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PROVISIONAL INTELLIGENCE REPORT

THE MUNITIONS INDUSTRY
OF COMMUNIST CHINA



CIA/RR PR-131
30 December 1955

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CENTRAL INTELLIGENCE AGENCY

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PROVISIONAL INTELLIGENCE REPORT

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CIA/RR PR-131

(ORR Project 31.484)

NOTICE

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FOREWORD

This report appraises the current status of the arsenals used for the production of munitions in Communist China.* The report uses no information dated before 1949 unless the data indicate that the Chinese Communists either already controlled the arsenals before 1949 or captured the arsenals intact from the Chinese Nationalists and are still using them.

The report divides currently producing arsenals into the categories of major arsenals and minor arsenals. Major arsenals or complexes of arsenals are those in which the production of finished end items constitutes a major contribution to the total munitions requirements of Communist China. Minor arsenals are those units which produce limited quantities of end items or component parts. Only those arsenals which are believed to be in production at the present time are discussed in this report.

The quantitative estimates of capacity (both total capacity and that of individual arsenals) contain the inherent qualitative weaknesses of the many reports of varying reliability from which they have been derived.

Data on the arsenals of Communist China have been compiled by the Department of the Army, G-2; Armed Forces, Far East, G-2; [REDACTED] 25X1X7
25X1X7 [REDACTED] These listings for the most part are based on the same information which was available to CIA and were not used as confirmation.

* Only arsenals used for the production of land munitions have been included in this report.

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THE MUNITIONS INDUSTRY OF COMMUNIST CHINA*

Summary

The munitions industry** of Communist China is estimated to include 12 major arsenals and 58 minor arsenals. The 3 most important centers for the production of munitions are Mukden (Shen-yang), with 2 major arsenals and 1 minor arsenal; Chungking (Ch'ung-ch'ing), with 3 major arsenals and 4 minor arsenals; and T'ai-yuan, with 1 major arsenal and 1 minor arsenal.

Chinese Communist control of the munitions industry has been characterized by a consolidation of arsenals and a possible shift of production emphasis from Manchuria to other areas of China. Reports of new construction and of the expansion of old arsenals during 1951-54 indicate not only that the Chinese Communists are tending to locate arsenals in new locations, but also that the Chinese Communist capacity to produce ammunition and light weapons has increased considerably since 1949-50.

Despite the development of new arsenals, Communist China is not self-sufficient in the production of munitions. Although the production of certain types of ammunition is estimated to be more than sufficient for training requirements, the arsenals of China, which have a monthly capacity of about 5,400 short tons*** of ammunition and an estimated annual capacity of between 60,000 and 80,000 tons of ammunition, currently cannot supply all the wartime ammunition requirements of China.

The production of small arms, machine guns, light mortars and light artillery, and special weapons such as rocket launchers and recoilless rifles in Communist China is considered adequate to maintain the necessary levels of equipment even during wartime. The Chinese Communist arsenals, however, cannot provide the heavy weapons

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 September 1955.

** The term munitions industry, for the purposes of this report, includes the production of both ammunition and weapons.

*** Tonnages throughout this report are given in short tons.

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such as antiaircraft artillery, medium and heavy artillery, or armored fighting vehicles needed to equip the Chinese Communist armies and must import these weapons from other nations in the Sino-Soviet Bloc.

The estimated labor force used in the munitions industry of Communist China ranges from 210,000 to 250,000. Over 1,000 Soviet and other foreign engineers and technicians also aid in the production of munitions in China. This technical aid has been instrumental in building up the capacity of the industry. The other members of the Sino-Soviet Bloc have also provided equipment and the raw materials necessary for the expanded production of munitions.

I. Development since 1949.

From the end of World War II until the evacuation of the mainland of Communist China by the Chinese Nationalists in 1949, 20 to 25 government arsenals produced almost all the Chinese Nationalist munitions. Four of these arsenals were removed to Taiwan; the remainder form the basis for the present munitions industry of Communist China. 1/* The three major munitions-producing complexes at Mukden, Chungking, and T'ai-yuan were captured by the Chinese Communists practically intact with only slight destruction by the retreating Chinese Nationalists to several of the Chungking arsenals. 2/

Not only were machinery and arsenal facilities left relatively intact but also about 95 percent of the skilled labor remained on the mainland of Communist China. The skilled labor and technicians have received further training from Soviet and German engineers sent to China by the USSR. 3/

In addition to the arsenals captured from the Chinese Nationalists in 1949, Chinese Communists held 28 arsenals in Manchuria and 15 in northern China** before 1949. The total production of these arsenals was significant in meeting the Chinese Communist needs, but the production of no one arsenal in itself was significant. 4/

* For serially numbered source references, see Appendix E.

** For geographic areas of Communist China as referred to in this report, see the map, inside back cover.

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The production of the arsenals was limited by obsolescent machine tools and by the lack of brass-rolling and extrusion equipment as well as by shortages of explosives and copper. In addition, Chinese Communist production was initially limited by transportation and labor problems. 5/

In reorganizing the munitions industry, the Chinese Communists were dependent upon the Soviet Bloc for imports of machine tools, metalworking equipment, and raw materials as well as for technical advice and assistance. Numerous plant reports indicate the introduction of Soviet equipment into various arsenals throughout Communist China. Soviet and/or Satellite advisers and technicians were used in the arsenals, and Soviet experts made an over-all inspection of arsenals to discover and correct discrepancies. The inspection appears to be a part of the Soviet program to aid in the reconstruction and rehabilitation of important arsenals. 6/

Under Chinese Communist administration, the number of small arsenals of workshop size decreased either through the consolidations of small arsenals, the absorption of small arsenals by larger ones, or the conversion of arsenals to nonmilitary production. Under the Chinese Communist regime, the production of munitions has been characterized by specialization in a limited number of weapons and calibers of ammunition.*

II. Administrative Control.

During 1952 the munitions industry of Communist China was placed under the control of the Second Ministry of Machine Industry, one of the economic ministries established as part of the governmental reorganization. 7/ Later reports indicated that in the government reorganization of 21 September 1954 the Second Ministry of Machine Industry was placed administratively in the State Council but under the operational supervision of the National Planning Commission. In this manner, arsenals were placed under the direct control of the central government. Apparently concomitant with this reorganization was a redesignation of the arsenals according to a three-digit system. 8/ Three-digit designations, however, have been identified with only a few specific arsenals.

* For a list of the types of munitions being currently produced, see Appendix A.

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III. Production.*

A. Major Arsenals.**

Communist China has an estimated 12 major arsenals with the largest concentrations of arsenals in the Mukden and Chungking areas. The Mukden Arsenal complex in Manchuria, which includes the arsenals in the Ta-tung district and in Wen-kuan-t'un, is still considered the largest arsenal complex in China. It is capable of producing the entire range of weapons and ammunition currently produced in China.*** The Mukden Arsenal complex contains about 50 percent of the artillery and small-arms production capacity and about 15 percent of the total estimated ammunition production capacity of China.

The arsenals in Chungking produce small arms (carbines or sub-machine guns), recoilless rifles, machine guns, and mortars as well as ammunition for these weapons and for artillery pieces.

T'ai-yuan is the only major arsenal complex in northern China. The production of the complex includes artillery ammunition, machine guns, mortars and artillery, and possibly small arms ammunition.

Dairen (Ta-lien), in northeastern China, contains about 10 percent of the total ammunition production capacity of Communist China and probably ranks second to Mukden.

The two major arsenals of eastern China are the Ch'in-ling Arsenal in Nanking and the Tsinan (Chi-nan) Arsenal complex. The Ch'in-ling Arsenal produces mortar and small arms ammunition, hand grenades, machine guns, and mortars. The Tsinan Arsenal complex is reported to produce mortar fuses, mines, grenades, small arms, and mortars, although the rate of production of these items is not reported.

The Shih-ching Arsenal in Canton and the Wu-han Arsenal complex of arsenals in central and southern China produce small arms, light machine guns, mortars, light artillery pieces, grenades, fuses, and ammunition for mortars and small arms.

* See the map, inside back cover, and Table 5, p. 19, below.

** Major arsenals or complexes are those in which the production of finished end items constitutes a major contribution to total national munitions requirements.

*** For a list of weapons and ammunition, see Appendix A.

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The arsenal in K'un-ming in southwestern China is considered to be a major arsenal because it is the major producer of optical fire-control equipment and also produces light machine guns.

B. Minor Arsenals.*

An estimated 58 minor arsenals currently are producing weapons and ammunition in Communist China. The minor arsenals are of considerable significance in the production of ammunition. The minor arsenals of northeastern China have the capacity to produce about 75 percent of the mortar ammunition, about 80 percent of the small arms rounds, and about 80 percent of the hand grenades produced in the area. The minor arsenals of eastern China and central and southern China have the capacity to produce more artillery ammunition and hand grenades as well as bombs, fuses, mines, torpedoes, and depth charges than do the major arsenals in these areas. In the production of weapons, however, the minor arsenals are of less over-all importance than the major arsenals.

C. Unconfirmed Installations.

The multitude of intelligence reports which suggest a great number of small arsenals or plants which produce or at some time have produced military end items tend to present a distorted picture of the munitions industry of Communist China. Installations are often erroneously reported. Some installations may have existed under the Chinese Nationalists or may still be producing simple military end items for the security forces. The installations which possibly exist provide a potential source of additional supply in times of heavy need.

The following four criteria were used to determine which of the many minor arsenals probably no longer contribute to the total production of arms and ammunition.

1. The absence of sufficient information to present a case; the presence of only one report of doubtful reliability not verified by other sources. In this category fall the majority of arsenals which have been dropped from the lists of accepted major and minor munitions-producing arsenals.

* See the map, inside back cover, and Table 6, p. 31, below.

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2. The absence of recent information -- that is, information after 1949 or the time that the Chinese Communists captured particular arsenals.

3. The presence of some positive indication that the production of weapons and/or ammunition has been discontinued in specific arsenals.

4. The presence of definite information that certain installations, which are called arsenals, do not produce arms or ammunition but only repair or store munitions. Also in this category are chemical- and explosives-producing plants which are not definitely identified as ammunition-producing plants.

D. Estimated Capacity for the Production of Ammunition.*

The monthly capacity of the major and minor arsenals in Communist China to produce ammunition is given in Table 1. The estimate of capacity is based on the summary of available production figures as given in Appendix B.

Table 1

Estimated Monthly Capacity for the Production of Ammunition
in Communist China
1952

<u>Type of Ammunition</u>	<u>Short Tons</u> <u>Monthly Capacity</u>
Artillery	1,100
Mortar	1,000
Small arms	1,700
Grenades	1,600
Total	<u>5,400</u>

* For methodology, see Appendix C.

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Estimates of production for individual arsenals on which this estimated minimum capacity is based vary in date from 1948 to 1953. An examination of prevailing conditions in the munitions industry of Communist China during 1948-53 indicates that the estimate might best be applied to production capacity during 1952. Because 1949 was a year of war during which the Chinese Communists drove the Chinese Nationalists from the mainland, conditions were unsettled, and production was interrupted. Much of the construction activity in the munitions industry, which was reported during 1950 and 1951, consisted of rehabilitating installations, training personnel, centralizing control under the Communist regime, and preparing for production to meet military requirements in North Korea. With the many problems encountered in rehabilitation, it is doubtful if the estimated production capacity was attained by the Chinese Communists until 1952.

Estimates of the annual production capacity of the munitions industry of Communist China, based on monthly capacity figures (see Table 1*), range from a minimum of 60,000 tons to a maximum of about 80,000 tons. This upper limit would include the unreported capacity of new arsenals and the capacity to produce mines and bombs for which no estimates of production are made.

E. Estimated Capacity for the Production of Weapons.

The estimated monthly capacity of the major and minor arsenals in Communist China to produce weapons is given in Table 2.** The estimate of capacity is based on the summary of reported production rates as given in Appendix B. The dates of information on which these reports were based range from 1948 to 1952. The estimated monthly capacity in Table 2 most closely represents the production capacity of the Chinese Communists during 1952.

A number of major and minor arsenals are reported to be producing one or more of the types of weapons for which quantitative estimates of production rates are not available, thus making an estimate of the capacity of these arsenals difficult. Certain tentative conclusions can be drawn, however, concerning the magnitude of this additional capacity on the basis of analogical comparisons of certain of the important arsenals in the group.*** The capacity to produce

* P. 6, above.

** Table 2 follows on p. 8.

*** For methodology, see Appendix C.

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Table 2

Estimated Monthly Capacity for the Production of Weapons
in Communist China
1952

<u>Type of Weapon</u>	<u>Monthly Capacity</u>	<u>Units</u>
Artillery		60
Mortars		2,300
Machine guns		1,700
Small arms		24,000
Special weapons		
Rocket launchers		1,800
Recoilless rifles		220

weapons, as given in Table 2, could possibly be increased by the following amounts: artillery, 100 percent; mortars, about 30 percent; machine guns, about 40 percent; and small arms, about 70 percent.

The Chinese Communist capacity to produce artillery and mortars is centered in the major arsenals -- 10 of the 16 reported producers are major arsenals. Facilities at one or another of the major arsenals are adequate for the production of all calibers of artillery pieces although no reliable reports have indicated that artillery larger than 76.2 millimeters (mm) is being produced by the Chinese Communists. Mortars ranging in size up to 120 mm are believed to be in production.

Machine guns are reported to be in production at 6 major and 8 minor arsenals.* No machine guns made in Communist China have yet been recovered among the enemy weapons captured in Korea. Light and heavy machine guns, however, were produced by the Chinese Nationalist arsenals. The capacity to produce machine guns still exists, and it is believed that the Chinese Communists now are producing machine guns copied after Soviet models.

* See Appendix B.

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In the field of small arms, production has been concentrated on submachine guns, Type 50, which are modeled after the Soviet PPSH 1941 submachine gun. [REDACTED] has indicated a production of approximately 150,000 of these weapons in 1952 at Arsenal 626 in Mukden alone. 9/ Since then, production has been reported at the former 21st Arsenal in Chungking. 10/ Other small arms for which Chinese Communist production in 1951 has been verified [REDACTED] include the 7.62-mm pistol, Type 51, and the 26.7-mm flare pistol, Type 51, both copies of Soviet weapons. 11/

25X1B4d

Five major and 18 minor arsenals in Communist China can produce small arms. The minor arsenals have about 50 percent of the total Chinese Communist capacity to produce small arms. The reported construction of 4 new arsenals and the expansion of 1 existing arsenal for the production of small arms alone* indicate that the Chinese Communists are increasing their capacity to produce small arms.

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Capacity for the production of 57-mm recoilless rifles at a rate of about 220 pieces** per month at Chungking and capacity for the production of 90-mm rocket launchers at a rate of about 1,800 pieces*** at 2 arsenals in northeastern China have been estimated on [REDACTED]. No expansion of production of these weapons has been indicated. Requirements for the 57-mm recoilless rifle and the 90-mm rocket launcher are so low as to lead to the conclusion that these items are now out of production, with the 75-mm recoilless rifle and the 132-mm rocket launcher taking their place. 13/

F. Distribution of Installations.

The percentage distribution of installations for the production of ammunition and weapons in Communist China by geographic areas is given in Table 3.*** For the most part, this distribution of installations is representative of the distribution of production. The capacity, however,

* A description of the new construction is given in Table 6, p. 31, below. See the discussion of the former 25th Military Factory in Harbin and of the facilities in Ch'ang-chih, Wu-ch'ang-hsien, Feng-hsiang, and Fu-shih.

** The production for the month of January 1952. 1951 production reached a high of 469 pieces in September and totaled about 2,000 pieces for the year.

*** The highest rate of production for 1 out of 4 months in 1951.

**** Table 3 follows on p. 10.

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Table 3

Percentage Distribution of Installations
for the Production of Ammunition and Weapons in Communist China
by Geographic Area a/

Geographic Area	Installations			Percent
	Ammunition	Weapons	New	
Northeastern China	35	26	7	
Inner Mongolia	Negligible	Negligible	0	
Northern China	8	11	13	
Eastern China	16	8	20	
Central and southern China	22	26	30	
Southwestern China	14	16	0	
Northwestern China	5	13	30	

a. The data in this table are a summary of the data in Appendix B.

of the 5 arsenals in southwestern China, an area which includes Chungking and K'un-ming, is considerably more significant than that of the 5 minor arsenals in northwestern China. In addition, the capacity of the two major arsenals at Mukden makes northeastern China a more significant area of production than central and southern China, with its less important major arsenals at Wu-han and Canton (Kuang-chou).

Reports of new construction and the expansion of existing installations during 1951-54 indicate a possible change in their distribution (see Table 3). The location of new arsenals indicates a de-emphasis of the major production areas of Manchuria and Chungking and a possible attempt to provide all significant areas with a base for the supply of munitions -- at least of small arms and ammunition.

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IV. Estimated Labor Force.

Analysis of estimates of the labor force of all major arsenals and of about 66 percent of the minor arsenals indicates that the minimum labor force employed in the arsenals of Communist China totals about 212,000. This estimate is considered a minimum figure because no reported labor figures are available for 21 minor arsenals. The total labor force for these 21 minor arsenals is estimated at about 40,000 on the basis of a rough average derived from the reported figures for 37 of the minor arsenals.

A distribution of the estimated labor force of the munitions industry of Communist China by geographic area is given in Table 4.

Table 4

Distribution of the Estimated Labor Force
of the Munitions Industry of Communist China
by Geographic Area a/

<u>Geographic Area</u>	<u>Reported Labor Force</u>	<u>Distribution of Total (Percent)</u>
Northeastern China	98,000	46
Inner Mongolia	Negligible	Negligible
Northern China	16,000	8
Eastern China	25,000	12
Central and southern China	29,000	13
Southwestern China	40,000	19
Northwestern China	3,500	2
Total	<u>211,500</u>	<u>100</u>

a. Based on reports given in Appendix B.

About 1,000 Soviet and European technicians are reported to be working in the major and minor arsenals of Communist China.* The

* Reported information of foreign technicians working in Chinese Communist arsenals is given in Appendix B.

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presence of Soviet and European technicians in the geographic areas of China loosely parallels the pattern of arsenal construction and expansion and might be related to this pattern.

During the Korean War, and to a lesser degree during the war in Indochina, many arsenals were operating on a three-shift basis. The existence of this practice at present is unknown. Correlations between the estimated labor force or the number of shifts in operation and possible increases in capacity therefore have not been drawn.

V. Capabilities, Vulnerabilities, and Intentions.

The munitions industry of Communist China produces a supply of munitions which is more than adequate for training purposes. The Chinese Communists also are considered capable of maintaining wartime levels of infantry-type weapons such as small arms, machine guns, light mortars and light artillery, rocket launchers, and recoilless rifles.

The Chinese Communists must import ammunition for the following weapons:

- 152-mm howitzer and self-propelled gun
- 122-mm howitzer
- 85-mm antiaircraft and tank gun
- 76-mm self-propelled gun
- 12.7-mm antiaircraft machine gun
- 7.62-mm aircraft machine gun
- 23-mm aircraft cannon

These items of ammunition are needed for weapons which are now included in the Chinese Communist tables of equipment. Peacetime as well as wartime requirements must be imported from the USSR. 14/

The extent to which the munitions industry of Communist China is unable to supply the wartime requirements of the Chinese Communist military forces is indicated by a comparison of the estimated capacity of the industry in 1952 with the wartime ammunition requirements of that year. The Chinese Communist forces in China and North Korea not only required the capacity production of 60,000 tons of ammunition in 1952 but also had to import 110,000 tons of ammunition from the USSR. 15/ The supply of ammunition from the badly damaged North Korean plants was negligible. 16/

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The ammunition industry of Communist China would have to increase its 1952 production by about 110,000 tons to attain self-sufficiency, or an increase over estimated 1952 capacity of about 180 percent. Such increased production would have to include all imported items for which the Chinese Communists were completely dependent upon the USSR. During 1952-55, out of a total of 58 arsenals producing ammunition, 9 were new arsenals and an additional 6 arsenals reportedly were expanded. Although specific quantity increases cannot be estimated, the annual increase in the production capacity of military end items during 1952-55 has been estimated at 15 percent. ^{17/} At such a rate of increase China will remain dependent upon Soviet imports for wartime requirements of ammunition for some time to come.

Arsenals producing weapons in Communist China are capable of producing any of the required types of small arms, light artillery, mortars, and machine guns as well as such simple weapons as the recoilless rifle and the rocket launcher. The arsenals have the capacity, at present, to provide both the peacetime and the wartime requirements of light infantry weapons to the Chinese Communist military forces.

Large quantities of rifles, machine guns, mortars (except the 60-mm mortars), antiaircraft artillery, artillery, and armored fighting vehicles were imported from the Soviet Bloc during the Korean War by the Chinese Communists. The construction of new arsenals and the expansion of old arsenals since 1951 indicate that there has been a buildup of facilities for the production of basic infantry weapons. There is no reliable indication of the production of medium or heavy artillery or antiaircraft guns. Chinese installations are not considered capable of producing armored fighting vehicles. Armored cars and armored trucks have been reported as produced in small numbers, but the level of production is not considered an indication of a significant capacity to produce armored fighting vehicles. For the present, Communist China remains dependent upon the Soviet Bloc for all heavy weapons.

The munitions industry of Communist China also depends upon the Soviet Bloc for machine tools, technical assistance, and imports of raw materials such as copper, alloy steels, and explosives. The hope for a quick and easy industrialization has been shattered by the realization that Soviet economic aid would be largely limited by the extent to which Communist China could pay for such aid. ^{18/}

It is anticipated that the munitions industry of Communist China eventually will be self-sufficient in terms of military end items as the installations necessary for the production of more complicated armaments become available.

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APPENDIX A

TYPES OF MUNITIONS PRODUCED IN COMMUNIST CHINA

1. Ammunition.

Grenades (hand and rifle).
Antitank hand grenades.
Bombs.
Land mines.
7.62-mm submachine gun rounds.
7.62/79-mm rifle, light machine gun and heavy machine gun rounds.
57-mm recoilless rifle shells.
90-mm rockets.
60-mm mortar shells.
81- and 82-mm mortar shells.
120-mm mortar shells.
37-mm antitank gun shells.
57-mm antitank gun shells.
70-mm infantry howitzer shells.
75-mm gun shells.
76.2-mm howitzer shells.
105-mm howitzer shells.

2. Weapons.

7.62-mm pistol, Type 51.*
7.62-mm submachine gun, Type 50.*
26.7-mm flare pistol, Type 51.
60-mm mortar.*
82-mm mortar.
120-mm mortar.
Machine gun (light).
Machine gun (heavy).
57-mm recoilless rifle, Type 36.*
90-mm rocket launcher, Type 51.*
70-mm howitzer, Type 92.*
76.2-mm howitzer.

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APPENDIX B

ARSENALS IN COMMUNIST CHINA

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Table 5
Major Arsenals in Communist China

Location	Identification	Estimated Labor Force	Estimated Monthly Capacity	Item	Quantity	Remarks	Date of Information
Northeastern China							
Mukden (Shan-yang) (41°08' N - 123°27' E) Ta-tung District of Mukden and Wen-huan-t'un Liaoning	Mukden Arsenal complex (see Ta-tung and Wen-huan-t'un branches, below, for all entries except consolidated production estimate).	15,000 workers on three 8-hour shifts (1951) 5/	700 short tons 6/*	Ammunition: All types Weapons: 7.62-mm submachine gun, Type 50	15,000 pieces 6/	The Mukden Arsenal complex has reportedly produced all of the weapons listed under production for the Ta-tung and Wen-huan-t'un arsenals. Reports indicating the production of antiaircraft artillery and artillery above 76 mm require verification, and until such verification is obtained, it is assumed that such reports have confused repair work with actual production. Production figures for weapons other than submachine guns cannot be determined with any degree of accuracy. Following March 1952 the production of submachine guns averaged roughly 15,000 per month.	March 1948 to January 1954
Mukden (Shan-yang) (41°08' N - 123°27' E) Ta-tung District of Mukden	Ta-tung 90th Arsenal (main) 51st and 54th Arsenals 626th Arsenal			Ammunition: Small arms rounds Mortar shells Artillery shells Hand grenades Land mines Bombs Weapons: Small arms Machine guns Mortars 120mm artillery Miscellaneous Conversion of trucks to armored vehicles Repair of weapons		The main arsenal is located in the Ta-tung district of Mukden. It is not as large in area and has fewer buildings than the Wen-huan-t'un branch. All explosive filling is done in a branch to the east of the city in the Tung-tung Hills. Piece work on small parts, such as those used in hand grenades, is done in small workshops in the vicinity of the main arsenal.	

* Footnotes for Table 5, follow on p. 29.

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Table 5
Major Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China (Continued)							
Maikun (Shan-yang) (4,948 N - 123°27' E) One kilometer east of the railroad station in Wen- kuang-t'un	Wen-kuang-t'un 90th Branch 52d Arsenal	39,000 to 40,000 workers on three 8-hour shifts 7 days a week Includes Soviet techni- cians and 40 German and Soviet drafting engi- neers 5/	Ammunition: Small arms rounds Mortar shells Artillery shells Band grenades Weapons: Small arms Machine guns (heavy) Rocket launchers Light artillery Miscellaneous: Repair of weapons			The area is about 8 square miles. Several hundred workers' quarters, mostly one-story red brick buildings are located in the western part of the arsenal area. Plant No. 2 is located to the east of the quarters area and produced mortars and field guns. Plant No. 4, located somewhat east of Plant No. 2, produced small arms, machine guns, and mortars. Plant No. 3 and Plant No. 1, located about 600 to 700 meters east of Plant No. 4 in the eastern extremity of the arsenal area, produced artillery pieces and ammunition. During July 1951 there was addition- al construction of buildings, and damage done by the Chinese Nationalists was largely repaired.	November 1948 to March 1952
Dairen (Pa-lien) (38°55' N - 121°09' E) Port Arthur Naval Base area	Chien-hsin combine Ya-hua Arsenal Dairen Railroad Works (82-mm mortar castings) Dairen Calcium Carbonate Manufacturing Company (75-mm shell castings) Arsenal Dairen Chemical Arsenal Kosho Steel Works (shell heads and brass plate, steel rods) Dairen Machine Manufacturing Plant (artillery and mortar shells)	5,000 5/ 500 5/ 1,000 5/ 1,000 5/	Ammunition: 75-mm artillery shells 82-mm artillery shells Band grenades Rifle shells Artillery fuses Mortar shells Shell heads 82-mm mortar castings Gun cotton TNT Picric acid Dynamite Cordite Mercury fulminate Brass plates and disks for use in shells High-speed steel rods	100 tons 5/ 20,000 units 5/ 400 tons 5/ 5,000 units 5/ 105 tons 5/ 1.5 tons 5/ 30 tons 5/ 3 tons 5/	The Chien-hsin combine was formed to administer a number of industrial enterprises turned over to the Chinese Communists by the Russians in June 1947. A munitions trust including company consists of 12 enterprises, the largest of which is the Dairen Calcium Carbonate Manufacturing Com- pany. The Dairen Chemical Arsenal was dismantled by the Russians but by May 1949 was restored with equipment from Liao-yang; it is the chief source of supply of explosives for the Ya-hua Arsenal. The Chien-hsin Steel Works supplied all steel rods and brass plates to the Ya-hua Arsenal. The Dairen Machine Manufacturing Plant was prepared for the manufacture of munitions in June 1949. The conversion project was scheduled for comple- tion in December 1952.	1948 to 1949	

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Table 5
Major arsenals in Communist China
(continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity		Remarks	Date of Information
				Quantity			
Central and Southern China							
Carton (Kuang-chun) (23°07' N - 113°51' E)	Hsin-nan Arsenal or Hsin-nan Machinery Factory or 3rd Ordnance Factory and/or Shih-ching Arsenal	1,200 (1952) at Hsin-nan Arsenal E/	Ammunition: Small arms rounds Mortar shells Hand grenades Weapons (1951): Machine guns	220 pieces I/ 15 pieces I/ 800 pieces I/ 400 pieces I/		Soviet machinery was received in late 1951 and possibly also in 1952. Further expansion was reported by 1954 at Shih-ching. The Shih-ching Arsenal is reported to interchangeably and possibly are separate plants of a single complex. The Shih-ching Arsenal appears to specialize in the production of ammunition and was reported to produce Czechoslovak and Soviet-type ammunition under the supervision of Czechoslovak and Soviet technical advisers.	October 1950 to July 1954
Shih-ching (23°15' N - 113°22' E)							
Kuangtung							
Wu-han Arsenal complex (30°34' N - 116°13' E)	Hang-yang Arsenal (former 26th Arsenal) Plant No. 43 Central and South China Military District Ordnance Factory	15,000 (November 1952) E/ Soviet and German ordnance experts	Ammunition: Mortar shells (June-August 1952) Small arms rounds Hand grenades Fuses Weapons: Machine guns (110pts) 81-mm mortars (planned) Artillery (planned)	33,000 rounds E/ 2,000 pieces G/		The Wu-han Arsenal complex is the ordnance center for the Central and South China Military District. The Hang-yang Arsenal was reported to have received Soviet mechanics before November 1952 and machinery from other arsenals in Communist China. 43 in Hang-yang ordnance boxes were made at Plant No. 43 in Hang-yang. Soviet and German ordnance experts worked in Hankow in August 1951 on a new type of rapid-firing rifle. Hankow Arsenal also is reported to have done experimental work on fuses in 1951. New arsenal workshops were reported in Wu-chang in 1952.	February 1951 to April 1953
Hang-yang (30°33' N - 116°16' E)							
Hankow (Han-K'ou) (30°35' N - 116°16' E)							
Wu-ch'ang (30°32' N - 116°18' E)							
Hupien							

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Table 5
Major Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Estimated Monthly Capacity	Item	Quantity	Remarks	Date of Information
Southeastern China							
Chungking (Chung-ch'ing) (29°34' N - 106°35' E) Located about 30 miles from Chung-ch'ing at Chung-ch'ing-t'o (29°36' N - 106°39' E) Szechwan	Former 50th Arsenal 497th Arsenal	10,000 g/ (1951-52)		Ammunition: Hand grenades Aerial bombs 60-mm mortar shells 75-mm howitzer shells 57-mm recoilless rifle shells Weapons: 60-mm mortars 82-mm mortars 57-mm recoilless rifles (January 1952)	35,000 rounds g/ 690 rounds g/ 350 pieces g/ 220 pieces f/	The area is 1.5 x 1.5 kilometers. The testing area is 1.5 kilometers north of the arsenal. Buildings are dispersed. Some shops are hidden in caves. The machinery under the Chinese Nationalists was primarily German and Austrian, some US. The arsenal had its own power plant, which was destroyed by the Chinese Nationalists. The power station was repaired as reported by November 1950.	March 1947 to January 1954
Chungking (Chung-ch'ing) (29°34' N - 106°35' E) Szechwan	Former 10th Arsenal Possibly a branch of the former 50th Arsenal	2,000 (February 1951) g/		Ammunition: 60-mm flares 60-mm mortar shells 82-mm mortar shells 37-mm high-explosive (HE) shells Weapons: Rifles Machine guns (light) Mortars	500 units g/ 35,000 rounds g/ 100 pieces g/	The area is 2.5 x 2 kilometers. There are 120 buildings of various sizes, mostly 1-2 story grey brick about 60 x 15 meters, then to 15 meters of the arsenal was destroyed by the Chinese Nationalists. During 1950 the arsenal was repaired and/or expanded. In May 1950 the arsenal was reported to be in full operation.	1949 to February 1951

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Table 5
Major Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Chungking (Chung-ching) (69°34' N - 106°57' E) North bank of the Chia-ling River at Chiang-pai across from Chungking. Szechwan	Former 21st Arsenal	20,000 +/- Several Soviet experts	Ammunition (1949): 82-mm mortar shells (HB) 82-mm mortar shells (smoke) 120-mm steel shells 27-mm rifle grenades Hand grenades (HB) (Rifle grenades and hand grenades produced by the 31st Branch Arsenal) Weapons: (1952) Rifles (light and heavy) Machine guns (light and heavy) Recoilless guns (100mm and 120mm) (steel shells a new item of production for the 21st Arsenal. ✓/ Possibly the 7.62-mm PRSH.) Miscellaneous: Leather rifle slings Bayonets Carrying straps for machine guns (light)	60,000 rounds ✓/ 5,000 rounds ✓/ 2,000 rounds ✓/ 20,000 units ✓/ 100,000 units ✓/ 70 units ✓/ 10,000 units ✓/ 5,000 units ✓/ 1,000 units ✓/ 500 pieces ✓/ 300 units ✓/ 600 units ✓/ 2,000 units ✓/ 10 units ✓/ 70 units ✓	The area is about 3 kilometers east and west by 1.5 kilometers north and south. There are about 200 buildings. Some damage was done by the Chinese Nationalists and was partly re- paired by 1950. By October 1950 the arsenal was operating at 50-percent capacity. In early December 1950, Soviet equipment for the manufacture of weapons was received. The arsenal has its own power plant. Production figures are Chinese Nationalist.	1944 to June 1952	
K'un-ming (25°04' N - 102°41' E) Yunnan	Former 534 Arsenal Lan-pa Arsenal	2,000 plus (1950) ✓	Weapons: 7.92-mm machine guns (light) Miscellaneous: Rifles Machine guns Compass guns Range finders Sights for recoilless rifles Repair of small arms and opti- cal instruments	500 pieces ✓/ 300 units ✓/ 600 units ✓/ 2,000 units ✓/ 10 units ✓/ 70 units ✓	The arsenal was enlarged before and during World War II. After V-J Day, machines from the following arsenals were sent to the 534 Arsenal: the 521 Arsenal, the 531 Arsenal, the 524 Arsenal, the 534 Arsenal, the 534 Branch Arsenal at Kuei-yang, and the 14th Arsenal at Kuei-yang. The arsenal escaped destruction by the Chinese Nationalists. It has a dual mission -- the manufacture of Czechoslovak- type light machine guns and of optical instruments.	1948 to 1951	

a. See Appendix C, Table 1, p. 58, below.
b. 19/
c. 20/
d. 21/
e. 22/
f. 23/

g. 24/
h. 25/
i. 26/
j. 27/
k. 28/
l. 29/

m. 30/
n. 31/
o. 32/
p. 33/
q. 34/
r. 35/

s. 36/
t. 37/
u. 38/
v. 39/
w. 40/
x. 41/
y. 42/

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Table 6
Minor Arsenals in Communist China

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China							
An-tung (40°00' N - 124°24' E) Isaoling	Chien-tung combine (6 arsenals)	1,100 (1949) g/*	Ammunition: Hand grenades Mortar shells Mortars Explosives for mortar shells Repair of small arms and mortars	18,000 units g/ 9,000 rounds g/		The Chien-tung combine consists of 15 large brick buildings. The original arsenal was dismantled by the Nationalists and the equipment was destroyed by the Chinese Nationalists. The Chinese Communists refurbished the arsenal with equipment confiscated from privately owned factories. The production figures given are for 1948.	1947 to 1949
Chia-mu-sen (46°01' N - 130°21' E) Hsiungkiang	No. 1 and No. 2 Arsenals. Probably local designations of two plants within the same arsenal	2,700 b/ 2,000 (before November 1949) g/	Ammunition: Hand grenades Small arms rounds Other types Weapons: Rifles	4,500 units g/ 60,000 rounds g/ 1,500 units g/		The arsenal has been operating since mid-1946. As of mid-1951 the arsenal was producing a large variety of ammunition and hand grenades for shipment to Chinese Communist forces in North Korea.	1946 to 1951
Chi-an (Chi-an hsien) (41°06' N - 126°10' E) Kirin	Ch'i-ch'i-hsien Arsenal complex 31st, 32d, and 33d Arsenals (North Manchurian Arsenal) (Hsiungkiang Arsenal)	3,000 (Fall of 1952) g/	Ammunition: Hand grenades 75-mm mortar rounds Mortar shells Artillery shells Bombs Weapons: Machine guns Mortars Repair of tanks	96,000 units g/ 3 per month g/		There is a large installation occupying several square kilometers. The area was formerly the site of Japanese workshops. In 1951, machinery and personnel were reportedly brought here from the Mukden Arsenal complex in order to escape possible UN air raids. In 1953, information indicated a planned expansion of buildings and equipment by 100,000 square feet. A three-story plant with a capacity of 1,000 cubic feet per day was installed. Machinery was being supplied by the USSR. Before 1949, grenade parts and explosives were imported from the USSR. The arsenal complex is capable of manufacturing rifles and machine guns, but actual production has not been verified.	1946 to 1953

* Footnotes for Table 6 follow on p. 53.

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Table 6
Minor Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China (Continued)							
Ren-shih (42°00' N - 121°42' E) Jehol		600 (1945) <i>f/</i>	Ammunition: Hand grenades 50- and 80-mm mortar shells 50-mm mortar shells Miscellaneous: Repair of weapons Parts for weapons	60,000 to 90,000 units <i>f/</i> 4,500 to 4,800 rounds <i>f/</i> 2,100 to 2,400 rounds <i>f/</i>		This is a former machine tool plant. It was converted to the production of ammunition by the Chinese Communists in November 1945. There are 6 brick buildings 100 x 50 feet. Shells produced in 1948 were shipped to an unknown installation, probably a branch of this arsenal, for finishing.	1945 to 1948
Pu-hsien (Ma-fang-tien) (39°38' N - 122°00' E) Liaoning	Woyan Arsenal Former Nitchman Arsenal	5,000 (1948) <i>g/</i>	Ammunition: 82-mm mortar shells Hand grenades Miscellaneous: Repair of rifles and machine guns Assembly of tanks <i>g/</i> Ball bearings	30,000 rounds <i>g/</i> 30,000 units <i>g/</i>		In 1948 this arsenal was under the control of the Chinese Communists. It is reported to have been converted into a tank-assembly plant in August 1950. Tanks were assembled from parts received from the USSR.	1948 to April 1951
Pu-shun (41°58' N - 123°31' E) Liaoning		2,000 (1947) <i>g/</i>	Ammunition: Hand grenades Explosives for the Mukden Arsenal complex Possible shell filling Miscellaneous: Primer cord Incendiary pencils	15,000 units <i>g/</i>		Under the Chinese Nationalists, this arsenal was a branch of the Mukden Arsenal complex.	1947 to 1952
Beiqin (Be-orth-Pin) (45°45' N - 120°39' E) Heilungkiang	Technological Institute and Weapons Works		Ammunition: Small arms rounds Machine guns Machine pistols Flame throwers	750,000 rounds <i>h/</i>		In November 1950, part of the Mukden Arsenal complex was reported to have moved to Beiqin. The main types of weapons produced there were the same as before occupation. It is probably a temporary installation.	1950

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Table 6
Minor Armaments in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China (Continued)						
Hachin (Ba-erh-pin) (49°45' N - 126°39' E) Heilungkiang	Tung-kee Workshop	600 $\frac{1}{2}$	Ammunition: Hand grenades Small-arms rounds Mortar shells		The Tung-kee Workshop is located in an area about 200 x 100 meters. It contains 3 main buildings of brick construction, each 50 x 10 meters.	1948 to 1949
Hachin (Ba-erh-pin) (49°45' N - 126°39' E) Heilungkiang	Former 25th Military Factory	3,100 Chinese $\frac{1}{2}$ 990 Russians $\frac{2}{3}$ / $\frac{1}{3}$	Ammunition: Small-arms rounds Shell cases Weapons: Small arms Miscellaneous: Repair of damaged weapons and Assembly of new weapons and tanks received from the USSR. $\frac{1}{2}$		The USSR supplies the plant and equipment for this new arsenal. Expansion of the arsenal and labor force is expected. Possibly there are 2 installations of about equal size, 1 specializing in repair and assembly and the other in the production of small arms and ammunition. (Possibly, this is a major arsenal for production.)	1951 to 1953
Hun-ch'un (42°22' N - 130°21' E) Kirin	Hun-ch'un Arsenal (There are about eight arsenals dispersed throughout the Hun-ch'un area. They appear to be components of a complex.)	3,000 (1947-48) $\frac{1}{2}$	Ammunition: Hand grenades Grenade handles Mortar fuses Mortar shells Artillery shells Small-arms rounds Weapons: Mortars Miscellaneous: Parts for rifles Repair of weapons	60,000 units $\frac{1}{2}$ 300,000 units $\frac{1}{2}$ 36,000 units $\frac{1}{2}$ 9,000 rounds $\frac{1}{2}$ 700 rounds $\frac{1}{2}$ 77,000 rounds $\frac{1}{2}$ 170 pieces $\frac{1}{2}$	There are eight scattered arsenals. Some equipment for the production of mortar shells reportedly was moved here from Dairen in 1947.	1946 to 1951
Kirin (Chai-lin) (43°51' N - 128°33' E)	Former Hat Arsenal		Ammunition: Small-arms rounds after 1950			December 1950

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Table 6
Minor Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China (Continued)							
Lin-chiang (41°44' N - 126°51' E) Kirin		200 Japanese (repair) (1945) <u>u/</u> 500 Chinese <u>u/</u>	Ammunition: Hand grenades 60-mm mortar shells 82-mm mortar shells Miscellaneous: Repair of small arms		45,000 units <u>u/</u> 1,200 rounds <u>u/</u>	The arsenal consists of machine shops, a trench mortar-shell assembly shop, a foundry, and three grenade plants. The arsenal reportedly moved here from Yun-hua (41°41' N - 125°54' E) in early 1941. It received equipment from the USSR and from An-shun. Small shops throughout the city produced ammunition and grenades.	1945 to 1948
Ma-tan-chiang (44°35' N - 129°36' E) Heilungkiang	Plant No. 22	3,000 (1953) <u>u/</u>	Ammunition: Small-arms rounds (September 1952) <u>g/</u>		15 million to 18 million rounds	The arsenal moved here from Heilung-shan in June 1950. November to December 1951 and April to May 1952, Soviet machinery was imported. During 1952, plans were completed for an increase in production to 30 million rounds per month. <u>g/</u>	1946 to March 1953
Pai-tan (49°16' N - 126°36' E) Heilungkiang	Former 604 Arsenal	7,000 (1953) <u>u/</u>	Ammunition: Small-arms rounds 81-mm mortar shells			The arsenal was expanded following the outbreak of the Korean War. The reported manufacture of tanks and small cannons is doubtful. It is probably repair and/or assembly.	1949 to 1953
Mukden (Shen-yang) (41°48' N - 123°27' E) Liaoning	Former 534 Arsenal (formerly the Manchurian Automobile Manufacturing Company)	1,500 to 2,000 (December 1950) <u>u/</u>	Ammunition: Small-arms rounds Weapons: Mortars Miscellaneous: Repair of trucks and vehicles Pistons for locomotives Pots and pans			The USSR removed the total capacity of the arsenal to produce vehicles. From 1946 to 1948 the Chinese Nationalists developed the arsenal to produce tanks, trucks, and other heavy machinery and equipment. The Chinese Communists reportedly continued production. Local newspapers have called this a model plant with the highest efficiency record of any army installation in the northeastern military command.	1946 to 1953
T'ieh-ling (42°28' N - 123°49' E) Liaoning	34 Arsenal	20 Chinese Communist officers <u>u/</u> 1,275 Chinese laborers <u>u/</u> 2 Soviet officers <u>u/</u> 20 Soviet lathe operators <u>u/</u>	Ammunition: Hand grenades Small-arms rounds Weapons: Machine guns Mortars		380,000 units <u>u/</u>	The arsenal contains eight 1-story buildings 40 x 30 meters used in the production of arms and ammunition, a 1-story building 200 x 25 meters, a 1-story building 130 x 30 meters used in the manufacture of weapons, a foundry, warehouses, and a power station.	1949 to August 1950

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Table 6
Minor Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northeastern China (Continued)							
Yan-jin (43°21' N - 128°13' E) Kirin	Former Wood Plant (Formerly the Manchurian Pulp Plant)	2,000 (1990) ✓/	Weapons: Rifles Machine guns (light)			The Chinese Communists converted a former wood-pulp plant to the production of munitions during 1947-48.	1947 to 1950
Yen-shi (42°33' N - 129°31' E) Kirin		2,000 (1948) ✓/	Ammunition: Hand grenades Mortar shells Howitzer shells			In 1948 this arsenal was reported as one of the two largest arsenals in eastern Manchuria. It appears to produce primarily ammunition.	1947 to 1948
Northern China							
Ch'ang-kuh (36°11' N - 113°06' E) Shansi	Arsenal		Weapons: Rifles			The First Engineering Bureau of the Second Ministry of Machine Industry was to establish a medium-size arsenal. Construction was to begin shortly after May 1953. ✓/	July 1952 to May 1953
Peking (Pai-ching) (39°56' N - 116°24' E) Hopeh	70th Arsenal	3,000 (1951) ✓/	Ammunition: Hand grenades Rifle grenades Weapons: Machine guns (light) Miscellaneous: Repair of small arms		130,000 units ✓/ 30,000 units (1952) ✓/	Eighteen Czechoslovak-made lathes were received in 1952. Several small installations within Peking probably come under this arsenal.	June 1949 to April 1952
P'ai-yuan (37°52' N - 112°33' E) Shansi	Northwest Chemical Works	3,000 MA/	Ammunition: Artillery shells Bombs and mines Miscellaneous: Explosives			Expansion was reported in 1949. This installation probably operates in connection with the P'ai-yuan Arsenal in the production of shells and may be a branch of the P'ai-yuan, or Northwest, Manufacturing Plant.	January 1949 to October 1949
P'ien-shih (39°08' N - 117°12' E) Hopeh	60th Plant		Weapons: Small arms Miscellaneous: Repair of armored vehicles			A possible ammunition factory was reported to be constructed near the former International Race Course (1953). ✓/ Arsenal facilities here may be used for the repair of small arms and aircraft cannon.	1949 to 1953

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Table 6
Minor Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Eastern China (Continued)							
Po-shan (36°29' N - 117°50' E) 2 arsenals located about 12 kilometers southeast of Po-shan. Shantung	1st and 2d Arsenals of the Eastern China Military Zone	7,000 11/	Ammunition: Small arms rounds Band grenades	2.5 to 4.5 million rounds 11/ 700,000 units		Construction was reported in this area in 1951. 11/	November 1950 to November 1952
Shanghai (Shang-hai) (31°14' N - 121°29' E) Kiangsu	Royal Arsenal (formerly the East China 68th Arsenal)		Ammunition: Mines Torpedoes Deep-water bombs			In 1954, information indicated that there were branch workshops in Wu-sung, Pa-tung, and Ching-su.	September 1954
Shanghai (Shang-hai) (31°14' N - 121°28' E) Kiangsu	Shanghai Arsenal (former G1st Arsenal)	2,200 (1950) 11/ 200 Soviet technicians 11/ (1950)	Ammunition: Band grenades Small arms rounds Artillery shells Mortars Repair of small arms and infantry heavy weapons			Possibly there are several subarsenals in addi- tion to the main arsenal with which these plants may be associated. Plants were reported at Jiang-shua (31°10' N - 121°27' E), Wu-sung (31°23' N - 121°29' E), and in this area 700 meters northwest of the Chou-pu railroad station. Possibly it includes parts of the old G1st Arsenal which was evacuated to Taiwan by the Chinese Nationalists.	May 1949 to January 1951
Central and Southern China							
Ch'ang-sha (28°12' N - 112°59' E) Hunan	2d Ammunition Factory of the South China Military District		Ammunition: Small arms rounds Mortar shells			The arsenal moved here from Canton.	October to November 1952
Ch'eng-ch'i (28°00' N - 110°11' E) Hunan	Arsenal Former 11th Arsenal under the Chinese Nationalists	1,300 in artillery-shell manufacturing section 11/ (1950)	Ammunition: Small arms rounds Artillery shells Mortars Repair of rifles and machine guns Probably parts for rifles			The Chinese Nationalists made rifles and ammo- nition here. The area is reported as 250 x 200 meters with 2 sections in the plant -- artillery-shell manufacturing and bomb manufacturing.	May 1950 to May 1953

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Table 6
Minor Armaments in Communist China
(continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Central and Southern China (continued)							
Chen-pan-huan (21°59' N - 106°43' E) Kwangsi	8th Branch Factory	700 <u>11</u> /	Weapons: Machine guns (light and heavy)			The factory moved from Kwelin in July 1951. The factory is equipped <u>11</u> / with 4 machines for manufacturing machine guns and 1 iron-refining furnace. The director of the factory is Lo Ch'i-ching.	January 1950 to November 1951
Ch'in-hsien (21°58' N - 108°31' E) Kwangsi	Yenchow Ammunition and Repair Plant		Ammunition: Small-arms rounds Artillery shells Miscellaneous: Repair of weapons	150,000 rounds <u>mm</u> / 3,000 rounds <u>mm</u> / <u>mm</u> /		The plant was under construction in 1952. <u>mm</u> / In February 1951, 50 experienced workers were recruited to work in Pinghsiang and Ch'insien. Soviet equipment arrived on 15 July 1951.	October to November 1952
Ch'in-hsien (21°57' N - 108°31' E) Kwangsi	Arms Repair Shop	600 <u>mm</u> /	Ammunition: 60-mm mortar shells Small-arms rounds	20,000 rounds <u>mm</u> / 150,000 rounds <u>mm</u> / <u>mm</u> /		In February 1951, the shop was reported as recently enlarged. <u>mm</u> / It was also reported to be an underground arsenal being constructed in the mountains to the south of Wu-ch'ang-hsien to be completed by the end of 1950. <u>oo</u> / In 1951 the shop was reported as recently enlarged. <u>mm</u> / It was also reported to be an underground arsenal being constructed in the mountains to the south of Wu-ch'ang-hsien to be completed by the end of 1950. <u>oo</u> /	December 1950 to June 1951 October 1952 to February 1954
Wu-ch'ang-hsien (China-K'ou) (30°20' N - 114°07' E) Hupai	Arms Repair Shop		Ammunition: Machine-gun rounds Small hand grenades Weapons: Rifles Miscellaneous: Spare parts for weapons			Construction started in early 1952. <u>gg</u> / Mechinery came partly from the USSR and partly from the Hsien-an Arsenal. The head of the shop is reported to be a former member of the Maoist's Arms Repair shop located 3 miles from the city and has 200 workers and machinery from Shun-ching.	May 1952 to September 1952
Ch'u-chiang (24°40' N - 113°31' E) Kwangsi	7th Arms Manufactory of the Central Military Council		Weapons: Rifles Machine guns (light) Miscellaneous: Repair of all types of small arms	600 units <u>mm</u> / 60 pieces <u>mm</u> / <u>mm</u> /			

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Table 6
Minor arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Central and Southern China (Continued)							
Chi-chou (21°50' N - 113°09' E) Kuangsi	Arsenal of the Central and South China Ordnance Administration	4,600 ^{III} / _{3 shifts (1951)}	Ammunition: Band Grenades Small-arms rounds Weapons: Mortars (December 1952) Machine guns (heavy and light) Rifles	20,000 units ^{SS} / _{SS}	90 pieces ^{SS} / _{SS} 5,000 pieces ^{SS} / _{SS}	The arsenal was established in late 1950 or early 1951. ^{IV} / _{IV} It received new Soviet machinery in May 1952. ^{IV} / _{IV} reportedly to produce machine guns, rifles, pistols, and ammunition. There is production for the Viet Minh. The arsenal also repairs rifles. The director is Chang Ting.	October 1950 to January 1951 May 1951 to December 1952
Fang-ch'eng (21°06' N - 108°21' E) Kuangsi	5th Arsenal of the South China Military District	800 (includes Viet Minh workers) ^{IV} / _{IV}	Ammunition: Small-arms rounds Band Grenades Weapons: Small arms (possibly) Machine guns	1 million rounds ^{IV} / _{IV} (June 1951)		Armament repair operations were reported as reported to normal in 1951. The arsenal repaired 7,000 rifles. ^{IV} / _{IV} Soviet technicians repaired 10 cases of electric drills, and other small machines arrived from Canton. The hand grenade branch planned to move into the arsenal in March 1951.	February 1951 to March 1953
Iin-chou (20°09' N - 109°24' E) Kuangsi	Iin-chou Machine Plant operated by the Kuangsi government (former 38th Arsenal at Chi-ia, Chinese Nationalists, Iin-chou Arms Repair Shop)		Ammunition: Small-arms rounds Band Grenades Miscellaneous: Repair of small arms Machine guns and industrial machinery ^{IV} / _{IV}			This is also a supply center for the distribution of ammunition, Soviet arms, and materials from Bloc countries to the Viet Minh.	October 1950 to March 1952
Iung-ching (Iung-chou) (22°20' N - 107°01' E) Kuangsi			Ammunition: Shells and bombs Weapons: Small arms and automatic weapons				October 1952 to November 1953
Man-ning (22°09' N - 108°19' E) Kuangsi	Man-ning Machine Factory		Ammunition: Small-arms rounds			The Man-ning Weapons Repair Shop was reported as moved to Heng-yang (22°23' N - 108°23' E). This shop may have been transferred to Heng-yang from the former Soviet-occupied parts (1953). At the beginning of 1951, 90 Soviet technicians and 10 pieces of Soviet-made machinery arrived. ^{XX} / _{XX} From 15 July to September 1953, daily deliveries of copper ingots were reported at 60,000 to 70,000 pounds. ^{XX} / _{XX}	

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Table 6
Minor Arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Quantity	Remarks	Date of Information
Central and Southern China (continued)						
P'ing-shiang (28°06' N - 106°44' E) Kwangsi		600 (1951) ZZ/ 79 Soviet and Czechoslovak mechanics and technicians who arrived in September 1951. ZZ/	Light and heavy infantry weapons and ammunition for the Viet Minh. (Possibly includes light mortars, grenade launchers, rifles, and automatic weapons.)		Expansion was reported in 1953. <u>ZZ/</u> Soviet machines and construction work were reported in 1951. <u>DBB/</u> The Soviet adviser was Barkov (1951-53). Other technicians are Hseng Sheng (1951-53) and Chen Chang-hsi (1953); and the assistant is Cheng Wei-tan (1951).	October 1950 to July 1953
Shenow (Shan-t'ung) (23°22' N - 116°40' E) Kwangtung	(F'ao-t'ai)		Ammunition: Bombs Antitank shells Sea mines		This arsenal was under construction in August 1951. <u>CC/</u>	August 1951
Yen-ch'i (28°10' N - 110°57' E) Hunan (East of Ferry Landing)	Arsenal	3,500 to 4,000 and Soviet advisers <u>dad/</u>	Weapons: Machine guns (light and heavy) 82-mm mortars		Labor reported at the arsenal includes 1,000 from Indochina. The director is Wang Lei and the Army representative is Pan Peng. The arsenal was reported to be producing artillery shells and rocket shells of a new type, but this is doubtful.	October 1952 to September 1953
Southern China			Ammunition: Small-arm rounds 82-mm mortar shells Hand grenades Miscellaneous: Repair of small arms	15,000 rounds <u>FF/</u>	In 1952, recent expansion was reported. <u>CC/</u> The arsenal has 2 workshops -- 1-story brick buildings with galvanized iron roofs. Rifle production was reported as well as eight machine guns in 1951.	1950 to 1952
Ch'eng-fu (30°40' N - 104°04' E) 3 kilometers southeast of the city) Szechwan	31st Arsenal	2,000 <u>CC/</u>				
Chungking (Ch'ung-ch'iang) (29°34' N - 106°55' E) About 20 kilometers west of Chungking Szechwan	Former 25th Arsenal	2,000 <u>CC/</u> (Chinese Nationalist figure)	Ammunition: Small-arms rounds	9 million rounds <u>HH/</u> (1944-49)	The arsenal area is circular in shape and about 4 kilometers in diameter. There are about sixty 1-story buildings of various shapes and sizes. The arsenal was reported to be in full operation in May 1950.	1944 to 1950

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Table 6
Minor arsenals in Communist China
(Continued)

Location	Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Southwestern China (Continued)							
Chungking (Ch'ung-ch'ing) (29°34' N - 106°35' E) About 5 kilometers west of the Shan-hu-pa Airfield Szechwan	Former 1st Arsenal	1,200 (1947) III/	Ammunition: Artillery shells Weapons: 7.9-mm rifles Machine guns (light)	10,000 rounds 600 pieces 200 pieces		The arsenal was reported to be in partial production in May 1950. It is reported to be an underground arsenal with machine shops in numerous caves. Machinery was moved here from Hang-yang during the Sino-Japanese War.	1944 to 1952
Chungking (Ch'ung-ch'ing) (29°34' N - 106°35' E) Szechwan	Former 20th Arsenal		Ammunition: Small-arms rounds Flare shells Mortar shells	10 million to 18 million rounds III/		The arsenal area is about 4.5 x 2.5 kilometers, and there are about 200 1-story buildings of various sizes. Under the Chinese Nationalists, powder was imported from the US. It was slightly damaged by the Chinese Nationalists. Only a portion was in operation in May 1950. Many shops in manufacturing were done by hand labor.	1944 to February 1951
Chungking (Ch'ung-ch'ing) (29°34' N - 106°35' E) (Tan-tai-shih) (Across the Yangtze /Ch'ang Chiang/ River from Chiang-pai) Szechwan	Former 30th Arsenal	1,000 XXX/	Ammunition: Band Grenades			This is a small arsenal. Possibly it produces rifle grenades and rifle-grenade launchers. Machines were moved here from Hang-yang during the Sino-Japanese War.	1944 to 1951
Tachien (23°53' N - 105°23' E) Szechwan	Former 23d Chemical Arsenal		Ammunition: Chemical grenades with Grenade launchers	15,000 units III/ (1954)		The arsenal was reported as partially removed by the Chinese Nationalists. Under the Chinese Nationalists (1948) it was reported to consist of a gas-mask plant, a nitrocellulose plant, and a sulfuric acid plant. The arsenal was not in production in 1950.	October 1948 to June 1954
Northwestern China							
Fei-g-hsiang (34°26' N - 107°18' E) Shensi	Arsenal		Weapons: Copy of Soviet rifle			This is a new arsenal. <u>mm/</u>	August 1952 to November 1952

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Table 6
Minor Arsenals in Communist China
(Continued)

Location		Identification	Estimated Labor Force	Item	Estimated Monthly Capacity	Quantity	Remarks	Date of Information
Northwestern China (Continued)								
Sian (Hsi-an) (34°16' N - 108°24' E) Shensi	Arsenal			Weapons: Mortars (unknown size) Miscellaneous: Accessories for rifles and machine guns			This is an old arsenal. Chinese Communist plans call for expansion and the introduction of Soviet equipment and methods. <u>mm/</u>	August 1952 to November 1952
Pe-shih (33°40' N - 109°09' E) Shensi	Arsenal			Weapons: Copy of Soviet machine gun			This is a new arsenal. <u>mm/</u>	August 1952 to November 1952
T'ung-wei (35°18' N - 105°20' E) (Northwest of Pe-shih) Kansu	Arsenal			Ammunition: Rifle shells			This is a new arsenal. <u>mm/</u>	August 1952
Yen-an (Pa-shih) (36°34' N - 109°27' E) Shensi			2,500 <u>mm/</u> Unknown number of Soviet technicians	Ammunition: Mortar shells Hand grenades Weapons: Rifles Grenade launchers			It is reported by some to be Communist built. <u>ccc/</u>	January 1950 to November 1952
Yung-feng (36°54' N - 103°24' E) Kansu	1st Northwest China Arsenal		1,000 laborers, <u>ppp/</u> 300 Soviet, Japanese and European technicians <u>ppp/</u>	Ammunition: Small-arms rounds Weapons: Small arms			This arsenal received Soviet-made machinery. <u>ppp/</u> The superintendent is Wang K'o.	November 1951
a. 12/	k. 52/	u. 62/	es. 72/	oo. 82/	yy. 92/	111. 102/		
b. 13/	l. 53/	v. 63/	fr. 73/	pp. 83/	zz. 93/	112. 103/		
c. 14/	m. 54/	w. 64/	gs. 74/	qq. 84/	aa. 94/	113. 104/		
d. 15/	n. 55/	x. 65/	hh. 75/	rr. 85/	bb. 95/	114. 105/		
e. 16/	o. 56/	y. 66/	ii. 76/	ss. 86/	cc. 96/	115. 106/		
f. 17/	p. 57/	z. 67/	jj. 77/	tt. 87/	dd. 97/	116. 107/		
g. 18/	q. 58/	aa. 68/	kk. 78/	uu. 88/	ee. 98/	117. 108/		
h. 19/	r. 59/	bb. 69/	ll. 79/	vv. 89/	ff. 99/	118. 109/		
i. 20/	s. 60/	cc. 70/	mm. 80/	ww. 90/	gg. 00/	119. 110/		
j. 21/	t. 61/	dd. 71/	nn. 81/	xx. 91/	hh. 01/	120. 111/		

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APPENDIX C

METHODOLOGY

1. Ammunition Capacity Estimates.

The estimated monthly capacity for the production of ammunition in Communist China was based on the reported production figures summarized in Appendix B. Many reports mention only the number of rounds per category of ammunition and do not list exact calibers. Adequate information needed to arrive at a weighted average weight for a representative round for each category was lacking. To obtain the minimum capacity, in tons, for artillery and mortar shells and grenades, the lowest weight within the category was used. The 7.62-mm rifle and machine gun round was used to obtain the minimum capacity, in tons, of small arms ammunition.

The following items and weights were used: artillery shells, 70-mm -- 9.9 pounds; mortar shells, 60-mm -- 3.25 pounds; small arms, rounds, 7.62-mm -- 0.055 pounds; and hand grenades -- 1.54 pounds. The minimum capacity for the production of ammunition in Communist China was determined by totaling the reported production from Appendix B, in tons, and in rounds converted to tons. The monthly estimates shown in Table 1* were derived from this total.

Table 7** gives the estimated monthly capacity for the production of ammunition in the Mukden Arsenal complex in 1948. The complex was given more detailed treatment than any of the other arsenals because it is the major munitions-producing complex in Communist China and because more detailed information on production according to calibers was available for this arsenal than was available for the others.

2. Production Capacity for Weapons.

To arrive at the general magnitude of additional capacity of the arsenals for which no monthly rates of production are available, analogous comparisons of the more important arsenals, as listed below,

* P. 6, above.

** Table 7 follows on p. 56.

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Table 7

Estimated Monthly Capacity for the Production of Ammunition
in the Mukden Arsenal Complex of Communist China
1948

Type of Ammunition	Reported Production a/ (Units)	Weight of Individual Round (Pounds)	Weight of Reported Production (Pounds)	Weight of Reported Production (Tons)
Small arms rounds	4,000,000	0.055	220,000	110
Mortar shells				
60-mm	20,000	3.25	65,000	32
81- and 82-mm	30,000	8.52	256,000	128
120-mm	10,000	35.2	352,000	176
Artillery shells				<u>340 b/</u>
75-mm	10,000	19.1	191,000	100 b/
Hand grenades	200,000	1.54	308,000	150 b/
Total				<u><u>700 b/</u></u>

a. 110/
b. Rounded.

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were made where applicable. Analogous arsenals were selected on the basis of old Chinese Nationalist production estimates, 111/ the types of end items reported to be produced, and the similarity of geographic areas of production. The arsenals selected were the following: Mukden Arsenal complex; T'ai-yuan Arsenal complex; Tsinan Arsenal complex; Hsin-nan Arsenal, Canton; Wu-han Arsenal complex; former 10th Arsenal, Chungking; and former 21st Arsenal, Chungking.

a. Artillery.

The capacity of the Mukden Arsenal complex was compared with that reported for the T'ai-yuan Arsenal complex, and the capacity of the Wu-han Arsenal complex was compared with that reported for the Hsin-nan Arsenal in Canton. An estimated additional capacity of 100 percent over the reported production capacity is suggested.

b. Mortars.

Similar comparisons were made to obtain the estimated capacity of the Mukden and Wu-han arsenals to produce mortars. In addition, the capacity of the Chungking former 21st Arsenal was compared with the reported capacity of the Chungking former 10th Arsenal. An estimated additional capacity of 30 percent over the total reported production capacity is suggested.

c. Machine Guns.

Similar comparisons were made to obtain the estimated capacity of the Mukden and Wu-han arsenals to produce machine guns. An estimated additional capacity of 40 percent over the reported production capacity is suggested.

d. Small Arms.

The submachine gun production of the Chungking former 21st Arsenal was compared with that of the Mukden Arsenal complex and the capacity at the Tsinan Arsenal complex with that of the Canton arsenals. An estimated additional capacity of about 70 percent over the reported production capacity is suggested.

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APPENDIX D

GAPS IN INTELLIGENCE

A most serious gap in intelligence exists in the area of production information after 1949. Information on raw materials going into arsenals, on the capital equipment presently used in the arsenals, and on the specific end products of the arsenals is almost nonexistent. The reports of production which do exist consist largely of simple references to types of armaments such as small arms, artillery, guns, grenades, shells or small arms ammunition, or artillery ammunition.

Descriptions of buildings are out of date in most cases, and photointelligence is lacking on even the major production installations such as the arsenals around Chungking and T'ai-yuan. Little information to confirm developments in the munitions industry of Communist China since 1949 is available.

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APPENDIX E

SOURCE REFERENCES

25X1X4

25X1X4

The large majority of sources used in this report were [redacted] The reports were based on interrogations of Japanese prisoners of war and other repatriates who were in Communist China, on articles appearing in the Chinese Communist press, and on information from [redacted]

25X1X4

25X1X4

The quality of the information available from the interrogation of persons returning from Communist China ranges from reliable to completely false. It is believed that the poorest of the interrogation reports have been recognized and eliminated. The reports which were used were generally confirmed by two or more sources. A large part of the detailed information available on Chinese Communist arsenals comes from these interrogation reports which, unfortunately, are based on observations during 1949, 1950, and possibly 1951, and do not give the current picture.

Articles from the Chinese Communist press were used cautiously. Generally the Communist-controlled press within Communist China gives very little information on the arsenals or on the Second Ministry of the Machine Industry. The information that does reach the Chinese Communist newspapers is, however, more reliable than that received in the more numerous newspaper reports from Hong Kong, T'ai-pei, and Tokyo. The most unreliable were those from the pro-Chinese Nationalist Hong Kong newspapers, although they also are the most prolific in information on Chinese arsenals.

25X1X4

[redacted] is very valuable and considered reliable depending upon the channels through which the information was obtained. Information from [redacted]

25X1X7

25X1X7

[redacted] is used very cautiously. As with the pro-Chinese Nationalist press, the information often happens to strengthen the Chinese Nationalist cause. The estimate of the reliability of [redacted]

25X1X4

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[redacted] is based on the evaluation of the reporting agency when this information does not conflict with reliable information already on hand.

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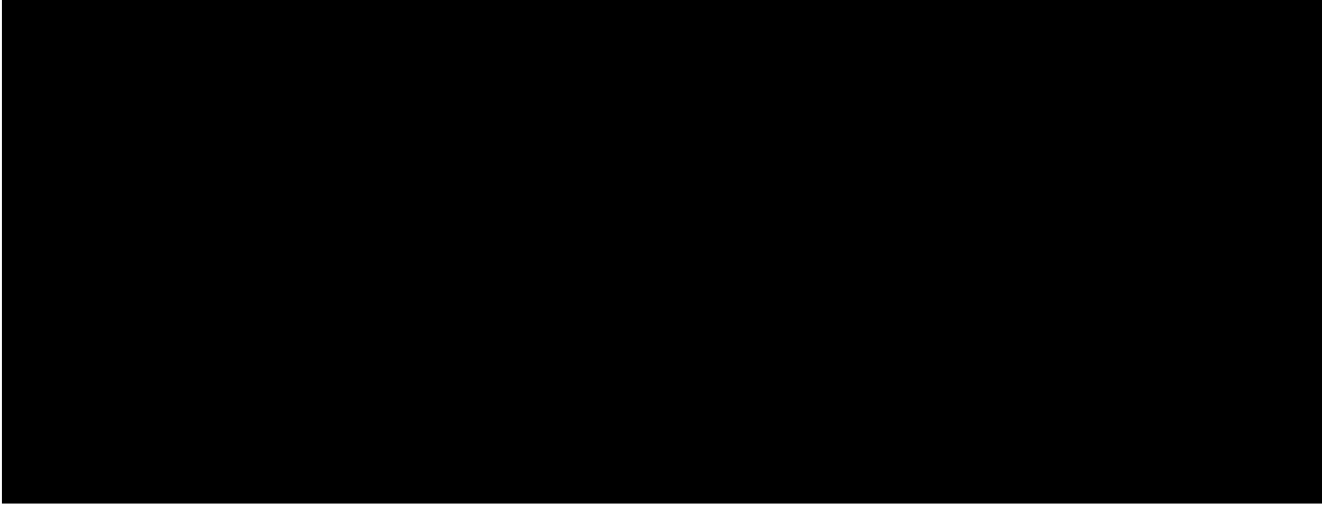
Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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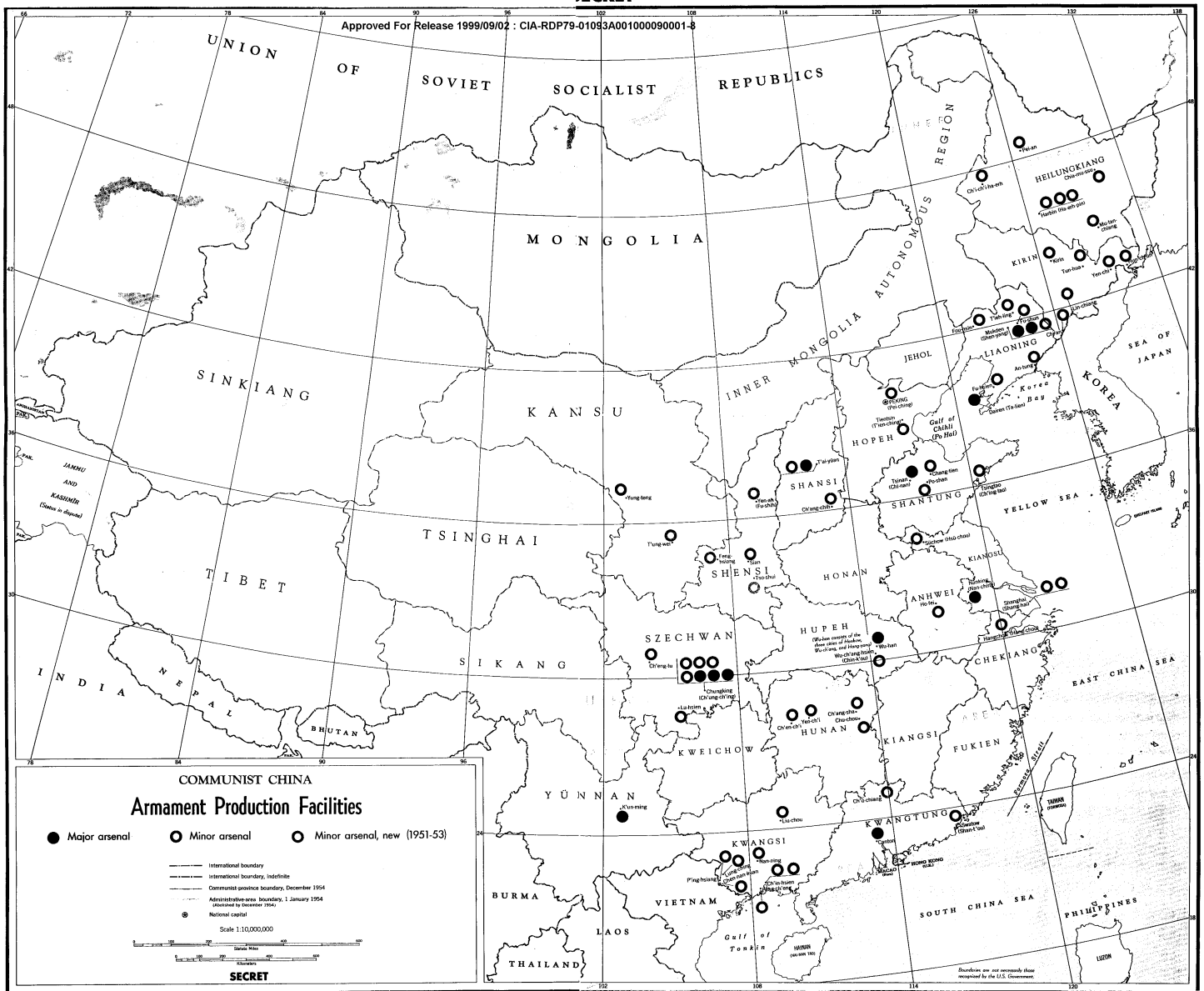


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