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PROVISIONAL INTELLIGENCE REPORT

PLANT STUDY OF THE IRON AND STEEL INDUSTRY  
OF THE USSR: ECONOMIC REGION XI

CIA/RR PR-63

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FOREWORD

This report covers those plants in Economic Region XI, East Siberia, which produce metallurgical coke, pig iron, and steel ingots, as well as steel castings and other types of finished steel. Although Region XI, East Siberia, accounted for little more than 1 percent of the production of steel for ingots and castings and approximately the same amount of finished steel in 1953, it represents an important link in a chain of steel plants the Russians have been developing eastward from the Kuznetsk Basin.

The primary intelligence value of this report lies in the basic evaluation of the plant capacity of this region as a contribution to the capabilities of the USSR in the production of metallurgical coke, pig iron, steel, and finished steel products. The localization of industrial centers and individual plants and their importance in the Soviet iron and steel industry furnish valuable target information. Regional production estimates of the Soviet iron and steel industry also serve as a check on Soviet statistics.

This report is one of a series of regional provisional reports that will provide basic research data for a comprehensive study which is to be made in the iron and steel industry of the USSR.

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PLANT STUDY OF THE IRON AND STEEL INDUSTRY  
OF THE USSR: ECONOMIC REGION XI\*

Summary

Although Economic Region XI,\*\* East Siberia, is the largest region in the USSR, it is one of the smallest producers of steel in the USSR. There are no blast furnaces or coke ovens in the region. Cold pig iron is shipped in to the steel-producing plants from other areas.

This region has a good iron ore base in the Angara - Elim district with its magnetite ore running up to 58 percent iron content, but there is no known deposit of good coking coal. This lack of good coking coal, however, cannot be considered as a principal retarding factor to the development of a fully integrated iron and steel industry, since good coking coal is available in the relatively nearby Kuznetsk Basin. The most plausible reason for the absence of a fully integrated steel industry in this section may be the fact that sufficient demand has not been generated by the manufacturing establishments of the area.

Steel production is concentrated in three cities, Petrovsk, Irkutsk, and Krasnoyarsk, with approximately 50 percent coming from Petrovsk. (See the accompanying map for the locations of iron and steel plants in Economic Region XI.\*\*\*)

In 1953, Region XI produced 385,200 tons\*\*\*\* of steel for ingots and castings, and 259,200 tons of finished steel. No coke

\* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 15 May 1954.

\*\* The term region as used in this report refers to the economic regions defined and numbered on CIA Map 12048.1, 9-51 (First Revision, 7-52), USSR: Economic Regions.

\*\*\* Following p. 24.

\*\*\*\* Tonnages are given in metric tons throughout this report.

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or pig iron was produced. Of the total steel and finished steel production in the USSR, the area accounted for 1.04 percent and 0.94 percent, respectively. Of the finished steel production, 117,200 tons or 45.2 percent was in the form of steel castings.

The disproportionately high production of finished steel in the form of castings results from the fact that all steel production with the exception of that at Petrovsk comes from foundries located in manufacturing plants.

Any development of a fully integrated steel industry in Region XI would be expected to take place in the Krasnoyarsk area because it is most favorably located with respect to sources of raw materials.

The distribution of the production of iron and steel in Region XI is given in Table 1.

Table 1  
Production of Iron and Steel in Region XI  
1953

Plant	Thousand Metric Tons					
	Coke	Pig Iron	Steel	Finished Steel	Rolled Steel	Steel Castings
Petrovsk-Zabaykal'skiy Metallurgical Plant	0	0	205.4	147.5	90.4	57.1
Krasnoyarsk Locomotive and Car Plant	0	0	52.6	34.3	22.7	11.6
Krasnoyarsk Armament Plant	0	0	44.9	24.7	0	24.7
Irkutsk Heavy Machine Building Plant	0	0	42.3	26.1	12.0	14.1
Irkutsk Motor Vehicle and Tank Plant	0	0	40.0	26.6	17.0	9.6
Total			<u>385.2</u>	<u>259.2</u>	<u>142.1</u>	<u>117.1</u>



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1. Petrovsk Zabaykal'skiy Metallurgical Plant  
(Petrovsk Transbaykal Works) [REDACTED]\*

25X1A

a. Location.

51°17' N - 108°50' E, Petrovsk, Chita Oblast, East Siberia, USSR. 2/ The plant is located approximately 2 kilometers east of the Petrovsk station on the Trans-Siberian railroad, 3/ on the north side of the Balega River.

b. History and Development.

Originally built in 1789 this plant contained primitive charcoal blast furnace, rolling mill, and forge shop. 4/ Iron ore for the blast furnace was obtained from the Balyaginsk mine 5/ and coal for the boilers and gas producers from nearby Cheremkhovo and Tarbagatay. 6/ Little development or improvement occurred until about 1930. At that time, definite plans were made to produce 83,000 tons of pig iron, 77,000 tons of steel and 100,000 tons of rolled products per year. 7/ With a planned total capitalization of 171,830,000 rubles there was to be a full metallurgical cycle of coke ovens, blast furnaces, open-hearth furnaces, and rolling mills. As the plan developed, No. 1 open-hearth furnace produced its first steel in 1940, the first steel was rolled in 1941, and the third open-hearth furnace went into operation in 1943. 8/ Action on the plans for coke ovens and blast furnaces was delayed pending the results of prospecting of local mineral reserves. 9/

c. Raw Materials and Other Inputs.

The weekly inputs in the period 1947-49 were pig iron, 300 tons 10/; limestone, 100 tons 11/; coal, 300 tons 12/; and coke, 100 tons. 13/ In 1949, 2,000 tons per month of semifinished steel in the form of ingots and bars were supplied by an unknown source. 14/

d. Coal and Coke.

Chernov and Tangatay coal deposits supply much of the coal used 15/ although Cheremkhovo in Irkutsk Oblast supplies part of the coal requirements. 16/ Receipts of coal up to 300 tons

\* Footnote references in arabic numerals are to sources listed in Appendix D.

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per day occurred in 1952. Coke from unknown sources was received at a rate of about 100 tons per week in 1951. 17/

e. Ironmaking Facilities.

There are no blast furnaces. 18/ Cupolas are operated for making iron castings. 19/ The capacity or number of cupolas is not available. Since the coke received is undoubtedly used for cupola operation, it can be assumed that 31,200 tons of iron were produced on the basis of 6 tons of iron for each ton of coke.

f. Steelmaking Facilities.

There are 3 basic open-hearth furnaces of 60 tons capacity each, their total hearth area is 120 square meters. 20/ The coefficient for steel production in 1952 was 5 tons per square meter of hearth area per day. All open-hearth furnaces are normally producer gas fired but are designed to be fired with oil when necessary. All cold metal charges are used and contain one-third to one-half pig iron. 21/ In 1950 the time of heats was 8 hours and 30 minutes. 22/ Improved methods were adopted in 1951 which decreased the time to 6 hours and 50 minutes. This decrease in time of heats increased steel production from 165,000 tons to 205,000 tons per year in 1952. Production of steel at the Petrovsk Metallurgical Plant is given in Table 2.

Table 2

Production of Steel at the Petrovsk Metallurgical Plant  
1952-53

Number of Furnaces	Type	Individual Capacity (Metric Tons)	Coef- ficient	Number of Heats per Day	Number of Operating Days per Year	Production (Thousand Metric Tons)
3	Open- Hearth	60	5	3 to 4	325	205.4 <u>a/</u>
Total						<u>205.4</u>

a. The time of 6 hours and 50 minutes for heats would provide approximately 3.5 heats per day per furnace.

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g. Primary Rolling Facilities.

There are no blooming or billet mills installed here. The necessity for such equipment is minimized by making small cross section ingots. These measure approximately 15 centimeters square by 100 centimeters long and weigh about 0.125 ton each.

h. Finishing Rolling Facilities.

(1) Rolling Mills.

There are 2 roll trains having rolls of 240 millimeter and 325 millimeter in diameter. 23/ These are 2-stand and 3-stand mills and are used to rough the billet-size ingots as well as for finishing the product.

(2) Rod Mill.

6-millimeter to 13-millimeter diameter rods, in the amount of 180 tons per day are rolled. 24/

(3) Structural Mill.

Rolls girders, 100 tons 25/ per day and angles, strip, plate, and rails in unknown amounts. 26/

The equipment in this department includes 27/ 2 annealing furnaces, 2 wire-drawing machines, 28/ and mechanical shears. In June 1952 it was reported that a mill with 231-millimeter diameter rolls was operating. No information regarding its product or capacity is available. 29/

i. Intraplant Services.

(1) Electric Power.

The capacity of this thermoelectric plant is 6,000 kilowatts. 30/ The transformer station has two 3,300-volt transformers. Power is furnished the city as well as the plant. 31/

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(2) Water Supply.

Water for the plant is obtained from two sources -- the Balega River which runs along the south side of the plant and a small lake close by. The power plant obtains its water from the lake. Water for drinking is brought into the plant in drums on horse-drawn wagons. 32/

(3) Maintenance Department.

A machine shop with the usual equipment exists for maintenance of production units. 33/ Other auxiliary shops essential to the maintenance and operation of the plant are an electric repair shop, 34/ a welding shop, 35/ a forge shop, 36/ a woodworking shop, 37/ a locomotive repair shop, 38/ a compressor plant, 39/ and a chemical laboratory. 40/

(4) Gas Producer Plant.

There are 10 to 12 gas producers that produce gas for the open-hearth furnaces, soaking pits, and annealers. 41/

j. Products and Production.

Finished goods for the civilian economy include machinery for oil, mining, railroad, and agricultural industries. 42/ Two thousand five hundred ingots per day were produced in 1949. 43/ They were rolled into rods, girders, strip, angles, plate, rails, and wire. 44/ The iron and steel foundries produce castings to be used in the assembly of the various machines. Production of steel and finished steel at the Petrovsk Metallurgical Plant is given in Table 3.\*

k. Distribution.

Much of the steel made is consumed in the form of castings, forgings, or finished rolled shapes in the manufacture of machinery. Shipments of finished steel in 1945 to 1949 were distributed to plants 45/ in East Siberia and the Far East, the Railroad Administration, the Far Eastern Army, Komsomol'sk, Chita, and

\* Table 3 follows on p. 7.

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Table 3

Production of Steel and Finished Steel  
at the Petrovsk Metallurgical Plant  
1953

Thousand Metric Tons				
<u>Steel</u>	<u>Ingots</u>	<u>Steel Castings</u>	<u>Rolled Steel</u>	<u>Total Finished Steel</u>
205.4	101.5 <u>a/</u>	57.1	73.1	147.5
	24.0 <u>b/</u>		17.3 <u>b/</u>	
Total	<u>125.5</u>		<u>90.4</u>	

a. 2,500 ingots weighing 0.125 ton each, cast per day equals 101,523 tons annually.

b. 2,000 tons of ingots per month supplied by an unknown source.

Ulan-Ude. Castings are shipped to the Agricultural Machine Shop at Rostov and the Tank Factory in Irkutsk. 46/

1. Plant Efficiency.

During the period of April 1949 through May 1953, citations and prize awards for efficiency were given to the plant. Some of these were as follows:

April 1949, pledged 4.32 tons of steel per square meters of hearth area. 47/

June 1949, reached production level planned for 1950. 48/

December 1949, fulfilled production plan in steel by 109.2 percent. 49/

February 1950, awarded challenge Red Banner for high production record. 50/

July 1950, first prize in Socialist competition, first quarter. 51/

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February 1951, completed 1950 plan ahead of schedule. 52/  
March 1951, awarded Stalin Prize, 3rd class. 53/  
December 1951, fulfilled year's quota. 54/  
October 1952, overfulfilled September plans. 55/  
December 1952, overfulfilled plan by 161 percent. 56/  
April 1953, surpassed 10-day plan by 13 percent. 57/  
May 1953, 92 percent of smelting completed ahead of schedule. 58/

m. Administration.

In 1949 this plant was subordinate to the Main Administration of Metallurgical Industry. 59/

n. Personnel.

In 1953, total employment was 2,000 civilians and 500 Japanese prisoners of war. 60/ The plant was operated 3 turns of 8 hours per day, 6 days per week. Individuals responsible for certain of the plant operations are:

Poltovan, Director, February 1949. 61/  
Gorbatov, Chief Engineer, October 1952. 62/  
Tarasov, Chief Engineer, April 1953. 63/

o. Locational Characteristics.

Located in a mountainous region 1,026 meters above sea level and in a land of eternal frost, this plant is subjected to the inconveniences and interruptions to operations that cold weather and snow usually cause.

2. Krasnoyarsk Locomotive and Car Shop (Siberian Heavy Machine Building Plant) [REDACTED] **25X1A**

a. Location.

56°02' N - 92°48' E, Krasnoyarsk Kray, East Siberia, USSR, 300 meters south of the Trans-Siberian railroad, close to the town of Zlobinka, on the Yenisey River. 64/

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b. History and Development.

This plant was started in 1941 <sup>65/</sup> with equipment evacuated from Bryanskiy in the Ukraine. <sup>66/</sup> It consisted of new US, German, and Japanese machinery plus some old Soviet equipment. Its objective was to build and repair railroad locomotives, cars, and heavy machine equipment. At the beginning the main effort was on repairing locomotives sent in from other locations. The equipment installed included units for the production of steel and iron castings and ingots for rolling. By May 1947, peak production was reached, <sup>67/</sup> 14 locomotives being built in that month.

c. Raw Materials and Other Inputs.

Pig iron, scrap, ingots, plate, and coke are shipped in from unknown sources. <sup>68/</sup>

d. Coal and Coke.

The 400 tons of coal consumed per day in the power and heating systems in 1950 came from the Abakan area. <sup>69/</sup>

e. Ironmaking Facilities.

No blast furnaces are installed in this plant. There are 3 cupolas, 2 of which <sup>70/</sup> operate continuously to supply iron for making castings and ingot molds.

f. Steelmaking Facilities.

Three oil-fired, basic open-hearth furnaces making 25-ton heats in 8 hours <sup>71/</sup> plus 2 electric furnaces that make 2-ton heats in 3 hours have a production capacity of about 72,000 tons per year. The policy in this plant is to operate 2 open-hearth furnaces, <sup>72/</sup> holding 1 in reserve or under repair. These 2 open-hearth furnaces operate 24 hours per day. Only 1 electric furnace is in operation, 1 being held in reserve. The 1 electric furnace operates on 2 turns, or 16 hours per day. <sup>73/</sup> Under this operating policy a total of about 52,000 tons were produced in 1949.

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Since there are no reports of increased efficiency of operations or expansion of facilities in the period 1949-53, steel production is estimated to have been the same in 1953 as in 1949. Production of steel at the Krasnoyarsk Locomotive and Car Shop is given in Table 4.

Table 4

Production of Steel at the Krasnoyarsk  
Locomotive and Car Shop  
1953

<u>Number of Furnaces</u>	<u>Type</u>	<u>Individual Capacity (Metric Tons)</u>	<u>Coef- ficient</u>	<u>Number of Heats per Day</u>	<u>Number of Operating Days per Year</u>	<u>Total Tonnage (Thousand Metric Tons)</u>
2	Open- Hearth	25	N.A.	3	325	48.7
1	Elec- tric	2	N.A.	6	325	3.9
Total						<u>52.6</u>

g. Primary Rolling Mill.

This plant does not have a blooming mill. The ingots produced are 20 centimeters square by 1 meter long, 74/ thus they can be rolled directly on the finishing mill.

h. Finishing Facilities.

(1) Structural Mill.

The capacity of this mill is not known. It produces plate, round, and square bars. 75/



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(2) Seamless Tube Mill.

The capacity or other characteristics of this mill are unknown. 76/

(3) Steel Foundry.

Steel castings are produced here to be used in the construction of locomotives, cars, cranes, and heavy machinery. 77/

(4) Iron Foundry.

There are three cupolas of unknown capacity to supply the iron for this foundry. 78/

(5) Forge Shop.

Forgings and stampings for machine building are made here. The equipment includes two 15-ton hammers and 4 presses. 79/

i. Intraplant Services.

(1) Electric Power.

Two power plants, a small one with 1,500-kilowatt capacity 80/ and a large one with 11,000-kilowatt capacity provide electric power for the plant. 81/

(2) Water Supply.

Water for the plant is pumped from the Yenisey River nearby. 82/

(3) Maintenance Department.

A machine shop with the usual complement of equipment exists for the maintenance of the production equipment in the plant. 83/

j. Products and Production.

Products from the steel and iron foundries and rolling mills are castings, plate, tubes, round, and square bars. 84/ These products are used in the construction of locomotives, cars,

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cranes, and other heavy machinery. 85/ Production of steel and finished steel at the Krasnoyarsk Locomotive and Car Shop is given in Table 5.

Table 5

Production of Steel and Finished Steel  
at the Krasnoyarsk Locomotive and Car Shop  
1953

<u>Thousand Metric Tons</u>			
<u>Steel</u>	<u>Steel Castings</u>	<u>Rolled Steel</u>	<u>Total Finished Steel</u>
52.6	11.6 <u>a/</u>	22.7	34.3

a. Of steel production, 60 percent was ingots and 40 percent, castings.

k. Distribution.

Practically all of the steel and iron made is consumed as castings or rolled products in the manufacture of finished machines.

l. Plant Efficiency.

It was reported in 1952 that there was a very definite increase in production of heavy cranes. 86/

m. Administration.

No information available.

n. Personnel.

Aleksandr Broisovich 87/ was Chief Designer and a recipient of a Stalin prize in October 1952. The number of employees in 1949 is reported to have been 3,200 civilians and 1,800 Japanese prisoners of war. 88/

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3. Krasnoyarsk Armament Plant (Plant 4 Voroshilov Arms Plant)

**25X1A**

a. Location.

56°02' N - 92°48' E, Krasnoyarsk, Krasnoyarsk Kray, East Siberia, USSR. The plant is located on the south side of the Yenisey River on the Trans-Siberian railroad.

b. History and Development.

Construction of this plant was started in 1932 and practically completed in 1938. 89/ Locomotives and railroad cars were repaired and new railroad cars, machine tools and mining machinery were manufactured. At the start of World War II the plant was enlarged for the production of mobile guns and other military equipment. 90/

c. Raw Materials and Other Inputs.

In 1947, weekly inputs 91/ were molding sand, 200 tons; pig iron, 150 tons 92/; limestone, 36 tons; manganese ore, 50 tons. The sources of these materials are unknown.

d. Coal and Coke.

Coal from Abakan 93/ is used for heating, power, and in the gas producers. 94/ In 1953, 360 tons per day were received. Coke is received from unknown sources. 95/

e. Ironmaking Facilities.

There are no blast furnaces. The iron foundry has two cupolas of unknown capacity. 96/

f. Steelmaking Facilities.

Two producer gas fired basic open hearths 97/ of 15-ton capacity each and one electric furnace with a capacity of 3 tons are installed in the steel foundry. 98/ In 1949 the open-hearth furnaces made 4 heats each per day and the electric furnace

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6 heats per day. Production of steel at the Krasnoyarsk Armament Plant is given in Table 6.

Table 6

Production of Steel at the Krasnoyarsk Armament Plant  
1953

<u>Number of Furnaces</u>	<u>Type</u>	<u>Individual Capacity (Metric Tons)</u>	<u>Coef- ficient</u>	<u>Number of Heats per Day</u>	<u>Number of Operating Days per Year</u>	<u>Total Tonnage (Thousand Metric Tons)</u>
2	Open- Hearth	15	N.A.	4	325	39.0
1	Elec- tric	3	N.A.	6	325	5.9
Total						<u>44.9</u>

Since there are no reports of increased efficiency of operations or expansion of facilities in the period 1949-53, production is estimated to have been the same in 1953 as it was in 1949. 99/

g. Primary Rolling Mills.

None.

h. Finishing Facilities.

(1) Rolling Mill.

None.

(2) Forge.

The type of equipment in this department is not known.

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(3) Steel Foundry.

Since no rolling is done here it is assumed that all of the steel production goes into castings. On the basis of a 55-percent yield it is estimated that 24,695 tons of finished steel castings are produced annually.

(4) Iron Foundry.

The two cupolas installed here produce iron for car wheels and gears. The tonnage produced is unknown. 100/

i. Intraplant Services.

(1) Electric Power.

The generating capacity of the power plant in 1949 was 12,000 kilowatts. 101/

(2) Water Supply.

Water pumped in 102/ from the Yenisey River is piped throughout the plant for ordinary and emergency uses. 103/

(3) Maintenance Department.

A machine shop 104/ with the usual complement of equipment exists for the maintenance of production equipment.

j. Products and Production.

Military end items being produced in 1950 were 120- and 150-millimeter guns 105/ and howitzers. Finished goods for the civilian economy include mining tools 106/ and agricultural equipment. 107/ Products from the iron and steel foundries and forge are gears, railroad car wheels, and chain links. 108/ Production of steel and finished steel at the Krasnoyarsk Armament Plant is given in Table 7.\*

k. Distribution.

Practically all of the steel and iron castings and forgings are consumed in manufactured products.

\* Table 7 follows on p. 16.

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Table 7

Production of Steel and Finished Steel  
at the Krasnoyarsk Armament Plant  
1953

<u>Thousand Metric Tons</u>			
<u>Steel</u>	<u>Steel Castings</u>	<u>Rolled Steel</u>	<u>Total Finished Steel</u>
44.9	24.7	None	24.7

1. Plant Efficiency.

No information available.

m. Administration.

No information available.

n. Personnel.

In 1944 the director 109/ of the plant was Shifrin. The number of employees engaged in the operation of the various departments of the plant could not be established. In 1947 the entire plant employed 2,000 civilians and 1,200 Japanese prisoners of war. 110/

4. Irkutsk Heavy Machine Building Plant (Kuybyshev Heavy Equipment Plant) (Kuybyshev Steel Works) 111/ [REDACTED]

25X1A

a. Location.

52°17' N - 104°18' E, 112/ Irkutsk, Irkutsk Oblast, East Siberia, USSR, on the east bank of the Angara River. 113/

b. History and Development.

This plant on the Trans-Siberian railroad is considered one of the earliest steel plants in East Siberia, having been started about 1930. 114/ During World War II, ammunition, small

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arms, 115/ shells, and armored tanks were manufactured. In April 1946 the production of locomotives, railroad car wheels, and machinery parts was started. Later production included dredges, drilling, mining, and agricultural machinery. Steel and iron foundries along with a well-equipped machine shop provide the basis for building heavy machinery. Immediately after World War II, many of the machine tools installed were brought from Manchuria. By 1948, 116/ the installation of machine equipment was about 70 percent complete. A large quantity of machine tools from Manchurian automobile assembly and manufacturing plants was still in storage awaiting installation. 117/

c. Raw Materials and Other Inputs.

Fuel oil 118/ is used in the open-hearth and soaking pits. Steel scrap, pig iron, and sand for molding are shipped in by rail and by barges on the Angara River. The molding sand 119/ comes from the Lake Baikal region at the rate of about 18 tons per day. Twenty tons of clay 120/ and 36 tons of limestone 121/ per day are shipped in from unknown sources. Steel ingots, 20 centimeter square by 1 meter long are brought in by rail; the tonnage of these shipments and their sources are unknown.

d. Coal and Coke.

In 1951, 150 to 200 tons of coal were shipped in by rail and river barges from the Cheremkhovo Basin. 122/ In 1948, approximately 150 tons of coke per week were received by rail from Irkutsk. 123/

e. Ironmaking Facilities.

There are no blast furnaces in this plant. Two cupolas of unknown size are operated 124/ for the production of iron castings.

f. Steelmaking Facilities.

There are two oil-fired basic open-hearth furnaces in operation. 125/ One has a hearth area of 5.73 square meters, the other 10.23 square meters. These areas indicate that charges of 10 and 15 tons respectively are used. 126/ It is reported that 31,000 tons were produced in 1944. 127/ There is 1 small electric

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furnace with a shell diameter of 3 meters, 128/ which will accommodate 5-ton charges. Production from this furnace is estimated to be about 9,750 tons per year, assuming that the furnace is operated 2 turns or 16 hours per day and makes 6 heats each day. 129/ Production of steel at the Irkutsk Heavy Machine Building Plant is given in Table 8.

Table 8

Production of Steel at the Irkutsk  
Heavy Machine Building Plant  
1953

Number of Furnaces	Type	Individual Capacity (Metric Tons)	Coef- ficient	Number of Heats per Day	Number of Operating Days per Year	Total Tonnage (Thousand Metric Tons)
1	Open-Hearth	10	N.A.	4	325	13.0
1	Open-Hearth	15	N.A.	4	325	19.5
1	Elec- tric	5	N.A.	6	325	9.8
Total						<u>42.3</u>

Since there are no reports of increased efficiency of operations or expansion of facilities since 1944, steel production is estimated to be the same in 1953 as in 1944.

g. Primary Rolling Mills.

None.



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h. Finishing Facilities.

(1) Rolling Mill.

There is one 3-high, 4-stand mill train with 450-millimeter diameter rolls. The capacity is not known, but it is reported to have rolled 12,000 tons in 1948. 130/

(2) Steel Foundry.

Ingots to produce 12,000 tons of rolled product would be 16,700 tons of the total steel produced. The balance of the steel production or 25,600 tons is assumed to be rough castings. On the basis of a 55-percent yield, it is estimated that 14,000 tons of finished castings per year are produced.

(3) Iron Foundry.

There are two cupolas of unknown capacity in the iron foundry. 131/

i. Intraplant Services.

(1) Electric Power.

The thermoelectric power plant has 3 boilers, 2 of which operate continuously. The power-generating capacity is not available. 132/

(2) Water Supply.

Water for the plant is pumped in from the Angara River. 133/

(3) Maintenance Department.

A machine shop with the usual complement of equipment exists for the maintenance of the steel and iron foundries. 134/

j. Products and Production.

Finished rolled steel items produced are round 135/ and square bars, 136/ angles, 137/ rails, and plate. Finished steel

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and iron 138/ and steel castings produced include locomotive and car wheels, 139/ gears, motor housings, and pulleys. Production of steel and finished steel at the Irkutsk Heavy Machine Building Plant is given in Table 9.

Table 9

Production of Steel and Finished Steel  
at the Irkutsk Heavy Machine Building Plant  
1953

Thousand Metric Tons			
<u>Steel</u>	<u>Rolled Steel</u>	<u>Steel Castings</u>	<u>Total Finished Steel</u>
42.3	12.0 <u>a/</u>	14.1 <u>b/</u>	26.1

a. 12,000 tons divided by 72 percent equals 16,700 tons of ingots.

b. 42.3 minus 16.7 equals 25.6 tons of rough castings minus 55 percent yield equals 14.1 tons of finished castings.

k. Distribution.

Most of the steel made is consumed in the form of castings, forgings, or rolled items in the manufacture of machinery for the mining, metallurgical, and agricultural industries. Castings, forged balls, and finished rolled products are shipped out in unknown tonnages to plants in Irkutsk and other unknown locations.

l. Plant Efficiency.

No information available.

m. Administration.

In 1948 this plant was subordinate to the Ministry of Heavy Industry.

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n. Personnel.

The number of employees in the entire plant in 1952 was 3,000 civilians and 400 Japanese prisoners of war. The plant operates 3 turns of 8 hours, 6 days per week.

5. Irkutsk Motor Vehicle and Tank Plant No. 104 (Kuybyshev Machinery Plant) [REDACTED]

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a. Location.

52°17' N - 104°18' E, Irkutsk, Irkutsk Oblast, East Siberia, USSR, on the Angara River, 72 kilometers southwest of Lake Baikal.

b. History and Development.

This plant was started in 1930 with 1 open hearth of 5.76-square meter capacity. In 1932 a second open-hearth furnace with 10.32-square meter capacity was started. 140/ In 1935 a medium bar mill was put in operation. 141/ Since 1938 the plant has been devoted almost exclusively to the production of war materiel.

c. Raw Materials and Other Inputs.

Cast and rolled steel products received from Kuybyshev Steel Works at Irkutsk are used in manufacturing war materiel. 142/

d. Coal and Coke.

No information available.

e. Ironmaking Facilities.

No information available.

f. Steelmaking Facilities.

There are 2 open-hearth furnaces with a total of 16 square meter capacity (5.76 square meter and 10.32 square meter, respectively). They are reported to have produced 40,000 tons of steel in 1944. 143/

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Production of steel at the Irkutsk Motor Vehicle and Tank Plant No. 104 is given in Table 10.

Table 10

Production of Steel at the Irkutsk Motor Vehicle and Tank Plant No. 104  
1953

<u>Number of Furnaces</u>	<u>Type</u>	<u>Individual Capacity (Metric Tons)</u>	<u>Coef- ficient</u>	<u>Number of Heats per Day</u>	<u>Number of Operating Days per Year</u>	<u>Total Tonnage (Thousand Metric Tons)</u>
1	Open-Hearth	12.0	N.A.	3 to 4	325	
1	Open-Hearth	20.0	N.A.	3 to 4	325	
Total						<u>40.0</u>

As there were no reports of increased efficiency of operations or expansion of facilities since 1944, steel production is estimated to be the same in 1953.

g. Primary Rolling Mills.

No information available.

h. Finishing Facilities.

(1) Rolling Mill.

A 4-stand bar mill was operating in 1935 and rolled 17,000 tons in 1936. 144/

j. Products and Production.

Finished goods for military use include tanks, guns, artillery, and automatic weapons. In 1941, production of tanks was 12

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per day. 145/ Production of steel and finished steel at the Irkutsk Motor Vehicle and Tank Plant No. 104 is given in Table 11.

Table 11

Production of Steel and Finished Steel  
at the Irkutsk Motor Vehicle Plant No. 104  
1953

<u>Thousand Metric Tons</u>			
<u>Steel</u>	<u>Rolled Steel</u>	<u>Steel Castings</u>	<u>Finished Steel</u>
40.0	17.0 <u>a/</u>	9.6 <u>b/</u>	26.6

a. 17.0 divided by 72 percent equals 23.6 tons of ingots.

b. 40.0 minus 23.6 equals 16.4; 55 percent of 16.4 equals 9.0 tons of finished castings.

k. Distribution.

The cast and rolled steel products are used in the assembly or manufacturing of combat vehicles, guns, and other war materiel.

l. Plant Efficiency.

No information available.

m. Administration.

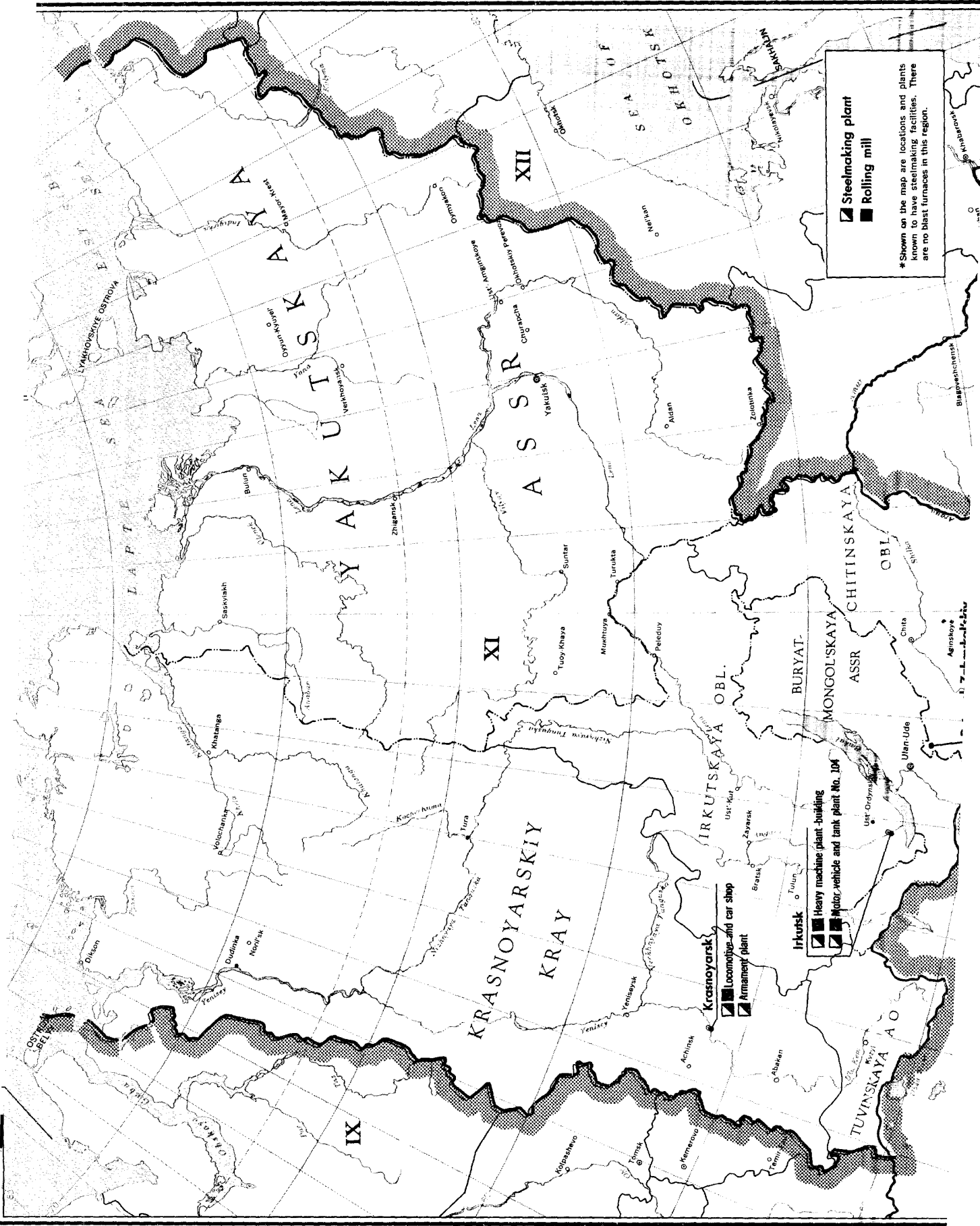
No information available.

n. Personnel.

No information available.

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Steelmaking plant  
Rolling mill

\*Shown on the map are locations and plants known to have steelmaking facilities. There are no blast furnaces in this region.

Heavy machine plant-building  
Locomotive and car shop  
Ironworks plant





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APPENDIX A

PLANT SUMMARY TABLES

Table 12

Production and Capacity of the Petrovsk-Zabaykal'skiy Metallurgical Plant  
1953

Thousand Metric Tons	
Metallurgical Coke Production	None
Pig Iron Production	None
Steel Production	
3 Open-Hearth Furnaces and 1 Electric Furnace	205.4
Rolling and Finishing Capacities	
Primary Mills	None
Structural Mill	Unknown
Rod Mill	58.5
Steel Foundry	57.1
Iron Foundry	31.2
Finished Steel Production	
Castings	57.1
Rolled	90.4
Power Plant Capacity	6,000 Kilo-watts

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Table 13

Production and Capacity of the Krasnoyarsk  
Locomotive and Car Shop  
1953

	Thousand Metric Tons
Metallurgical Coke Production	None
Pig Iron Production	None
Steel Production	
3 Open-Hearth and 2 Electric Furances	52.6
Rolling and Finishing Capacities	
Primary Mills	None
Seamless Tube Mill	Unknown
Structural Mill	Unknown
Steel Foundry	11.6
Iron Foundry	Unknown
Finished Steel Production	
Castings	11.6
Rolled	22.7
Power Plant Capacity	
1	1,500 Kilowatts
1	11,000 Kilowatts

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Table 14

Production and Capacity of the Krasnoyarsk  
Armament Plant  
1953

	<u>Thousand Metric Tons</u>
Metallurgical Coke Production	None
Pig Iron Production	None
Steel Production	
2 Open-Hearth Furnaces	44.9
Rolling and Finishing Capacities	
Primary Mill	None
Other Mills	None
Forge	Unknown
Steel Foundry	24.7
Iron Foundry	Unknown
Finished Steel Production	
Castings	24.7
Rolled	None
Power Plant Capacity	12,000 Kilowatts

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Table 15

Production and Capacity of the Irkutsk  
Heavy Machine Building Plant  
1953

<u>Thousand Metric Tons</u>	
Metallurgical Coke Production	None
Pig Iron Production	None
Steel Production	
2 Open-Hearth Furnaces	42.3
Rolling and Finishing Capacities	
Primary Mills	None
Other Mills	12.0
Steel Foundry	14.1
Iron Foundry	Unknown
Finished Steel Production	
Castings	14.1
Rolled	12.0
Power Plant Capacity	Unknown

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Table 16

Production and Capacity of the Irkutsk  
Motor Vehicle and Tank Plant  
1953

<u>Thousand Metric Tons</u>	
Metallurgical Coke Production	None
Pig Iron Production	None
Steel Production	
2 Open-Hearth Furnaces	40.0
Rolling and Finishing Capacities	
Primary Mills	None
Other Mills	17.0
Steel Foundry	9.6
Iron Foundry	Unknown
Finished Steel Production	
Castings	9.6
Rolled	17.0
Power Plant Capacity	Unknown

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APPENDIX B

METHODOLOGY

Methods used to derive the production estimates shown in various tables throughout the report follow:

1. Petrovsk-Zabaykal'skiy Metallurgical Plant.

Total tonnage figure for 1953 is 205,400 tons obtained by multiplying the number of heats of 6 hours and 50 minutes per day times the number of furnaces times the weight of charge times 325 days, or  $3.51 \times 3 \times 60 \times 325 = 205,400$  tons.

2,500 ingots at 0.125 ton each per day  $\times 325 = 101,523$  tons.  
72 percent of 101,523 tons = 73,100 tons of rolled steel products.  
Total steel 205,400 tons - 101,520 tons = 103,900 rough castings.  
55 percent of 103,900 tons = 57,145 tons of finished castings.

2. Krasnoyarsk Locomotive and Car Shop.

Since information on the tonnage of ingots and castings is not available, it is assumed that 60 percent of the steel produced would be ingots and 40 percent castings.

60 percent of 52,600 tons = 31,600 tons of ingots.  
72 percent of 31,600 tons = 22,750 tons of rolled steel.  
52,600 tons - 31,600 tons = 21,000 tons of rough castings.  
55 percent of 21,000 tons = 11,550 tons of finished castings.

3. Krasnoyarsk Armament Plant.

Since this plant is not equipped to do any rolling it is assumed that all of the steel produced is in steel castings.

44,900 tons of steel produced.  
55 percent of 44,900 tons = 24,700 tons of finished castings.

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4. Irkutsk Heavy Machine Building Plant.

In 1948, rolled steel produced was 12,000 tons.  
12,000 tons divided by 72 percent = 16,700 tons of ingots  
required to produce it.  
42,300 tons of steel produced - 16,700 tons of ingots = 25,600  
tons of rough castings.  
55 percent of 25,600 tons = 14,080 tons of finished castings.

5. Irkutsk Motor Vehicle and Tank Plant.

In 1935, rolled steel produced was 17,000 tons.  
17,000 tons divided by 72 percent = 23,600 tons of ingots  
to produce 17,000 tons of rolled steel.  
40,000 tons of steel production = 23,600 tons = 17,400 tons  
of rough castings.  
55 percent of 17,400 tons = 9,570 tons of finished castings.



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APPENDIX C

GAPS IN INTELLIGENCE

There is a lack of information from 1950 to the present time regarding Region XI. This is particularly true on tonnage of product output and raw materials input. Information is also lacking on construction or acquisition of new production equipment since 1950. Japanese prisoner-of-war reports as well as newspaper reports are inaccurate in most instances.

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APPENDIX D

SOURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

The intelligence reports covering the plants in Region XI in most instances contain information of the period 1940-50.

a. Prisoner-of-War Reports.

In many instances these reports are inaccurate and misleading. They emphasize unimportant features such as the height of the fence around the plant and the type of roof on a building. Open-hearth furnaces or cupolas are frequently referred to as blast furnaces. In many instances it appears that the prisoners of war has information which is not being received, because of improper guidance by the interrogator.

b. Newspapers and Periodicals.

These sources are considered good as a rule. At times, however, they exaggerate and quote figures which give a favorable impression but do not reveal facts.

2. Sources and Evaluation of Sources.

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

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

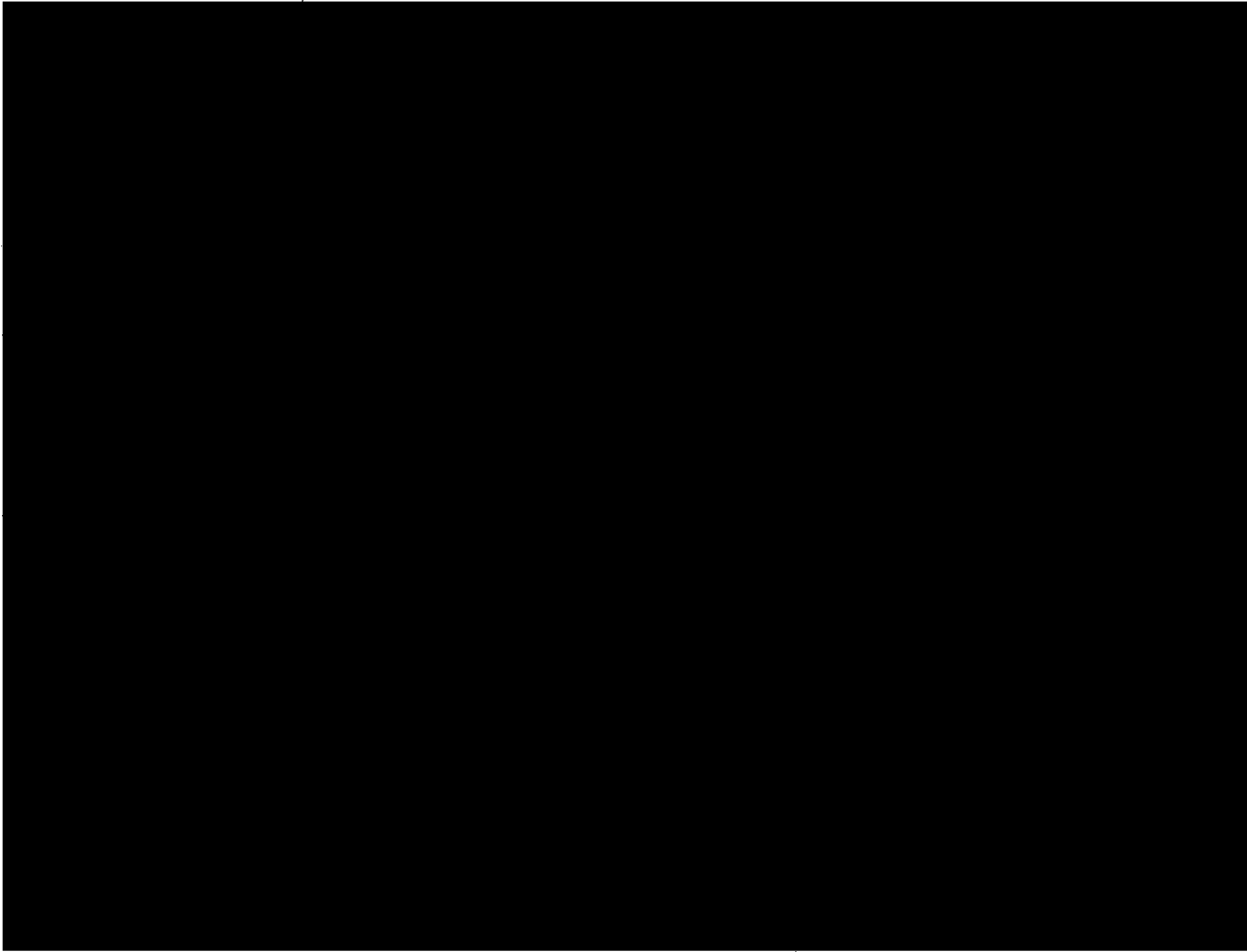
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"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which will carry the field evaluation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

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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