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E. Manpower.

There has been a continuing expansion in the size and quality of the labor force for public post and telecommunications in Communist China since 1950.

1. Labor Force.

Information on the number of employees* of the Ministry of Posts and Telecommunications in Communist China is scanty and suffers from two serious limitations: first, announced figures of employment do not indicate whether postal, radiobroadcasting, and wire diffusion personnel in agricultural cooperatives are included; and, second, the time periods involved in announcements are often either conflicting or ambiguous. The estimated number of employees of the Ministry is shown in Table 4.**

A comparison of the estimated number of employees in post and telecommunications service activity with total population and with the geographical expanse of Communist China highlights more than any other single fact the limited scope of this activity in the country. This conclusion is made even more impressive when related to the large number of unskilled and illiterate employees included in the public post and telecommunications labor force.

2. Trade Union.

The China Federation of Posts and Telecommunications Trade Union was formally organized in Communist China on 17 March 1950. The Union had reached a membership of about 123,000 in 1952, and this total had reached 196,364 members by September 1956. The 1956 figure represents about 86 percent of the estimated total number of public post and telecommunications employees in the country. 34/

This Union is primarily an organization for propagandizing and controlling the post and telecommunications labor force and for increasing the efficiency and effectiveness of these employees. The following objectives of the Union were announced at its Third Congress held in Peking in March 1957 35/:

* The term employee in this report is used to designate those people employed by the Ministry of Posts and Telecommunications on a full-time basis.

** Table 4 follows on p. 11.

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Table 4

Estimated Number of Employees in the Ministry of Posts and Telecommunications
in Communist China a/
1950-57

Types of Service	Thousand Employees							
	1950	1951	1952	1953	1954	1955	1956	1957
Postal	54.6 <u>b/</u>	65.4 <u>c/</u>	76.2 <u>c/</u>	87.1 <u>c/</u>	97.9 <u>c/</u>	109 <u>c/</u>	120 <u>d/</u>	130 <u>e/</u>
Telephone and telegraph <u>f/</u>	50.4	50.8	51.3	51.7	52.1	52.5	52.9	53.6
Subtotal	<u>105 g/</u>	<u>116 h/</u>	<u>128 h/</u>	<u>139 h/</u>	<u>150 g/</u>	<u>161 i/</u>	<u>173 i/</u>	<u>184 i/</u>
Radiobroadcasting	34.6 <u>j/</u>	38.4 <u>j/</u>	42.7 <u>k/</u>	45.8 <u>j/</u>	49.5 <u>j/</u>	53.2 <u>j/</u>	56.9 <u>j/</u>	60.7 <u>j/</u>
Total	<u>140</u>	<u>155</u>	<u>170</u>	<u>185</u>	<u>200</u>	<u>214</u>	<u>229</u>	<u>245</u>

a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.

b. 36/

c. Interpolated, using arithmetic progression between 1950 and 1956.

d. 37/

e. Extrapolated, continuing the arithmetic progression used between 1950 and 1956.

f. Derived by subtracting the number of postal employees from the total post and telecommunications labor force excluding radiobroadcasting employees.

g. 38/

h. Interpolated, using arithmetic progression between 1950 and 1954.

i. Extrapolated, continuing the arithmetic progression used between 1950 and 1954.

j. Derived by applying the 1952 percentage of radiobroadcasting personnel (33 percent) to the subtotal above.

k. 39/

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- a. "To thoroughly implement the Party policy for production increase and economy, and to penetratively develop socialist emulation and advanced worker's drive."
- b. "To strengthen political and ideological work, and continuously to raise the level of the worker's awakening and organizational power."
- c. "To enhance supervision by the broad masses of people and to strengthen democratic management within the enterprises."
- d. "To properly and regularly improve working conditions as well as the worker's material wellbeing and cultural life."

The Union also participates in international negotiations relating to post and telecommunications employees. It has established relationships with other post and telecommunications trade unions in 28 countries. 40/

3. Wages.

The average annual wage paid to public post and telecommunications employees in Communist China is higher than that paid to other employees in the country. This differential existed at the start of the First Five Year Plan (1953-57) and still prevailed in August 1956. 41/ Table 5* shows the estimated average annual wage and the total wage bill for full-time employees of the Ministry.

Considerable variation exists in wages paid to post and telecommunications employees. There are five different regional levels of wages, and within each region, wages vary according to the size of the enterprise and the type of work performed. For the nation as a whole, there are 270 different wage rates for post and telecommunications employees. 42/

To overcome some of the existing inequalities induced by variations in wages, the following principles for wage reform were adopted by the Ministry of Posts and Telecommunications in 1956 43/:

* Table 5 follows on p. 13.

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Table 5

Estimated Average Annual Wage and Total Annual Wage Bill for Employees
of the Ministry of Posts and Telecommunications
in Communist China a/
1950-57

	1955 Yuan							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Average annual wage (units)	661 <u>b/</u>	702 <u>b/</u>	743 <u>b/</u>	784 <u>b/</u>	823 <u>b/</u>	874 <u>c/</u>	977 <u>c/</u>	1,030 <u>d/</u>
Total annual wage bill <u>e/</u> (million units)	92	109	126	145	164	187	224	252

a. All data are rounded to three significant digits.

b. 44/. [] percentage figures for 1950 and 1954 showing an average rate of growth of 6.2 percent per year. Assuming the rate of growth in 1955 to be the same, the figures for 1951-54 are interpolated, using arithmetic progression between 1950 and 1955.

c. 45/

d. Extrapolated, continuing the arithmetic progression of 50 yuan per year used between 1950 and 1956.

e. Derived by multiplying the average annual wage by the total labor force.

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- a. Establishment of technical standards for job classification.
- b. A more equitable adjustment of wage scales so as to "eliminate ridiculous differences," taking into account the age and experience of employees.
- c. Appropriation of wage funds in accordance with the following principles:
 - (1) The ratio of the prevailing wage level to fund allocated for wage increases.
 - (2) Adjustment for high and low wage areas.
 - (3) Provision of subsidies for special or remote areas.
 - (4) Adjustment of wages to technical levels of operation.

The Ministry of Posts and Telecommunications is participating in the general wage reform movement espoused by the State Council in Communist China. It is believed that the aforementioned principles are intended to overcome inequalities of wage rates between areas and types of work for post and telecommunications employees.

4. Training.

The Ministry of Posts and Telecommunications in Communist China has an energetic training program which is conducted in universities and special post and telecommunications schools. In-service and on-the-job programs have also been instituted. In addition, radio-broadcasting facilities in Peking are being used to provide technical training lectures to more than 3,500 post and telecommunications employees. 46/

Three universities offer courses on post and telecommunications subjects. These are Tsinghua University in Peking, the South China English Institute in Canton, and Tientsin University in Tientsin. 47/ In addition to these universities, there are nine major post and telecommunications schools. They are located at Wu-han, Mukden, Nanking, Shanghai, Peking, Sian, Chungking, Ch'ang-ch'un, and Shih-men and are shown on the map, Figure 1.* 48/ These schools had a total enrollment estimated to have been about 5,000 students in 1956, 49/ of which about 1,500 were graduated during the year. 50/ Neither the number of students enrolled in 1955 nor the planned enrollment for 1957 is known. Nevertheless, there are indications that the 1956 enrollment exceeded that of 1955 and that the 1957 enrollment exceeded that of 1956. 51/

* Following p. 14.

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Formal, full-time training is being supplemented by in-service training at 20 provincial post and telecommunications schools. 52/ The following accomplishments reveal the extent of the in-service training program: By 1956, about 1,100 section chiefs or employees of higher rank had received in-service training. 53/ During 1950-55, about 5,000 employees were given elementary training, and 10,000 radio monitoring point operators were trained. 54/ By 1954, about 13,795 illiterate employees were taught to read, and in 1954, about 10,290 more were receiving such training. 55/ By the end of 1955, more than 40,000 cadre members had received some in-service training. 56/ In spite of this large training effort, however, technically qualified public post and telecommunications employees are in short supply. 57/ For this reason, it appears that many years will elapse before the demand for technical personnel can be satisfied.

5. Labor Productivity.

The productivity of the public post and telecommunications labor force in Communist China, measured in terms of average annual revenue per worker, is estimated to have increased 54 percent during 1950-57. Table 6 shows the estimated average annual revenue per employee of the Ministry of Posts and Telecommunications during 1950-57.

Table 6

Estimated Average Annual Revenue Per Employee
of the Ministry of Posts and Telecommunications
in Communist China a/
1950-57.

	Current Yuan							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Average annual revenue	1,036	1,219	1,247	1,427	1,440	1,533	1,694	1,600

a. Figures were derived by dividing total revenue, shown in Table 2 (p. 8, above), by total labor force, shown in Table 4 (p. 11, above).

The growth in the productivity of the post and telecommunications labor force has been accompanied by a growth in average annual wages per employee of 56 percent during 1950-57, as shown in Table 5.*

* P. 13, above.

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It appears from a comparison of productivity increases and wage increases that a fairly stable portion of productivity gains has been paid out in the form of wage increases. This trend is expected to continue.

F. Efficiency.

Constant effort has been made by the Ministry of Posts and Telecommunications of Communist China since its establishment in 1949 to increase the level of efficiency of the public post and telecommunications sector of the economy. By the end of 1956, 90 percent of all bureaus had joined an interbureau "emulation campaign" to improve service and output. 58/ Efforts to increase efficiency were to take the following forms:

1. Attempts to maintain a more stable labor force in each office. 59/
2. Attempts to establish standardized regulations to govern telecommunications work and to institute technical control standards. 60/
3. Education of private consumers so that inefficient practices, such as dialing wrong telephone numbers, could be reduced. 61/
4. Institution of more efficient methods of maintenance and repair to facilities to eliminate service stoppages. 62/
5. Increased effort to train personnel. 63/

Although some gains have been made in raising the level of efficiency since the "emulation campaign" was instituted, there is still ample room for further efficiency gains in the future.

III. Postal System.

The postal system in Communist China is an essential part of the communications structure, for there are serious limitations to the availability of telecommunications services in that country. In 1954, approximately 165,000 out of the 220,000 hsiangs (townships) had postal service. 64/ Postal service had increased to cover 170,500 hsiangs in 1955. 65/ Although the number of hsiangs was reduced to 120,000 in August 1956, so that only 96,000 hsiangs had postal service, 66/ the coverage had increased from 77.5 percent in 1955 to 80 percent in 1956. By the end of 1957, postal service is expected to be available in 117,600 hsiangs, or 98 percent of all hsiangs in the country. 67/ Table 7* shows the length of postal routes in Communist China.

* Table 7 follows on p. 17.

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Table 7

Estimated Total Length of Postal Routes in Communist China a/
1950-57

Type	Thousand Kilometers							
	1950	1951	1952	1953	1954	1955	1956	1957
Courier	715	943 <u>b/</u>	1,170	1,370	1,430	1,500 <u>c/</u>	1,670 <u>c/</u>	1,860 <u>d/</u>
Water	77.5	78.2 <u>b/</u>	79.0	83.0	87.0	91.3 <u>c/</u>	102 <u>c/</u>	106 <u>d/</u>
Railroad	23.0	23.1	24.2	24.8	25.6	26.6	29.4 <u>e/</u>	30.6 <u>d/</u>
Motor	47.5	50.1 <u>b/</u>	52.7	61.6	64.7	68.2	76.6 <u>c/</u>	82.8 <u>d/</u>
Air	8.3	10.5 <u>d/</u>	12.7	15.0	16.2	16.9 <u>f/</u>	17.7 <u>f/</u>	19.6 <u>g/</u>
Total	<u>871</u>	<u>1,110</u> <u>b/</u>	<u>1,340</u>	<u>1,560</u>	<u>1,630</u>	<u>1,700</u>	<u>1,900</u> <u>g/</u>	<u>2,100</u> <u>h/</u>

a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.

Substantiating evidence is as follows:

50X1
50X1

1950: 899,431 km 69/
 1952: 1,349,000 km 70/
 1953: 1,558,000 km 71/
 1,557,675 km 72/
 1954: 1,628,000 km 73/

total postal routes in 1954 were 104 percent of the 1953 figure. 50X1
 This percentage applied to the 1953 figure from source 75/ gives a 1954 total of 1,622,400 km.
 total postal routes in 1954 were 105 percent of the 1953 figure. 50X1
 This percentage applied to the 1953 figure gives a 1954 total of 1,639,560 km. 50X1

1955: 1,727,000 km 78/
 1,797,000 km 79/
 1,707,727 km 80/

the 1955 increase in total routes was 80,000 km. This figure applied to the 1954 total gives a 1955 total of 1,707,000 km. 50X1

b. Interpolated, using arithmetic progression between 1950 and 1952.

c. Estimates for courier routes in 1955-56 are based on the change in the ratio between courier and total postal routes in 1953 and 1954.

d. Extrapolated, continuing the arithmetic progression used between 1950 and 1956.

e. Assuming that the railroads' percentage of total routes in 1956 decreased from that in 1955 by the same amount that the railroads' percentage in 1955 decreased from that in 1954.

f. Assuming that the air routes' percentage of total routes in 1956 decreased from that in 1955 and their percentage of total routes in 1955 decreased from that in 1954 by the same amount that their percentage in 1954 decreased from that in 1953.

g. 82/

h. Summation of extrapolations of individual types of routes.

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To assist in the delivery of the expanding volume of mail, the Ministry of Posts and Telecommunications organized a large number of "volunteer" postmen in the agricultural cooperatives of the country. In May 1956 there were 50,000 such postmen, and by the end of 1956 this number was to have increased to 120,000. 83/ The volume of mail handled is shown in Table 8* and the number of post offices is shown in Table 9.**

The postal system in Communist China has made progress in increasing efficiency since 1950. Much of this progress is attributable to other sectors of the economy, particularly the transportation system. For example, in the early 1950's a letter required 60 days to reach Tibet from Peking, but by 1956 the time had been reduced to only 20 days. 84/ Mail from Peking to Shanghai required 7 or 8 days in the early 1950's, but by 1954 the time had been reduced to 3 or 4 days. 85/ Mail from Shanghai to Urumchi required 22 days in 1950 but only 13 days in 1954; to Foochow, 6 days in 1950 but only 3 days in 1954; to K'un-ming, 30 days in 1950 but only 8 days in 1954; and to Chungking, 15 days in 1950 but only 7 days in 1954. 86/ Thus as transportation facilities have improved, the postal system has become more efficient in the delivery of mail.

The movement of mail over the railroad system was facilitated in 1956 when 27 new railroad mail cars were put into operation. These cars carry mail on the Peking-Shanghai, Peking-Harbin, Peking-Hankow, Peking - Lan-chou, and Wu-ch'ang - Canton lines. 87/

Substantial room for improvement in postal service still remains. The following tabulation gives some indication of the inefficiencies and wastes prevalent in the postal service during January-April 1957 88/:

<u>Type of Error in Service</u>	<u>Number of Occurrences Per Month</u>	
	<u>Minimum</u>	<u>Maximum</u>
Mail bags wrongly dispatched	249	447
Pieces of mail wrongly dispatched	22,150	26,101
Failures to get mail on scheduled transport facilities	596	1,028
Mailbags carried beyond destination	151	311

* Table 8 follows on p. 19.

** Table 9 follows on p. 20.

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Table 8

Estimated Volume of Mail, by Type, in Communist China a/
1950-57

Type of Mail	Million Units							
	1950	1951	1952	1953	1954	1955	1956	1957
Letters	608 <u>b/</u>	562 <u>c/</u>	516 <u>d/</u>	613 <u>e/</u>	710 <u>e/</u>	806 <u>e/</u>	903 <u>e/</u>	1,000 <u>d/</u>
Parcels	3.8 <u>b/</u>	8.6 <u>c/</u>	13.3 <u>d/</u>	14.7 <u>e/</u>	16.0 <u>e/</u>	17.3 <u>e/</u>	18.7 <u>e/</u>	20.0 <u>d/</u>
Newspapers	1,420 <u>f/</u>	1,510 <u>c/</u>	1,610 <u>g/</u>	1,800 <u>h/</u>	1,900 <u>h/</u>	2,100 <u>i/</u>	2,300 <u>i/</u>	2,500 <u>g/</u>
Periodicals	128 <u>j/</u>	166 <u>j/</u>	204 <u>g/</u>	242 <u>e/</u>	280 <u>e/</u>	318 <u>e/</u>	356 <u>e/</u>	394 <u>g/</u>
Books	615 <u>j/</u>	701 <u>j/</u>	786 <u>g/</u>	871 <u>e/</u>	956 <u>e/</u>	1,040 <u>e/</u>	1,130 <u>e/</u>	1,210 <u>g/</u>
Money orders	14.2 <u>d/</u>	22.5 <u>c/</u>	30.8 <u>d/</u>	58.7 <u>d/</u>	59.6 <u>k/</u>	60.6 <u>k/</u>	61.5 <u>k/</u>	62.5 <u>d/</u>
Total <u>l/</u>	<u>2,788</u>	<u>2,974</u>	<u>3,159</u>	<u>3,599</u>	<u>3,922</u>	<u>4,344</u>	<u>4,766</u>	<u>5,185</u>

a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.

b. 89/

c. Interpolated, using arithmetic progression between 1950 and 1952.

d. 90/

e. Interpolated, using arithmetic progression between 1952 and 1957.

f. 91/

g. 92/

h. 93/

i. Interpolated, using arithmetic progression between 1954 and 1957.

j. Extrapolated, continuing the arithmetic progression used between 1952 and 1957.

k. Interpolated, using arithmetic progression between 1953 and 1957.

l. Sum of individual types of mail.

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Table 9
Estimated Number of Post Offices in Communist China a/
1950-57

Type of Post Office	Thousand Units							
	1950	1951	1952	1953	1954	1955	1956	1957
Rural	50.1 <u>b/</u>	57.1 <u>c/</u>	66.1 <u>d/</u>	71.3 <u>e/</u>	76.5 <u>e/</u>	81.7 <u>f/</u>	86.8 <u>g/</u>	93.8 <u>h/</u>
Major (urban)	3.66 <u>d/</u>	4.25 <u>i/</u>	4.83 <u>d/</u>	5.42 <u>j/</u>	7.14 <u>k/</u>	9.14 <u>l/</u>	11.1 <u>m/</u>	13.6 <u>h/</u>
Total <u>n/</u>	<u>53.8</u>	<u>61.4</u>	<u>70.9</u>	<u>76.5</u>	<u>83.6</u>	<u>90.8</u>	<u>97.9</u>	<u>107.4</u>

- a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.
- b. 94/
- c. 95/
- d. 96/
- e. Interpolated, using arithmetic progression between 1952 and 1955.
- f. 97/
- g. Extrapolated, continuing the arithmetic progression used between 1953 and 1955.
- h. Extrapolated, based on graphic analysis.
- i. Interpolated, using arithmetic progression between 1950 and 1952.
- j. Extrapolated, continuing the arithmetic progression used between 1950 and 1952.
- k. 98/
- l. 99/
- m. Extrapolated, continuing the arithmetic progression used between 1954 and 1955.
- n. Sum of rural and major (urban) post offices.

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Postal authorities are aware of the many deficiencies that still exist in postal service, and continued efforts to improve efficiency can be expected.

IV. Telephone and Telegraph System.

The public telephone and telegraph system in Communist China is composed of wirelines and point-to-point radio facilities. The majority of the domestic telephone and telegraph traffic passes over the wireline network. The point-to-point radio network is used for telecommunications to remote areas, as a backup for the domestic wireline network, and as the principal means for handling international telephone and telegraph telecommunications. Although each of these media is discussed separately, they comprise an integrated telecommunications system in China.

A. Wireline.

The wireline network in Communist China is limited in extent and capacity. About 718,000 pole-kilometers (km) of wireline existed in the country at the end of 1956. This total includes both urban telephone and interurban telephone and telegraph lines. Of this total, only about 65,000 pole-km can be considered to be major interurban trunklines. The remainder are local lines, both urban and rural. The length of the wireline network is shown in Table 10.*

The major portion of the interurban wireline network, about 86 percent, carries a single channel. 100/ Out of the 468,000 pole-km of interurban wireline at the end of 1956, only about 65,000 pole-km of multichannel circuits were in use. Approximately 25,000 pole-km of these multichannel circuits have been identified. In a majority of cases, 3-channel telephone terminal equipment is probably used. The highest capacity equipment known to be in operation provides 12 telephone channels. 101/

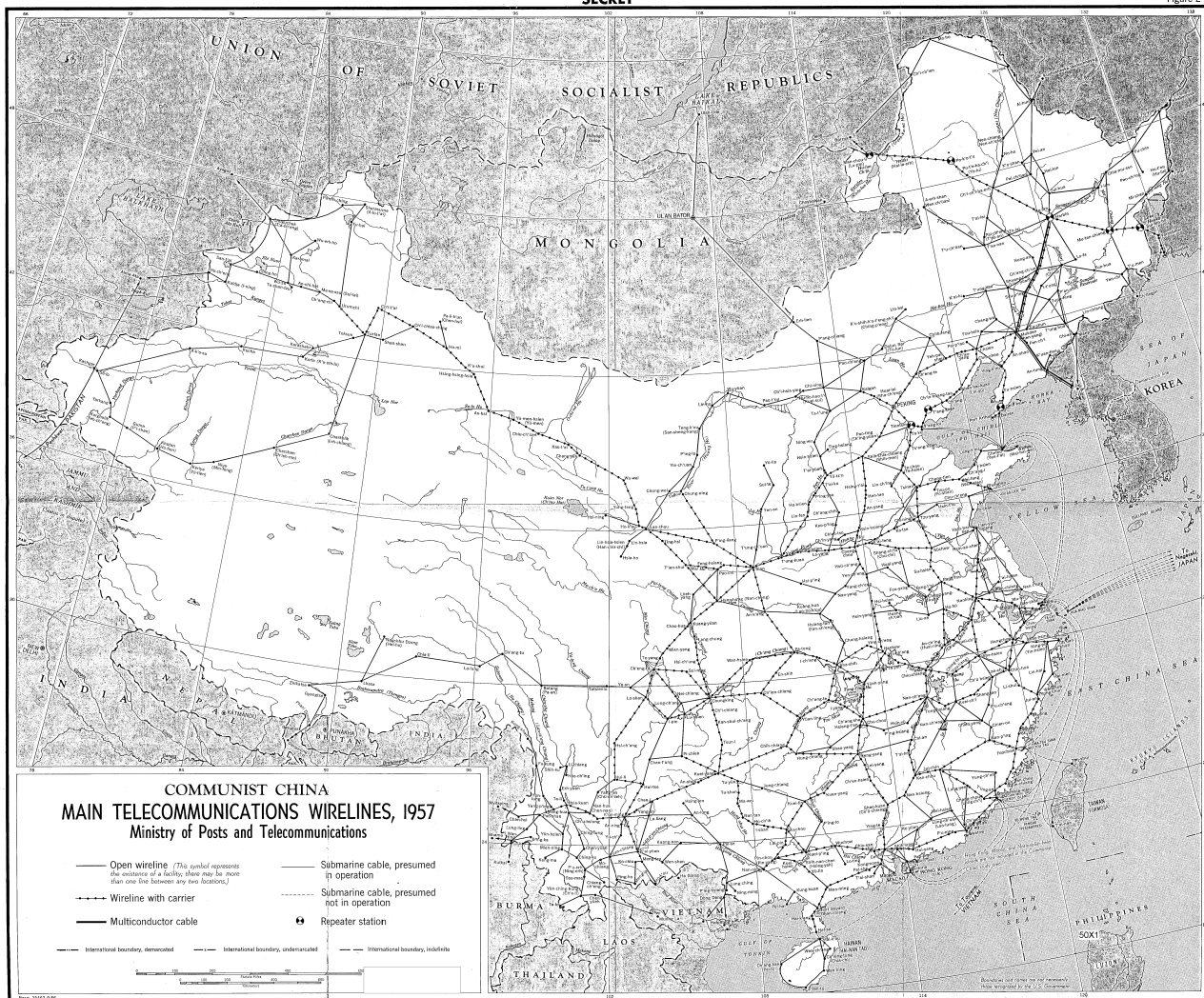
Most of the wireline network in Communist China (shown on the map, Figure 2**) is concentrated in the eastern part of the country, primarily along the coast and in Manchuria. There are only two major east-west wireline routes crossing the country, one to Urumchi and the other to Lhasa. The Provinces of Tibet, Sinkiang, Tsinghai, Inner Mongolia, Kansu, and Szechwan are very thinly covered. Between the coast and a north-south line connecting Lan-chou, Chung-tu, and K'un-ming, however, the density of the wireline network increases rapidly.

* Table 10 follows on p. 22.

** Following p. 22.

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Figure 2



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Coaxial cable is not known to be in use in Communist China for public telephone and telegraph service. Although some multiconductor cable is reported to be in use in China, the extent of usage is believed to be limited.

B. Point-to-Point Radio.

The limited wireline network of Communist China necessitates the use of point-to-point radio networks for the transmission of some domestic and international telephone and telegraph traffic. The majority of circuits in these networks utilize high-frequency (HF) transmissions.* These point-to-point radio networks are comprised of circuits using different modes of transmission, including manual and automatic Morse, facsimile, teletype, and voice telephony.

The domestic point-to-point radio network, as shown on the map, Figure 3,** is composed mainly of manual and automatic Morse circuits. These Morse circuits have a low traffic-handling capacity. They do provide, however, an important margin of traffic-handling capacity in excess of that which the wireline network affords. When communications over the wireline network are disrupted, point-to-point radio circuits provide the only telecommunications service available. In isolated areas, such circuits are often the only means of rapid communication.

The international point-to-point radio network of Communist China, as shown on the maps, Figures 4, 5, and 6,** utilizes manual and automatic Morse and teletype transmissions about equally, while the use of voice telephony is limited. In all, China has international point-to-point radio circuits with 47 cities in 34 foreign countries. Peking and Shanghai are the major international telecommunications centers of the country. Peking uses automatic and manual Morse circuits with 23 cities in 21 countries, and Shanghai has automatic and manual Morse circuits with 43 cities in 34 countries. Peking and Shanghai together operate teletype circuits with 28 cities in 18 foreign countries. Only one international voice circuit is known to be in operation, connecting Peking with Oakland, California.

C. Microwave.

Demand is growing in Communist China for high-capacity telecommunications facilities. The civil government and the armed forces are placing heavy demands on the present telephone and telegraph

* The known exceptions to this are three medium-frequency (MF) circuits operating from Shanghai, Shasi, and Chungking. These cities are the control stations of these circuits, and the outstations are not identifiable.

** Following p. 24.

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system of the country, and their demands will continue to increase. The continued expansion of economic activity is creating demands for more and more telephone and telegraph traffic-handling capacity. In addition, plans for the eventual relaying of television throughout the country will necessitate the provision of a high-capacity telecommunications network. The present wireline and point-to-point radio networks do not provide sufficient capacity to meet these increasing demands. For this reason, it seems clear that China will need to introduce some type of high-capacity telecommunications facilities if these increasing service demands are to be met.

There are two alternative types of intercity telecommunications facilities capable of providing sufficient capacity to meet these increasing demands -- coaxial cable and microwave radio relay. Microwave radio relay has an economic advantage over coaxial cable. The initial cost of a microwave network may exceed that of coaxial cable, but the maintenance and repair costs over time are sufficiently lower to offset any initial differences in cost. In most of the advanced countries of the world, microwave radio relay networks have been in use since shortly after World War II, and these networks are continually being expanded.

Communist China, aware of the advantages of microwave radio relay for some time, has been receiving such equipment, of a rather low-capacity type, from East Germany since 1954. 111/ This equipment, however, has been used exclusively by the armed forces and has not been employed in the public telephone and telegraph system. 112/

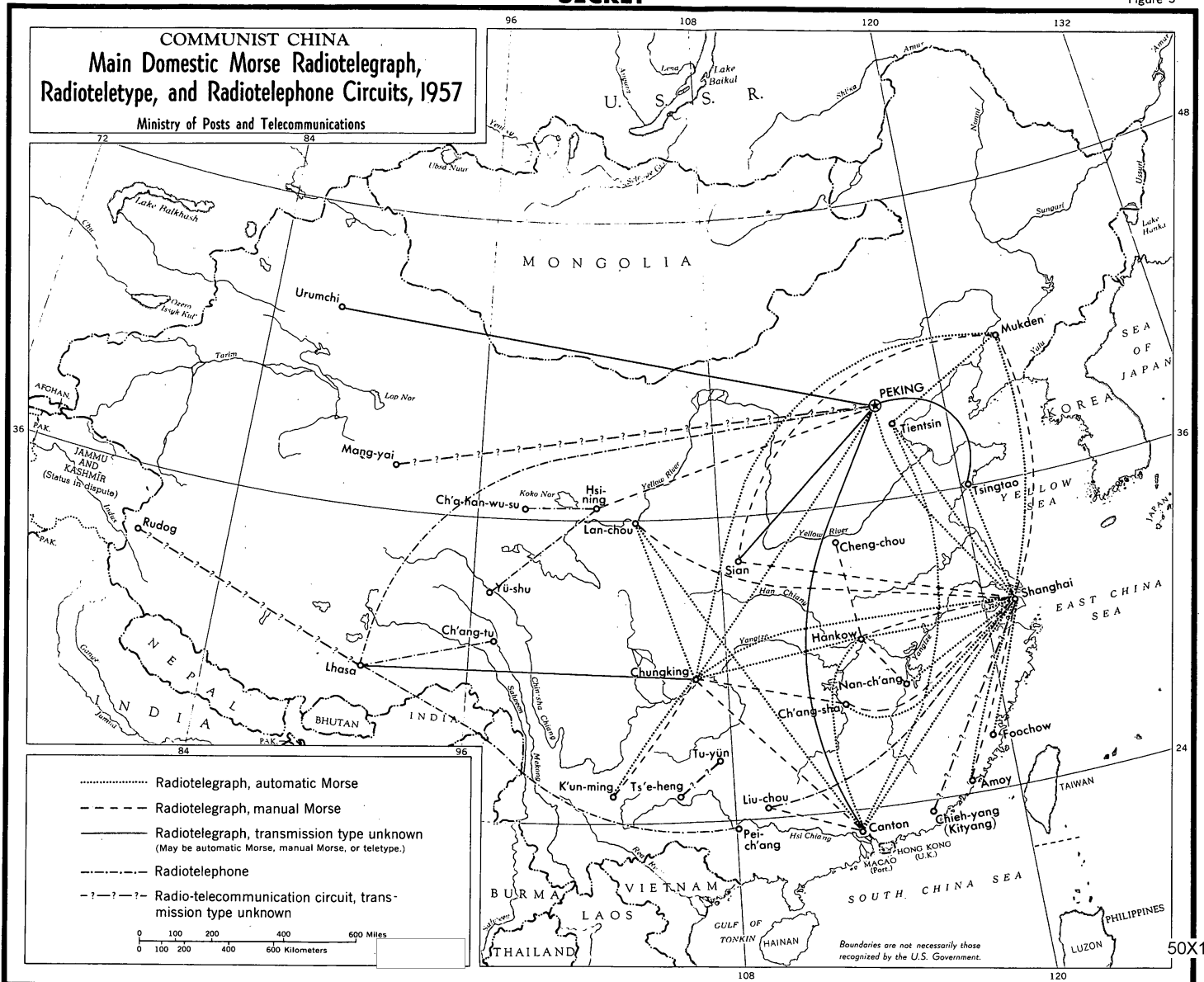
Plans now call for the establishment of the first public microwave radio relay circuit. This circuit is being set up between Peking and Sian, Shensi Province. 113/ Its route was originally surveyed by East German technicians in 1956, 114/ and construction was to have started in May 1957. 115/ The circuit is planned to be in operation by the beginning of 1960. 116/ It involves 26 intermediate relay stations and is about 1,200 km in length. There will be 1 drop-off station to serve Cheng-chou, Honan Province, and 1 relay station beyond Sian. The circuit will have an initial capacity of 60 telephone channels* and, of these, 48 will be used for telephone conversation and 12 for the relaying of radiobroadcast programs. The capacity of the circuit is to be increased later so that television programs can also be carried. The Chinese will construct the buildings and steel antennas and supply the power-generating equipment. East Germany will furnish the electrical equipment and will provide technical assistance. 117/ The total cost of the project is reported to be 22,427,523 Deutsche Mark East (DME) (US \$10,093,000).**

* It is probable that a number of these telephone channels will be adapted for teletype service.

** Converted at the international exchange rate of 2.22 DME to US \$1.

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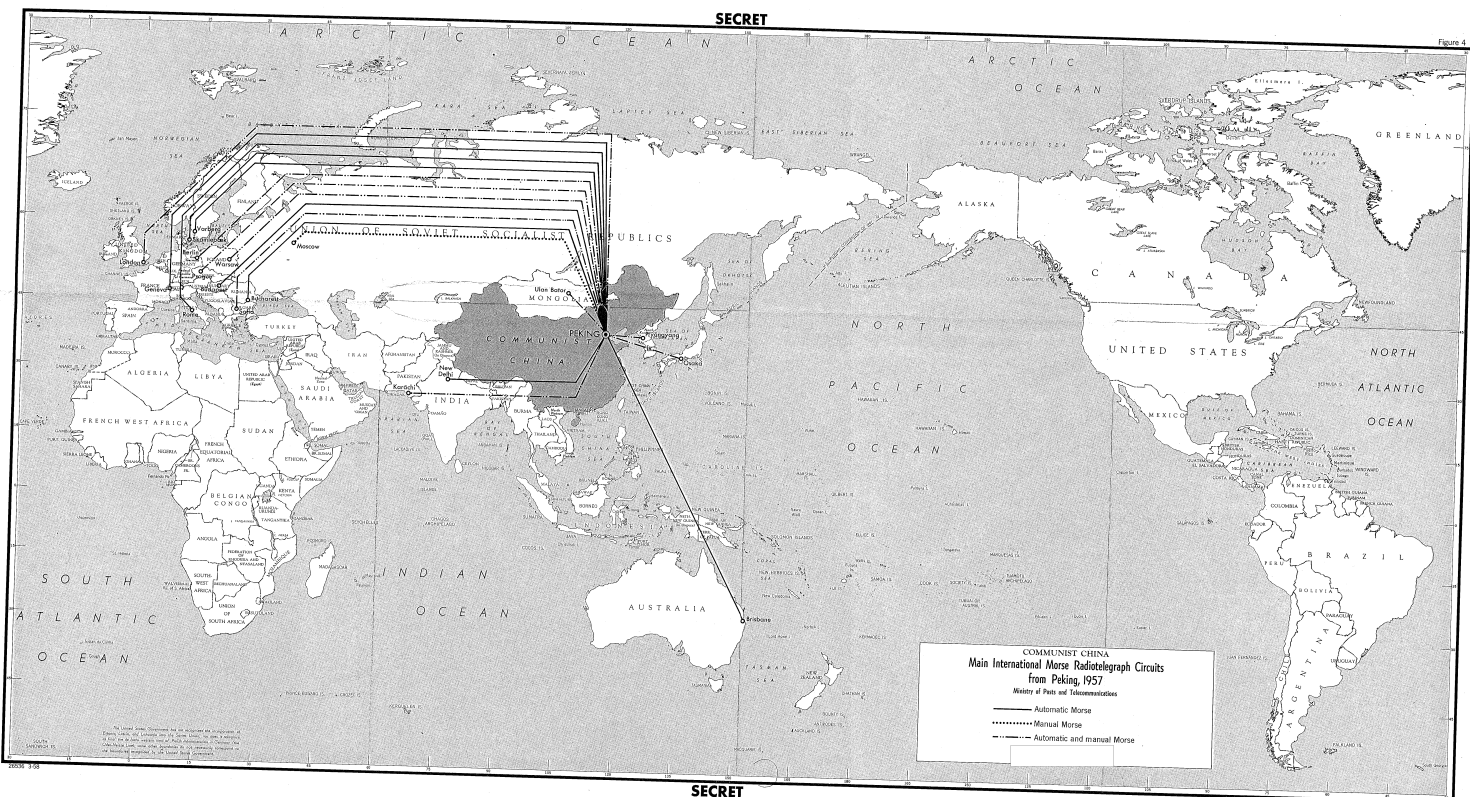
Figure 3



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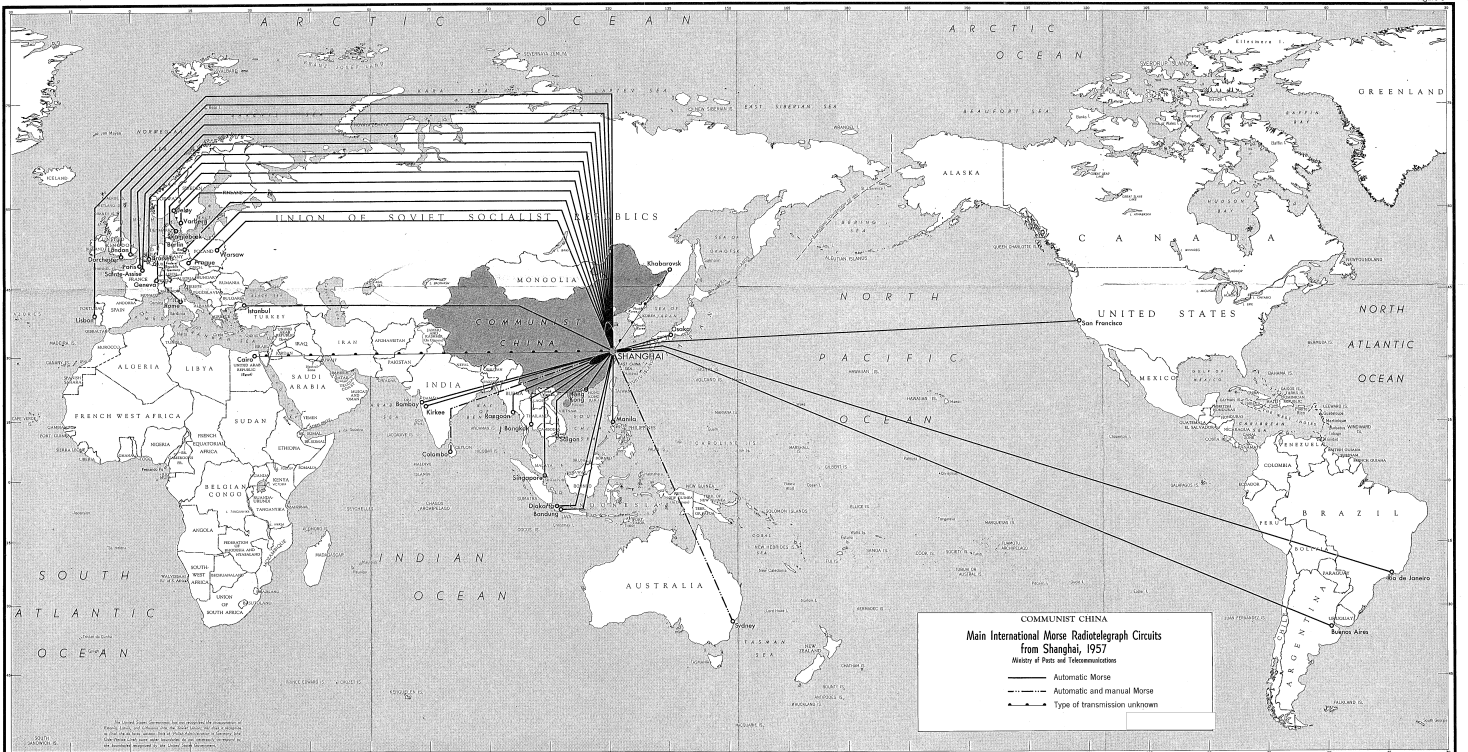
Figure 4



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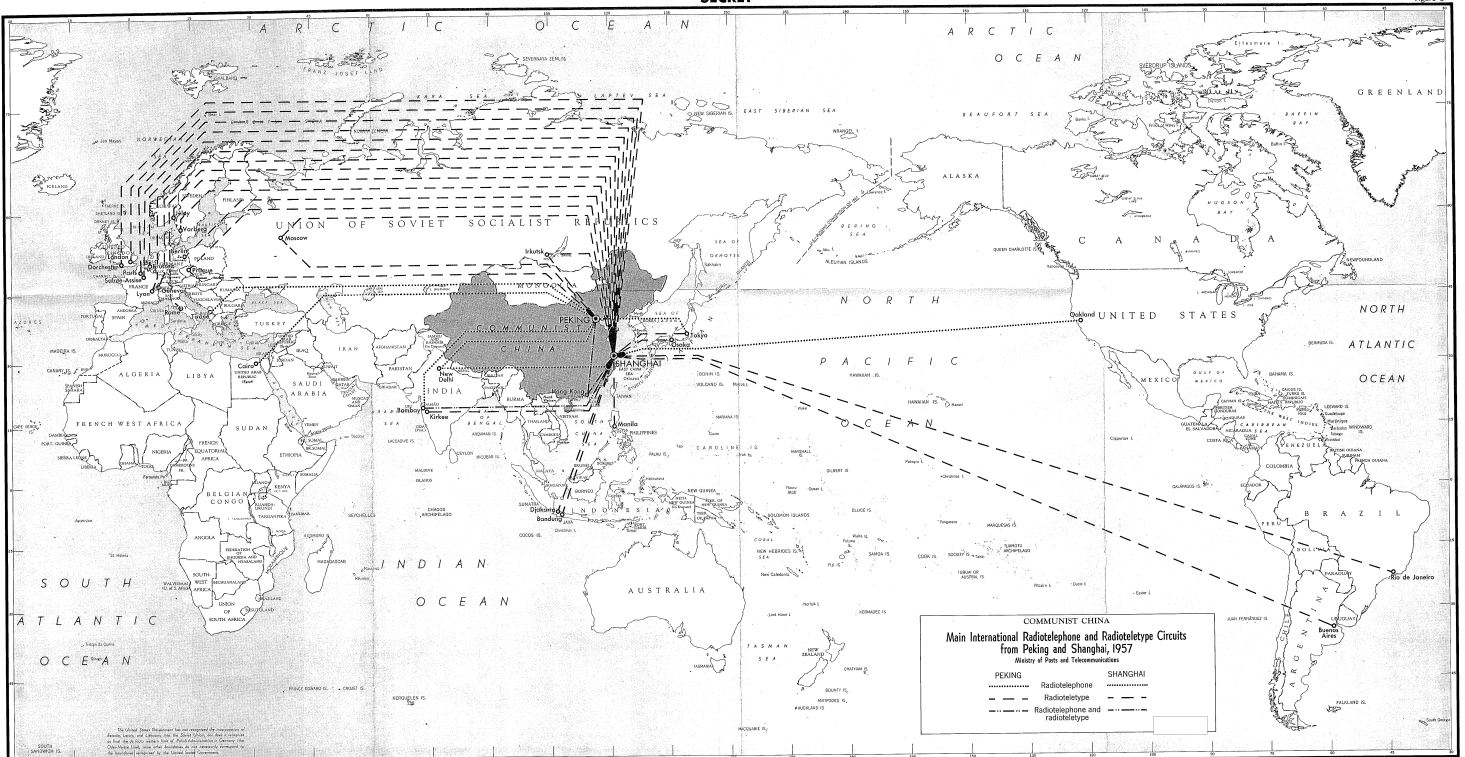
Figure 5



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Figure 6



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It is reported that other circuits will be established, after the Peking-Sian circuit is completed, between Cheng-chou and Shanghai, between Peking and Chungking (probably an extension of the Peking-Sian circuit), and eventually between Communist China and North Vietnam. 118/ No dates are known to have been set for the establishment of these circuits.

It is also reported that Communist China and the USSR will be connected by a microwave radio relay circuit in 1958. 119/ The establishment of such a circuit, probably running from Peking to either Vladivostok or Chita, is not at all unreasonable, though the report on it is unconfirmed. Because the Peking-Sian circuit is not to be completed until 1960, it seems highly unlikely that any microwave circuit between China and the USSR will be established before that time. The accompanying map, Figure 7,* shows the planned microwave network of China.

The completion of the Peking-Sian microwave radio relay circuit will add considerably to the telecommunications capacity available between these cities. The establishment of additional circuits will further increase the capacity of the telephone and telegraph system in Communist China, and the completion of a microwave network, even on the limited scale indicated in current plans, will go a long way toward supplying the demand for more telecommunications capacity.

D. Telephone.

Telephone service in Communist China is very limited. Its availability has been expanded considerably in recent years, however, with particular emphasis placed upon providing service to the rural areas of the country. For example, in 1952, 9.4 percent of the hsiangs had telephone service and in 1955, only 19 percent had telephone service; but by the end of 1956, almost 60 percent of the hsiangs had received some form of telephone service.** 120/ By the end of 1956, there were to be eight provinces where telephone service would be extended to every hsiang. By the end of 1958, 7 more provinces are to be covered in this manner; and by the end of 1961 a total of 18 provinces are to have telephone service in every hsiang in the province. 121/ The hsien coverage was 88.7 percent in 1954 and had reached 90 percent at the end of 1955. 122/ These figures on the extent of telephone service coverage in the rural areas of Communist China, however, should not be misconstrued. They show that at least one point in a hsiang or hsien, usually the administrative center, has telephone service available

* Following p. 26.

** it is assumed that these figures reflect the reorganization of hsiangs that occurred in 1956.

50X1

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from a central office, but they do not mean that all populated points within the hsiang or shien have such service.

Telephone capacity increased 78 percent in Communist China during 1949-55. At the end of 1956, telephone capacity had been expanded 100 percent above the level of 1949. 123/ Table 11* shows the growth that has occurred in the volume of long-distance telephone calls since 1950.

Expansion of the capacity of the telephone system has been accompanied by efforts to modernize the system. At the end of 1956 the following cities had dial telephone exchanges: Peking, Mukden, Wu-han, Harbin, Ch'ang-ch'un, Shih-chia-chuang, Chungking, and Tientsin. 124/ It is planned in 1957 to expand the automatic facilities in these cities and to extend automatic dialing facilities to the following cities: Sian, T'ai-yuan, Lan-chou, Cheng-chou, Ch'ang-sha, and Urumchi. 125/ Sixty percent of the exchanges installed in 1954 were automatic. 126/

To intensify the use of the limited number of telephones available in Communist China, as shown in Table 12,** conference telephone service was introduced in Peking in February 1956. 127/ By March 1956 it was possible to hold telephone conferences between Peking and 27 areas throughout the country. 128/

The telephone system in Communist China is, however, still far from satisfactory. The following list indicates deficiencies that need to be overcome 129/:

1. Manpower shortages are still serious, and more training and experience are needed in the telephone labor force.
2. Many of the telephone lines do not meet required standards in transmission and in noise reduction.
3. Maintenance has been neglected in many areas in favor of the construction of new lines.

E. Telegraph.

The telegraph system in Communist China is operated on a rather small scale, as indicated by the volume of telegrams shown in Table 13.*** The wireline and point-to-point radio networks in the country provide****

* Table 11 follows on p. 27.

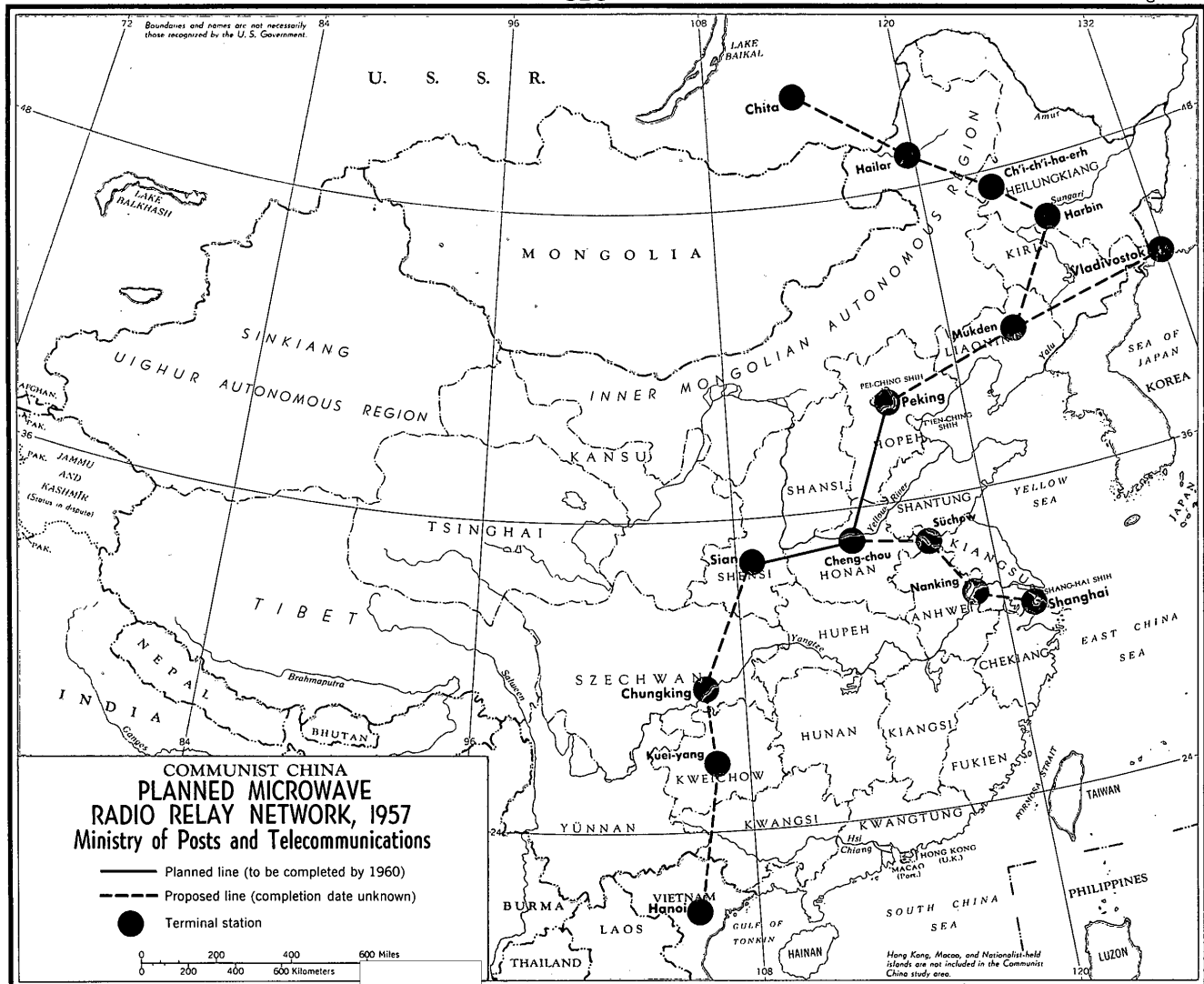
** Table 12 follows on p. 28.

*** Table 13 follows on p. 29.

**** Continued on p. 30.

SECRET

Figure 7



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Table 11

Estimated Number of Domestic and International Long-Distance Telephone Calls Made in Communist China a/
1950-57

		Thousand Units							
Type of Telephone Call	1950	1951	1952	1953	1954	1955	1956	1957	
Domestic long distance	14,800 <u>b/</u>	24,100 <u>c/</u>	29,000 <u>d/</u>	37,300 <u>e/</u>	45,700 <u>e/</u>	54,000 <u>f/</u>	61,000 <u>f/</u>	70,000 <u>d/</u>	
International long distance	793 <u>g/</u>	807 <u>g/</u>	821 <u>d/</u>	835 <u>g/</u>	849 <u>g/</u>	863 <u>g/</u>	877 <u>g/</u>	890 <u>d/</u>	
Total <u>h/</u>	<u>15,600</u>	<u>24,900</u>	<u>29,800</u>	<u>38,100</u>	<u>46,600</u>	<u>54,900</u>	<u>61,900</u>	<u>70,900</u>	

a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.

b. 130/

c. 131/

d. 132/

e. Interpolated, using arithmetic progression between 1952 and 1955.

f. 133/

g. Interpolated, using arithmetic progression between 1952 and 1957, and extrapolated back to 1950, continuing the arithmetic progression used between 1952 and 1957.

h. Summation of domestic and international long-distance telephone calls.

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Table 12

Estimated Number of Telephone Subscribers in Communist China a/
1950-57

	Thousand Units							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Number of telephone subscribers	230 <u>b/</u>	274 <u>c/</u>	285 <u>d/</u>	297 <u>e/</u>	338 <u>f/</u>	399 <u>g/</u>	460 <u>h/</u>	551 <u>e/</u>

- a. All data are rounded to three significant digits.
b. 134/
c. 135/
d. Interpolated, using arithmetic progression between 1951 and 1953.
e. 136/
f. 137/
g. Interpolated, using arithmetic progression between 1954 and 1956.
h. 138/

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Table 13

Estimated Number of Domestic and International Telegrams Sent in Communist China a/
1950-57

Type of Telegram	Thousand Units							
	1950	1951	1952	1953	1954	1955	1956	1957
Domestic	10,300 <u>b/</u>	10,600 <u>b/</u>	11,000 <u>c/</u>	12,600 <u>d/</u>	14,200 <u>d/</u>	15,800 <u>d/</u>	17,400 <u>c/</u>	18,800 <u>e/</u>
International	1,070 <u>f/</u>	1,130 <u>f/</u>	1,190 <u>g/</u>	1,250 <u>f/</u>	1,310 <u>f/</u>	1,370 <u>f/</u>	1,440 <u>f/</u>	1,500 <u>g/</u>
Total	<u>11,400</u>	<u>11,700</u>	<u>12,200</u>	<u>13,800</u>	<u>15,500</u>	<u>17,200</u>	<u>18,800</u>	<u>20,300</u>

a. All data are rounded to three significant digits. Totals were derived from unrounded data and may not agree with the sum of the rounded components shown.

b. Interpolated, using arithmetic progression between 1949 139/ and 1952.

c. 140/

d. Interpolated, using arithmetic progression between 1952 and 1956.

e. Extrapolated, based on graphic analysis.

f. Interpolated, using arithmetic progression between 1952 and 1957, and extrapolated back to 1950, continuing the arithmetic progression used between 1952 and 1957.

g. 141/

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low circuit capacities. These circuits of low capacity are restricted in their traffic-handling potential because the majority employ manual and automatic Morse transmissions. Teletype and facsimile transmissions are used on a relatively small scale.

The transmission of telegrams in Communist China presents a unique problem. The nature of the written Chinese language makes the direct use of alphabetic telegraph-transmitting equipment impossible. To overcome this problem, the Chinese have adopted a numerical four-digit code system to transmit the Chinese language by telegraph equipment. This code, however, is not as efficient as a normal alphabetical telegraph system.

The introduction of facsimile is another attempt to overcome the language problem in telegraph transmissions. The first facsimile circuit in Communist China was established between Shanghai and Moscow on 25 April 1952. 142/ This was followed on 10 September 1952 by the Peking-Shanghai circuit, on 24 September 1952 by the Peking-Moscow circuit, and on 23 July 1954 by the Wu-han - Peking and Wu-han - Shanghai circuits. 143/ In 1955, Shanghai was connected by facsimile circuits with San Francisco and Bombay; and in 1956, circuits were established between Canton and Peking and between Canton and Shanghai. Peking also has a facsimile circuit with East Berlin. 144/ Wu-chang is to be connected with Peking, Shanghai, and other cities in Communist China some time after October 1956. 145/ Facsimile circuits are shown on the map, Figure 8.*

In September 1956 a new telegraph building was started in Urumchi, which is eventually to receive facsimile transmissions from Peking and Shanghai. 146/ No date has been set for the beginning of this service.

As an alternative to facsimile, the Chinese Communists developed a Chinese language teletype machine in Shanghai in August 1955. 147/ This machine was reported to be capable of transmitting 4,096 different Chinese characters and thus would eliminate the necessity of coding and decoding Chinese ideographs into numbers for transmission by standard teletype devices. No further information has been received on the manufacture or use of this machine.

With respect to more conventional teletype equipment, a new tape perforating teletype machine, Model 68, is planned for introduction in Communist China some time in 1957. 148/ This machine can perforate tape as well as transmit and receive messages on tape. The machine is designed to work with both the Model T-37 and the Model 55 teletype machines currently being used in China. The adoption of the Model 68

* Following p. 30.

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teletype machine will add considerably to the efficiency of the telegraph system of China.

V. Broadcasting System.

The broadcasting system of Communist China, which is extensive, is composed of radiobroadcasting stations and wire diffusion centers transmitting programs to independent radiobroadcast receivers, monitoring points, and wired loudspeakers. There is as yet no television broadcasting service. The broadcasting system covers the entire country as shown in the maps, Figures 9 and 10,* but is not very intensive because of the limited transmitting and reception facilities available, as shown in Tables 14, 15, and 16.**

The broadcasting system in Communist China is used primarily as a propaganda and educational medium and secondarily as an entertainment medium. The radiobroadcasting stations are regarded as "huge lecture rooms which can teach tens of thousands, hundreds of thousands, and millions of people at the same time." The system is considered to be a "modern weapon of great use in consolidating and coordinating the activities of different levels of government and in straightening of policies, thwarting of deviations, and greatly increasing work efficiency." 149/

The center of broadcasting activity is the Central Peoples Broadcasting Station in Peking. Its programs are relayed by other broadcasting stations throughout the country, by the wire-diffusion network, and by the monitoring network. Some programs are transmitted overseas, as indicated in Table 17*** and on the maps, Figures 11, 12, and 13.*

A new Central Peoples Broadcasting Station is under construction in the western suburbs of Peking. 150/ Scheduled for completion in 1957, the structure will be the tallest building in Peking, having 11 stories, plus a 50-meter (m) antenna, two 4-story wings, and floor-space of several thousand square meters. Most of the equipment in the station will be supplied by the USSR. The building will have broadcast rooms, recording rooms, sound stages, a central control room, and a music hall large enough for 250 musicians and an audience of 600 people. This structure will also contain telephone and telegraph facilities, including microwave transmitting and receiving****

* Following p. 36.

** Tables 14, 15, and 16 follow on pp. 32, 33, and 34, respectively below.

*** Table 17 follows on p. 35.

**** Continued on p. 36.

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Table 14

Estimated Number of Radiobroadcasting Transmitters in Communist China a/
1950-57

Type of Service	Transmitters							
	1950	1951	1952	1953	1954 <u>b/</u>	1955	1956 <u>b/</u>	1957
Medium-wave regional	95	114	108	102	89	77	75	73
Medium-wave home and international	4	4	5	5	7	8	9	10
Short-wave regional	14	20	24	15	13	10	10	9
Short-wave home and international	9	12	13	12	13	15	22	30
Long-wave regional	0	0	0	0	0	0	1	2
Short-wave Taiwan	4	4	5	4	6	8	8	8
Medium-wave Taiwan	1	1	2	1	5	8	8	8
Short-wave China Press Agency	0	7	7	7	7	7	7	7
Total	<u>127</u>	<u>162</u>	<u>164</u>	<u>146</u>	<u>140</u>	<u>133</u>	<u>140</u>	<u>147</u>

a. 151/. All figures represent midyear totals and, except for 1954 and 1956, are based on monitoring observations and Chinese Communist publications.

b. Interpolated, using arithmetic progression between 1953 and 1955 and between 1955 and 1957.

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Table 15

Estimated Power Output of Radiobroadcasting Transmitters in Communist China
1950-57

	Kilowatts							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Total power output	300 <u>a/</u>	350 <u>a/</u>	550 <u>b/</u>	1,600 <u>a/</u>	1,700 <u>a/</u>	2,000 <u>a/</u>	2,200 <u>a/</u>	2,650 <u>b/</u>

a. 152/. These figures are based on monitoring observations, Chinese Communist publications, All figures are for the latter part of each year.

b. These figures were announced by Radio Peking and represent end-of-year figures. The announced figure for 1952 probably does not include the total output of Chinese Communist Press Agency transmitters, which is estimated at approximately 100 kw. The 1957 figure also may not include these transmitters.

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Table 16

Estimated Number of Radiobroadcast Receivers in Communist China a/
1950-57

	Million Units							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Number of receivers	1.00 <u>b/</u>	1.14 <u>c/</u>	1.28 <u>c/</u>	1.41 <u>c/</u>	1.55 <u>c/</u>	1.69 <u>c/</u>	1.89 <u>d/</u>	2.07 <u>e/</u>

a. All data are rounded to three significant digits.

b. 153/

e. Extrapolated, based on graphic analysis.

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Table 17

Estimated Total Weekly Output
of Peking International Radiobroadcasting Service
in Communist China ^{a/}
Selected Months, 1950-56 and 1958

Language Broadcast	Hours per Week							
	April 1950	April 1951	December 1952	July 1953	October 1954	October 1955	September 1956	January 1958
Amoy-Swatow	3.50	3.50	5.25	5.25	7.00	7.00	7.00	10.50
Arabic								7.00
Burmese	3.50	3.50	7.00	7.00	7.00	7.00	7.00	7.00
Cambodian								7.00
Cantonese	3.50	3.50	5.25	5.25	7.00	7.00	7.00	10.50
Ch'ao-chou	3.50	3.50	5.25	5.25	5.25	5.25	7.00	10.50
English	3.50	3.50	10.50	10.50	10.50	10.50	17.50	37.50
Hakka	3.50	3.50	5.25	5.25	5.25	5.25	7.00	10.50
Indonesian	3.50	3.50	7.00	7.00	7.00	7.00	12.25	12.25
Japanese	3.50	3.50	10.50	10.50	10.50	8.75	15.75	15.75
Korean			7.00	7.00	7.00	7.00	7.00	12.25
Laotian								7.00
Mandarin	3.50	3.50	3.50	3.50	0	0	17.50	24.50
Persian								7.00
Spanish							7.00	14.00
T'ai-shan								7.00
Thai	3.50	3.50	7.00	7.00	7.00	7.00	7.00	10.50
Turkish								7.00
Vietnamese	3.50	3.50	7.00	7.00	7.00	7.00	7.00	10.50
Total	38.50	38.50	80.50	80.50	80.50	78.75	126.00	228.25

a. ^{156/}. These estimates, except the 1951 figures, are based on monitoring observations, Chinese Communist publications,
 The figures for 1951 were assumed to be the same as those of 1950.

This table does not include Peking recordings in Russian, which are broadcast on the Soviet Home Service, nor does it include the Peking service for Taiwan in Mandarin, Amoy-Swatow, and Hakka.

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apparatus, and will house television in the future. It is often referred to as the "new telecommunications building" in Peking. 157/ Although the plans for the building appear impressive, some criticism has already been levied against the quality of the construction work thus far completed. It now appears that the finished structure will not be quite as grandiose as propaganda would have the Chinese people believe. 158/

Communist China has received considerable assistance from the USSR in expanding and improving its radiobroadcasting system. In 1954, radio workers from Peking, Shanghai, Mukden, Canton, Tientsin, and other cities visited Moscow, Leningrad, and Kiev to acquaint themselves with the Soviet techniques of radiobroadcasting. Many Soviet technicians have gone to China to assist in training radio operating personnel and technicians. 159/

The intense desire of Communist China to create an extensive broadcasting system, coupled with material and technical assistance from the USSR, has resulted in a considerable expansion of the system during the past 7 years. Goals set for 1962 indicate that expansion will continue. The following sections discuss the radiobroadcasting, monitoring, wire diffusion, and television networks.

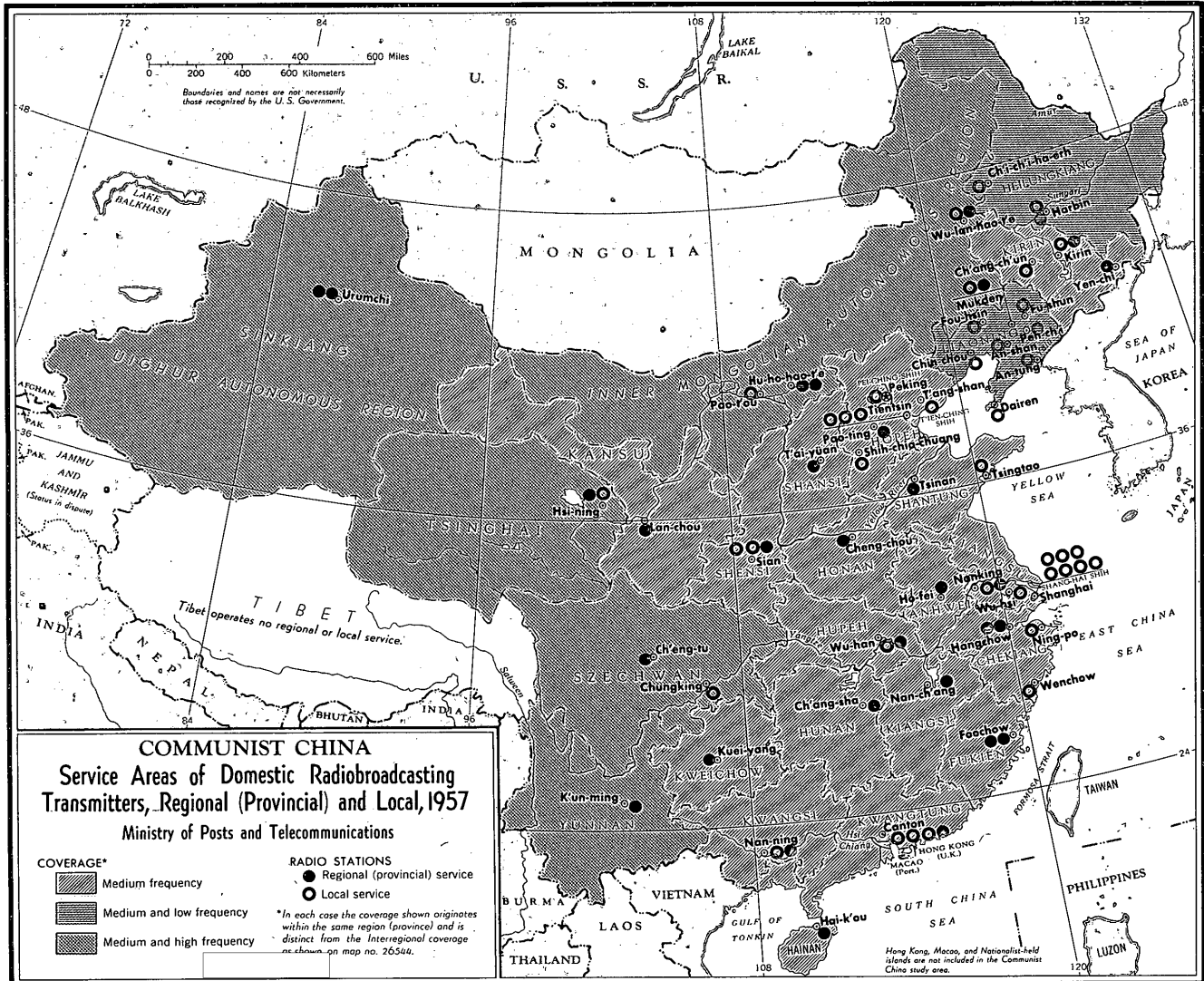
A. Radiobroadcasting.

Radiobroadcasting by the Communists in China dates back to 1944, when the first Communist radiobroadcast was made from Shensi Province. This first station, originally broadcasting news bulletins in English to North America and Europe, was soon followed by others. By the end of 1948 the Communists claimed to have had 16 radiobroadcast stations on the air. On 1 October 1949 the main Communist radio station was renamed the "Central Peoples Broadcasting Station."

Growth of the radiobroadcasting network has been steady since 1950. In early 1950, there were 127 medium and short-wave transmitters in operation, with a combined power of 300 kilowatts (kw). During the next 2 years the number of transmitters had increased to 164. The number then decreased with the elimination of some of the smaller and older transmitters, so that by June 1957 there were only 147 radiobroadcasting transmitters on the air. This decline did not indicate a decreasing emphasis on radiobroadcasting in Communist China, for the power of the transmitters in operation was steadily increased throughout this period. The importation of high-powered radiobroadcasting transmitters, mainly from Hungary, supplemented by the domestic production of higher powered transmitters in China, enabled the expansion in power to reach an aggregate of 2,200 kw by the end of 1956. The plans for 1957 call for a further increase in power to 2,650 kw.

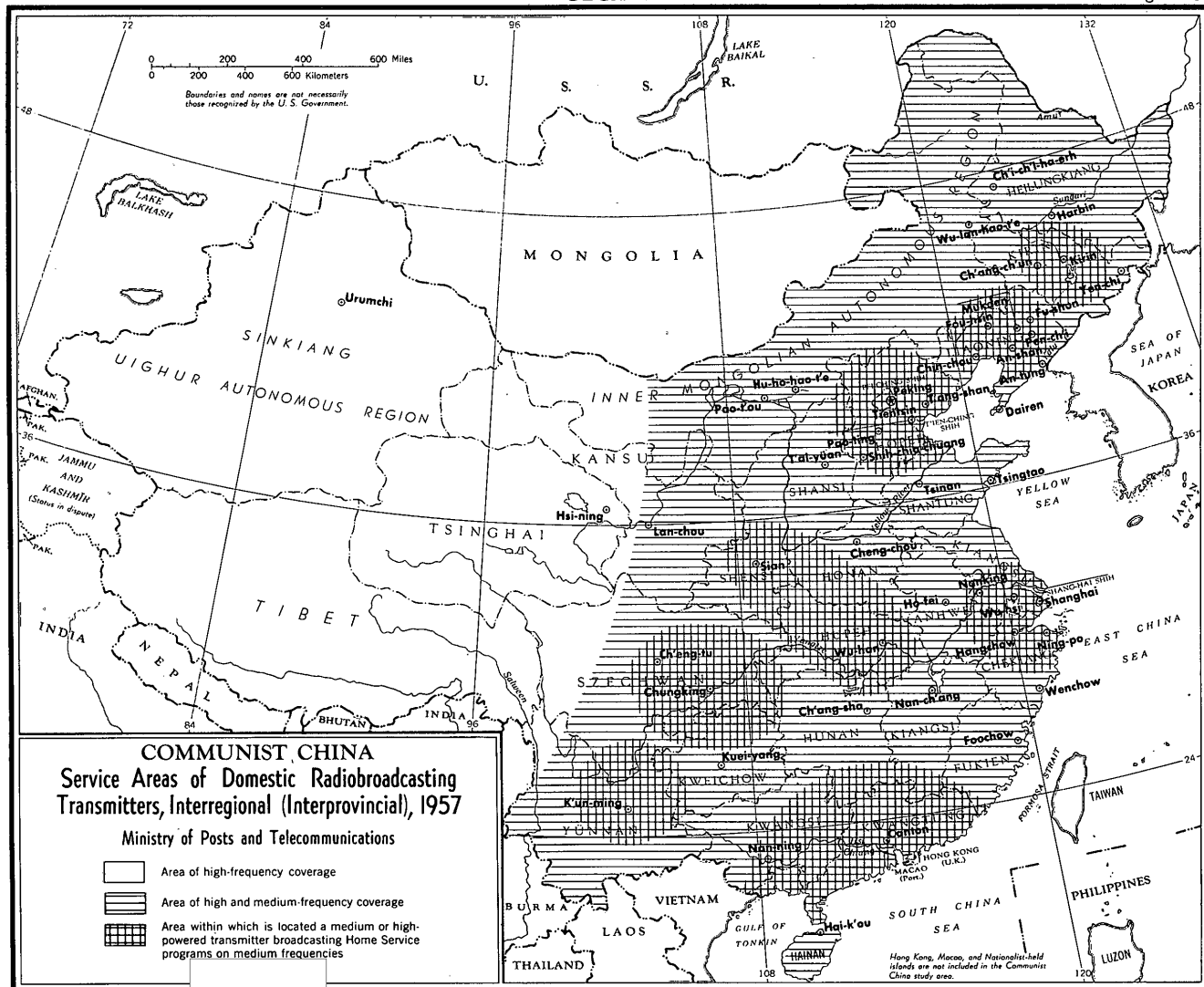
SECRET

Figure 9



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Figure 10



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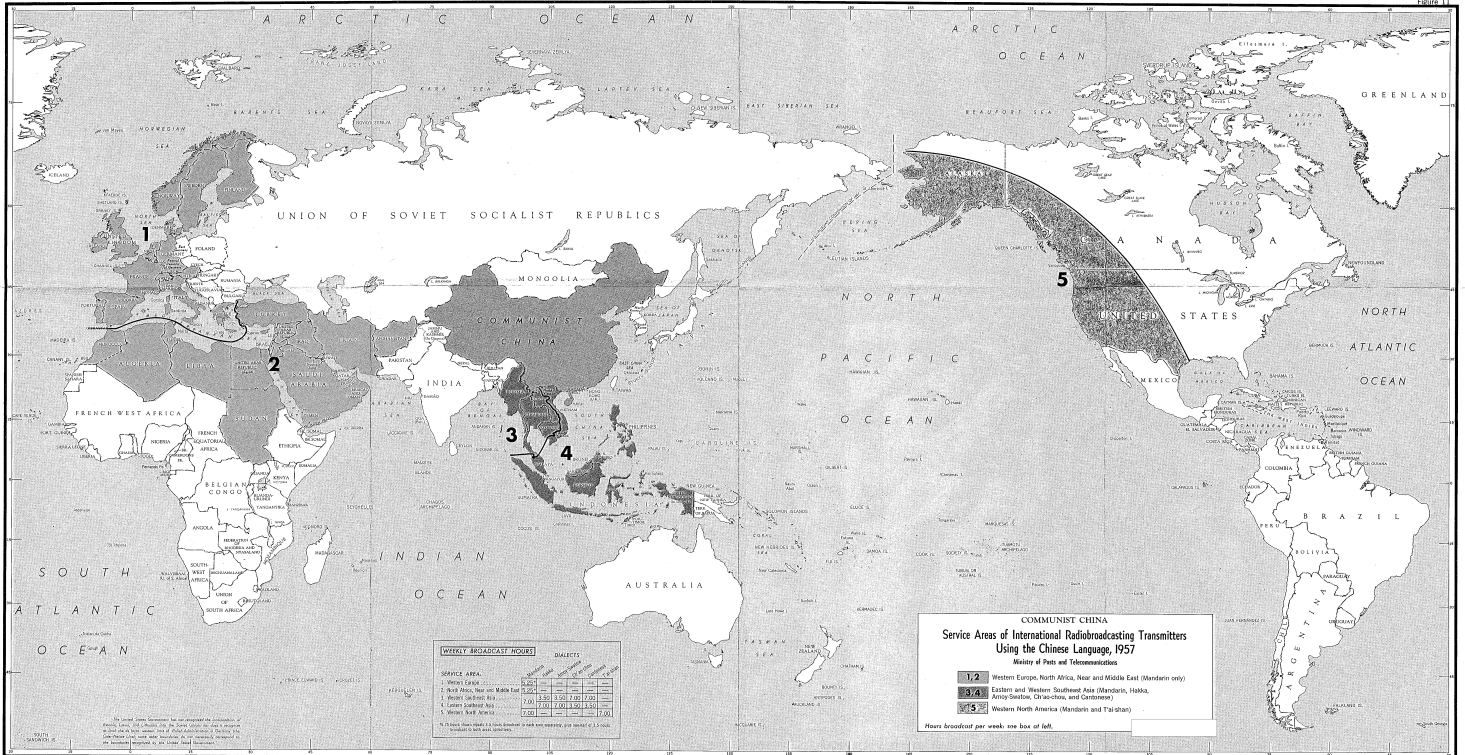
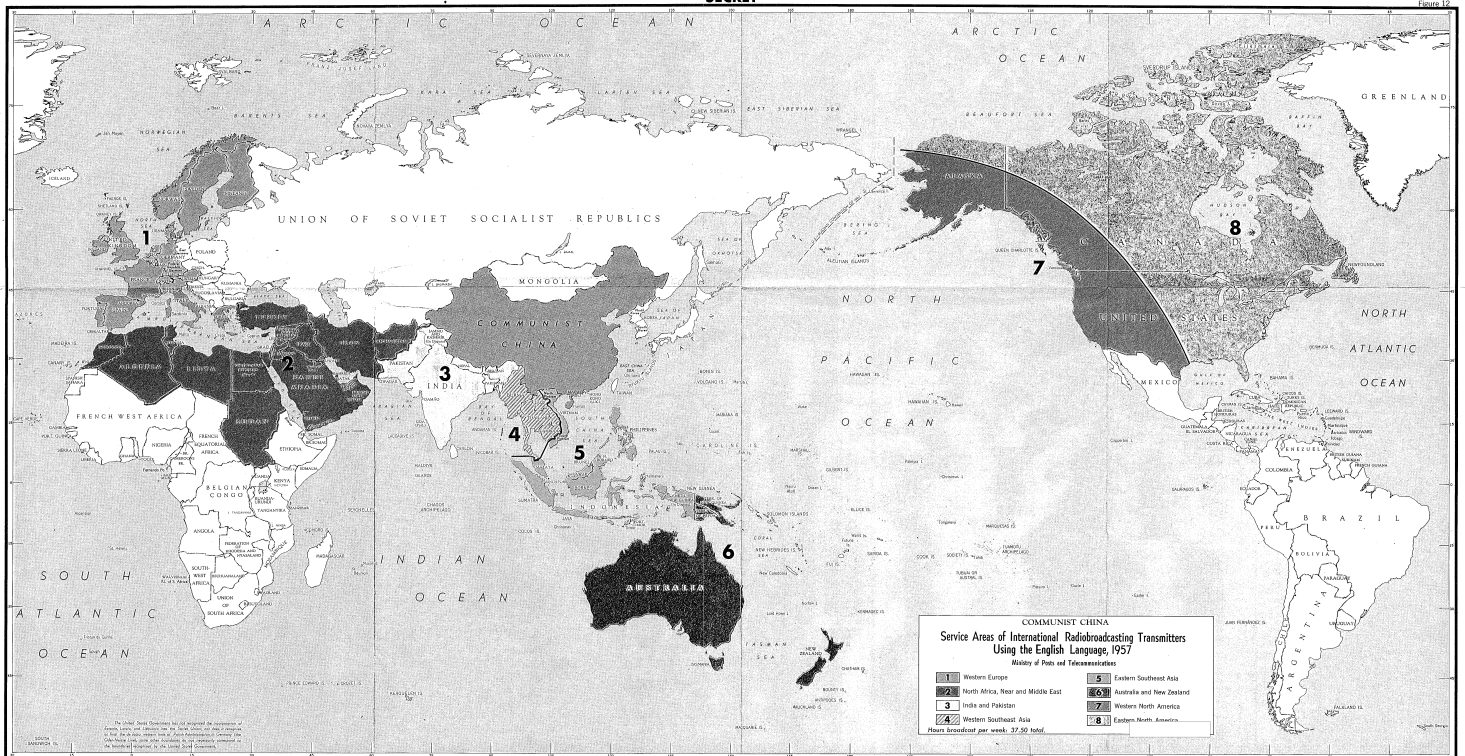


Figure 11

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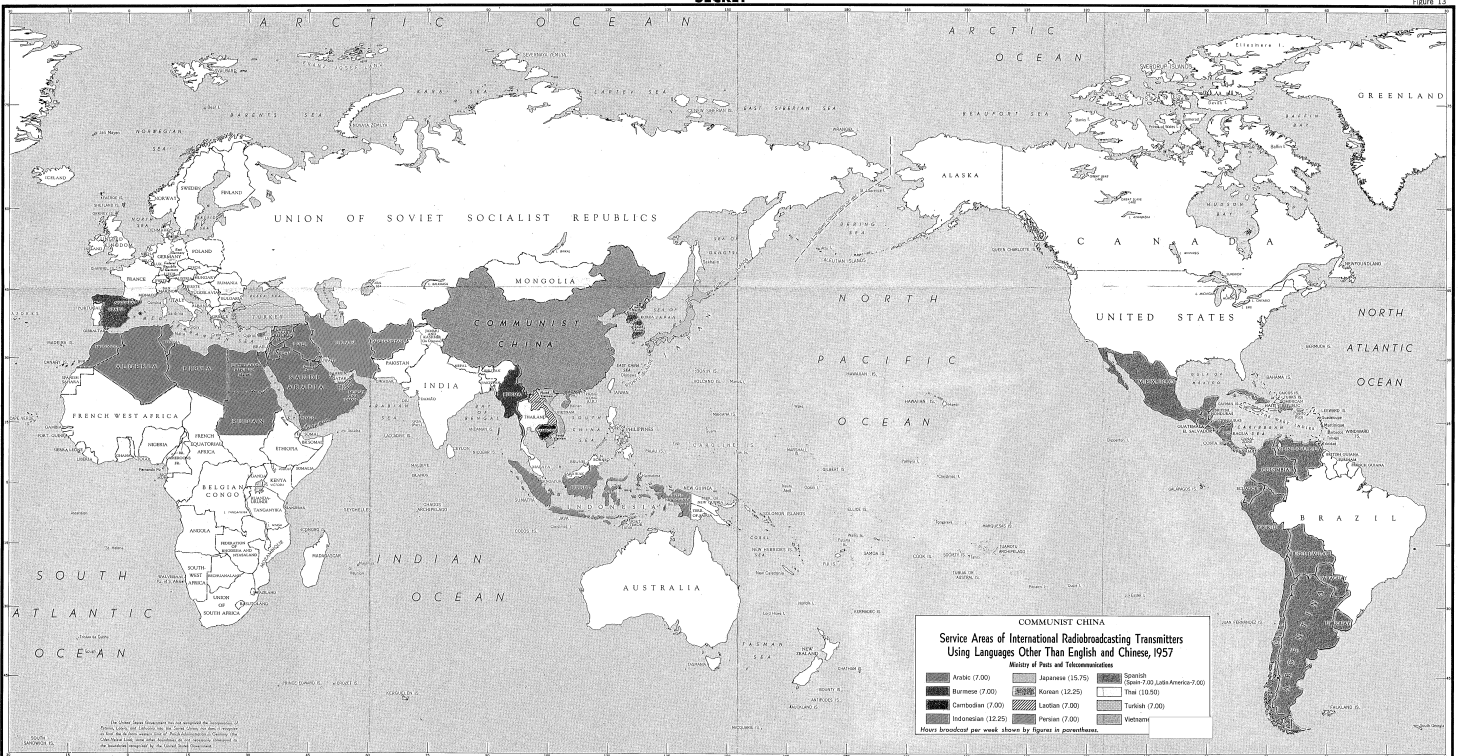
Figure 12



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Figure 13



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The expansion of the radiobroadcasting system in Communist China has been directed toward increasing the size of both domestic and overseas audiences. The current effort in overseas broadcasting by China has now placed it among the top 10 countries in the world in this field.

B. Monitoring Points.

In terms of population, the number of radiobroadcast receivers in Communist China is very low. To increase the number of people that can be reached by radiobroadcasts, monitoring points have been established in the rural areas of China. A monitoring point consists of one person who listens to a radiobroadcast receiver and then relays the content of the program to local inhabitants. This is done either by circulating a written summary of the program or by putting a summary of the program on a blackboard. Group listening is also organized around the monitoring point receiver.

The monitoring point network has steadily grown since 1950, as shown in Table 18,* and now provides a large radiobroadcast audience in supplement of that supplied by the wire diffusion network.

C. Wire Diffusion.

The wire diffusion network, which relays radiobroadcast programs through wire diffusion centers to wired loudspeakers, was initiated in Communist China in 1950. 160/ This network, supplementing the coverage of the radiobroadcasting system, has been given considerable emphasis during the past 7 years, as shown in Tables 19 and 20.** It has followed the pattern of development set in the USSR. Expansion of the wire diffusion network is expected to continue in the future. This is shown by announced plans to have 8.5 million wired loudspeakers operating in conjunction with 8,000 wire diffusion centers by the end of 1962. 161/

D. Television.

Television service has not yet been established in Communist China. The first television station will be built in Peking and is expected to become operational some time late in 1958. The station will be located in the telecommunications building now under construction.*** 162/ The station will occupy the top floors of the building and will have a steel and concrete tower 400 m high topped by a 100-m antenna. 163/ The tower is being designed by the Moscow Steel****

* Table 18 follows on p. 38.

** Tables 19 and 20 follow on pp. 39 and 40, respectively.

*** See V, p. 31, above.

**** Continued on p. 41.

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Table 18

Estimated Number of Radio Monitoring Points in Communist China a/
1950-57

	<u>Thousand Units</u>							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Number of monitoring points	4.80 <u>b/</u>	8.60 <u>b/</u>	12.4 <u>b/</u>	16.1 <u>b/</u>	19.9 <u>c/</u>	29.8 <u>d/</u>	43.6 <u>d/</u>	68.9 <u>e/</u>

- a. All data are rounded to three significant digits.
- b. 164/
- c. 165/
- d. 166/
- e. 167/

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Table 19

Estimated Number of Wire Diffusion Centers in Communist China
1950-57

Type of Wire Diffusion Center	Units							
	1950 a/	1951 b/	1952 b/	1953 b/	1954 b/	1955 c/	1956 d/	1957
Rural	244	418	592	766	940	1,114	1,294	1,497 d/
Urban	36	62	88	114	140	166	196	221 e/
Total	<u>280</u>	<u>480</u>	<u>680</u>	<u>880</u>	<u>1,080</u>	<u>1,280</u>	<u>1,490</u>	<u>1,700 e/</u>

a. Extrapolated, continuing the arithmetic progression used between 1951 and 1955.

b. The total was extrapolated using arithmetic progression between 1951 and 1955. The dis-
tribution between rural and urban was assumed to be the same as that given for 1956.

c. Assuming that the total growth for 1955-56 was the same as the total growth for 1956-57 and that the rural-urban distribution was the same as that given for 1956.

d. 169/

e. Derived by assuming that the rural-urban distribution for 1957 was the same as that given for 1956.

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50X1

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Table 20

Estimated Number of Wired Loudspeakers in Communist China a/
1950-57

Type of Wired Loudspeaker	Units							
	1950 <u>b/</u>	1951 <u>b/</u>	1952 <u>b/</u>	1953 <u>b/</u>	1954 <u>b/</u>	1955 <u>b/</u>	1956 <u>c/</u>	1957
Rural	77,300	132,000	188,000	243,000	298,000	353,000	410,000	640,000 <u>d/</u>
Urban	18,400	31,600	44,900	58,100	71,400	84,700	100,000	160,000 <u>d/</u>
Total	<u>95,700</u>	<u>164,000</u>	<u>233,000</u>	<u>301,000</u>	<u>369,000</u>	<u>438,000</u>	<u>510,000</u>	<u>800,000 <u>c/</u></u>

a. All data are rounded to three significant digits.

b. Derived by applying the ratio in 1956 of loudspeakers to wire-diffusion centers to the number of centers shown on the preceding table.

c. 170/

d. Derived by using the rural-urban distribution of the total in 1956.

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Structure Designing Institute. 171/ The station will telecast on 3 channels, 2 in black and white and 1 in color. 172/

Communist China has been interested in television equipment since early in 1956. At that time, negotiations were undertaken with East Germany for the procurement of television equipment. 173/ Announcements in August 1957 reveal that China now plans to manufacture the equipment domestically. 174/ Although it is not known whether some or all of the equipment is to be made in China, it appears that the first television station in the country will go into operation late in 1958. There are no known plans for other stations.

The planned Peking-Sian microwave circuit, expected to become fully operational in 1960, is to carry television some time after that date. 175/ It appears, therefore, that at least 2 years will elapse before any area outside of greater Peking will enjoy television in Communist China.

VI. Supply of Equipment.

Communist China produces relatively little telecommunications equipment. Importation of equipment has been necessary to satisfy the demands incident to the maintenance and expansion of the public post and telecommunications sector of the economy. Primary suppliers of such equipment have been the USSR, East Germany, and Hungary. Some equipment has been purchased by China from countries outside the Soviet Bloc, but these purchases have been small, primarily because Free World countries invoked embargo sanctions.

Some progress is being made in building up domestic production. A new complex for manufacturing electronics equipment is under construction in Peking. This complex will produce a wide variety of telecommunications equipment as well as other types of electronic items; however, it will probably not be able to satisfy for several years the full quantity and variety of telecommunications equipment required to meet the needs of Communist China. In the meantime, it will be necessary to continue imports of equipment from abroad.

Some Free World countries have recently reduced the number of telecommunications items under embargo to Communist China. These reductions will enable the purchase of such equipment from markets previously inaccessible. The extent to which China will take advantage of these new markets, instead of building up domestic production, is uncertain.

VII. Future Trends.

The primary purpose of this report is to assess the current status of the public post and telecommunications sector of the economy of

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Communist China and to show the growth that has occurred in this sector since 1950. Although no estimate of future growth has been attempted, it seems appropriate to indicate those aspects of the post and telecommunications sector which are expected to receive special emphasis in the future.

The goals set for the Second Five Year Plan (1958-62) in Communist China for public post and telecommunications call for the following 176:

1. Laying underground cables along the principal long-distance telecommunications routes and the use of multichannel telephone equipment.
2. Establishing microwave radio relay systems.
3. Establishing automatic and semiautomatic telephone-telegraph exchange facilities in key telecommunications centers.
4. Increasing the capacity of intracity telephone facilities.
5. Increasing the number of radio facilities for point-to-point telecommunications.

In addition to these goals, television is soon to be introduced, probably in 1958, and the radiobroadcast and wire diffusion networks are to be substantially increased. 177 All of these facets of growth in telecommunications can be expected to receive continuing attention for some years.

The status of the Second Five Year Plan is not known. Intimations are that plan goals may be either revised in substance or extended in time. Regardless of such changes, the goals listed above are considered to be sufficiently important to economic growth and national security to be included in any plans for at least the next 5 years. This conclusion is based upon an evaluation of the current status of the public post and telecommunications sector of the economy relative to over-all economic and military needs. The demands created by the expanding civil sector of the economy as well as by military requirements dictate a considerable expansion and modernization of the existing public post and telecommunications sector of the economy for some years to come.

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APPENDIX A

GLOSSARY OF TECHNICAL TERMS

Apparatus: Instruments, machines, appliances, and other assemblies used in providing a telecommunications facility.

Automatic (as an adjective): Of or pertaining to any process involved in producing telecommunications service which does not require direct, immediate human assistance.

Band (of frequencies): The entire range of frequencies between two numerically specified frequency limits. The magnitude of this range is a limiting factor on the amount of information that can be transmitted in telecommunications. With respect to frequencies of the radio spectrum as a whole, the International Telecommunication Union has for convenience divided the whole radio spectrum into eight major bands, as follows:

Frequency Bands		Corresponding Wave* Band
Range	Type	
30 kc** and below	Very low frequencies (VLF)	Myriametric waves
30 to 300 kc	Low frequencies (LF)	Kilometric waves
300 to 3,000 kc	Medium frequencies (MF)	Hectometric waves
3,000 to 30,000 kc	High frequencies (HF)	Decametric waves
30,000 kc to 300 mc***	Very high frequencies (VHF)	Metric waves
300 to 3,000 mc	Ultra high frequencies (UHF)	Decimetric waves****
3,000 to 30,000 mc	Super high frequencies (SHF)	Centimetric waves****
30,000 to 300,000 mc	Extremely high frequencies (EHF)	Millimetric waves****

* Waves are undulating disturbances: a sound wave is a disturbance in the air, which is an elastic medium, and an electric wave is a disturbance in any medium whatever. The number of waves per second is the frequency of a given wave. Because the speed of wave propagation is considered to be constant, the length of a given wave is in inverse relation to its frequency: the longer the wave length, the lower the frequency, and the shorter the wave length, the higher the frequency. Wave length is usually measured in linear units of the metric system.

** Kilocycles per second, or 1,000 cycles per second.

*** Megacycles per second, or 1 million cycles per second.

**** It is becoming common usage to refer to waves (frequencies) in these three bands as "microwaves."

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Cable: A bundle of sheathed, insulated wires and/or coaxial tubes, used as a telecommunications medium. It is sometimes referred to as "multi-conductor cable."

Channel: A portion, electrical or physical, of a telecommunications circuit, lane, supergroup, or group which can be used to transmit information independently of and simultaneously with all other portions. A channel may be used to provide two or more subchannels.

Circuit: A telecommunications connection between two or more distant points by a wire, cable, or radio medium facility used to carry information. The circuit is the fundamental telecommunications connection between distant points. By the application of appropriate techniques, a circuit may be arranged in many different combinations to meet the need for various kinds and quantities of telecommunications service. In its simplest form a circuit may carry only single telecommunications units in sequence. In its most complex form it may by apportionment carry simultaneously thousands of telephone channels and telegraph subchannels; a number of television programs; and other specialized kinds of service, such as high-fidelity broadcast programs, radar signals, and data-processing signals.

For the most complex application, a circuit is often arranged into lanes, each of which can carry, in 1 direction, 1 television program or 600 telephone channels. In turn, these 600 telephone channels are subdivided into 10 supergroups of 60 telephone channels each. Each supergroup is subdivided into 5 groups of 12 telephone channels each. One or more telephone channels may be further subdivided into three to twenty 60-word-per minute teletype subchannels. Other specialized kinds of service may be accommodated by combining two or more telephone channels.

Coaxial (as an adjective): Of or pertaining to a modern telecommunications cable medium technique using one or more tubes (sometimes called "pipes"). Each metal tube surrounds a conducting wire supported concentrically by insulators. The space in the tube usually contains nitrogen gas under pressure. Generally, coaxial cable is used for the transmission of information in complex form, such as radar, computer data, or television signals, and/or for the transmission of telephone channels and telegraph subchannels. A single tube usually carries information in only one direction at a time. The capacity of a tube depends in part upon the distance between repeater stations. In the standard facility, which may have from 2 to 8 tubes in the cable, a single tube carries a lane of 600 telephone channels or 1 television lane, for which the repeater station spacing is about 7 statute miles. In a new developmental coaxial cable facility, a single tube may carry 3 lanes of a total of 1,800 telephone channels.

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or 3 television lanes, for which the repeater station spacing is expected to be about 3 statute miles.

Electronics: A general term used to identify that branch of electrical science and technology that treats of the behavior of electrons in vacuums, gases, or solids. Today telecommunications makes extensive use of electronic technology.

Facility: An association of apparatus, material, and electrical energy required to furnish telecommunications service.

Facsimile (as an adjective): Of or pertaining to telecommunications (telegraph) service in which photographs, drawings, handwriting, and printed matter are transmitted for graphically recorded reception. In one method (Type A), images are built up of lines or dots of constant intensity. In another method (Type B), images are built up of lines or dots of varying intensity, sometimes referred to as "telephoto" and "photoradio."

Frequency: The rate in cycles per second at which an electric current, voltage, wave, or field alternates in amplitude and/or direction. (See Band.)

Functional (as an adjective): Of, pertaining to, or connected with special, unique, or particular telecommunications facilities managed and operated by a single agency, organization, company, department, committee, ministry, or other entity, in contrast to the facilities of a basic system. (See Basic system.)

Group: A number of channels (usually 12) or subchannels combined (multiplexed) electrically in building up the total capacity of a telecommunications circuit, lane, or supergroup.

Ionosphere: Those layers of the earth's atmosphere occupying the space about 210 statute miles in thickness extending from about 30 statute miles above the earth's surface to the outer reaches (exosphere) of the atmosphere. Reflection from these layers makes possible long-distance transmission of radio signals. The layers, however, are responsible for fading of signals, skip distance, and differences between daytime and nighttime radio reception. They are also used as a scattering reflector for ionosphere scatter-transmission techniques to transmit to distances of about 1,000 to 1,500 statute miles.

Line: A general term used to delineate a telecommunications circuit facility (wire, cable, or radio).

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Medium: Any substance or space that can be used practically to transmit a form of electrical energy for the purpose of providing telecommunications service.

Microwave radio relay (as an adjective): Of or pertaining to a radio medium technique in modern telecommunications employing radio frequencies higher than 300 mc. These frequencies do not normally afford practical direct transmission to great distances, principally because they do not bend well around the earth's surface and because they do not reflect well from the ionosphere. They are, however, capable of reliable transmission from horizon to horizon (line-of-sight) by the use of special antennas which concentrate the radio energy and give it desired direction. Great distances can, in consequence, be reached by this technique by the interposition of relay stations along the route of the line with a spacing interval of from 25 to 40 statute miles, depending upon terrain conditions. This technique can be employed practically to carry from a small number of telephone channels and telegraph subchannels to thousands of such channels and subchannels through 2 or more lanes and to carry 1 or more television and other specialized lanes and channels. (See Band.)

Network: An interconnection, electrical or physical, of two or more circuits or portions thereof for the purpose of facilitating telecommunications service.

Point-to-point (as an adjective): Generally, of or pertaining to telecommunications service between fixed points, using the radio medium.

Route: The geographical path followed by a wire, cable, or radio line.

Subscriber: Any customer who directly operates telecommunications apparatus in obtaining telecommunications service.

Supergroup: A number of groups (often 5) combined (multiplexed) electrically in building up the total capacity of a telecommunications circuit or lane.

System: All of the facilities and networks managed by a single agency, organization, company, department, committee, ministry, or other entity in rendering either functional or basic telecommunications service.

Telecommunications: Transmission, reception, or exchange of information between distant points by electrical energy over a wire, cable, or radio medium facility to produce telephone, telegraph, facsimile, broadcast (aural and visual), and other similar services.

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Teletype (as an adjective): Of or pertaining to a technique for effecting telegraph service by the use of an apparatus similar to a typewriter in which information is transmitted by keyboard and received by type printer on a roll of paper, on a roll of tape, or by perforations on a roll of tape, or both. (Sometimes called a "teleprinter" or "teletypewriter.")

Troposphere: The layer of the earth's atmosphere occupying the space from the earth's surface to a height of about 6 statute miles. This layer is used as a scattering reflector for tropospheric scatter transmission techniques to distances of about 200 to 500 statute miles.

Wire diffusion: Distribution of broadcast programs by a wire or cable medium to wired loudspeakers.

Wired loudspeakers: A telecommunications loudspeaker which receives from a distribution point one or more broadcast programs by a wire or cable medium.

Wireline: A general term used to identify a line consisting of either an aerial cable (and/or separate wires) or underground cable, used as a telecommunications medium.

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APPENDIX B

METHODOLOGY

Some of the statistical tables in this report cite all available source material and show all the methodologies to be derived from that material. For most of the tables, however, additional source material was available, and alternative methodologies were derived from it and applied as follows:

1. Fragmentary data available on individual provinces were applied to total population data to develop aggregates for use as guides in the selection of the most representative data.
2. Complementary statistical data were compared to verify correlations that are known to exist.
3. Announced increases, usually in percentage terms, were applied to the selected data as a check of conformity.
4. The distribution of facilities and services between rural and urban was used as a guide in the selection of data.

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