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ECONOMIC INTELLIGENCE REPORT

SIX NEW STEEL PLANTS IN THE USSR

CIA/RR 2

31 March 1952

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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SIX NEW STEEL PLANTS IN THE USSR

CIA/RR 2

CENTRAL INTELLIGENCE AGENCY

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S-E-C-R-E-T

CONTENTS

Appendixes

Map

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SIX NEW STEEL PLANTS IN THE USSR*

Summary

The construction of new steel plants in the USSR, initiated as part of the Third Five Year Plan (1938-42), was held up by World War II and has since proceeded slowly and unevenly. At the end of 1951 the new mills in operation were contributing little, probably not more than 200,000 metric tons, to the over-all Soviet iron and steel production. Progress has been hampered by shortages of construction materials and equipment, of installations and machinery needed for the equipment of the plants, and of skilled labor needed both for the building and for the operation of the mills. Not one of the plants has been completed. Available evidence indicates that installations for the production of not more than 23 percent of the planned capacity of more than 11.5 million metric tons of raw steel will be in operation by the end of 1955.

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1. Introduction.

Long-range plans were made as early as the Third Five Year Plan (1938-42) to increase the production of iron and steel in the USSR. At that time and since, specific plans have been announced to establish six new steel combines, so located as to serve areas isolated from existing metallurgical centers of the country and to exploit relatively untouched sources of raw materials.** Preliminary surveys were made and some actual construction was begun before and during World War II, but most of the work accomplished to date has been done since the end of hostilities. The latest known target date for any of the projects is 1960. When the last steel center is completed,*** the following output is expected from the new plants:

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* This report contains information available to CIA as of 31 December 1951.

** The locations of the six new steel plants are indicated on a map following p. 2.

*** See Appendix A, Table 1, Timetable for the Six New Steel Plants of the USSR.

Planned Capacities of the Six New Soviet Steel Plants*

	Metric Tons
Pig Iron	8,630,000 to 9,130,000
Raw Steel	10,935,000 to 11,535,000
Rolled Products	7,400,000

2. Brief Descriptions of the Six New Steel Plants.**

a. Baku Pipe Rolling Mill.

In 1940, surveys were conducted to place an iron and steel mill in the Transcaucasus, the principal product of which would be pipe urgently needed in the development of the oil fields in the region. Blast furnaces were to operate on iron ore from the Dashkesan mines. A site was selected at the town of Sumgait, just northwest of the city of Baku, and building was begun. Installations at Sumgait were to include three blast furnaces, seven open-hearth furnaces, and pipe and tube mills. The pipe mills were to have an annual capacity of 350,000 metric tons.

Building was interrupted during the war years but was resumed in 1944. Evidence available at the end of 1951 indicated that none of the three blast furnaces had been completed, that only one of the open hearths had been placed in operation, and that only one of the rolling mills was in operation. The slow progress of the construction of the mill has been a matter of extreme concern to the Ministry of Heavy Industry. There is no information available upon which to base an estimate of 1951 production.

b. Cherepovets Metallurgical Plant.

Plans to build a steel plant to serve the important industrial area of Leningrad and to utilize the large amount of iron and steel scrap generated by the large manufacturing plants in the locality, were not announced until January 1948. Although a plant site was chosen at Cherepovets, there is no evidence that construction of the mill has ever been started. The project had serious drawbacks. Iron ore was to come from the Kola Peninsula, in the Karelo-Finnish SSR, and coking coal was to be shipped from the fields in the Pechora Basin. From the sources of these important raw materials, which are located north of the Arctic Circle, it is a long, costly rail haul to the proposed plant site. For these reasons, the project probably has been abandoned or indefinitely postponed.

* See Appendix A, Table 2, Planned Capacities of the Six New Steel Plants of the USSR.

** For more detailed information, see Appendix B, Plant Studies.

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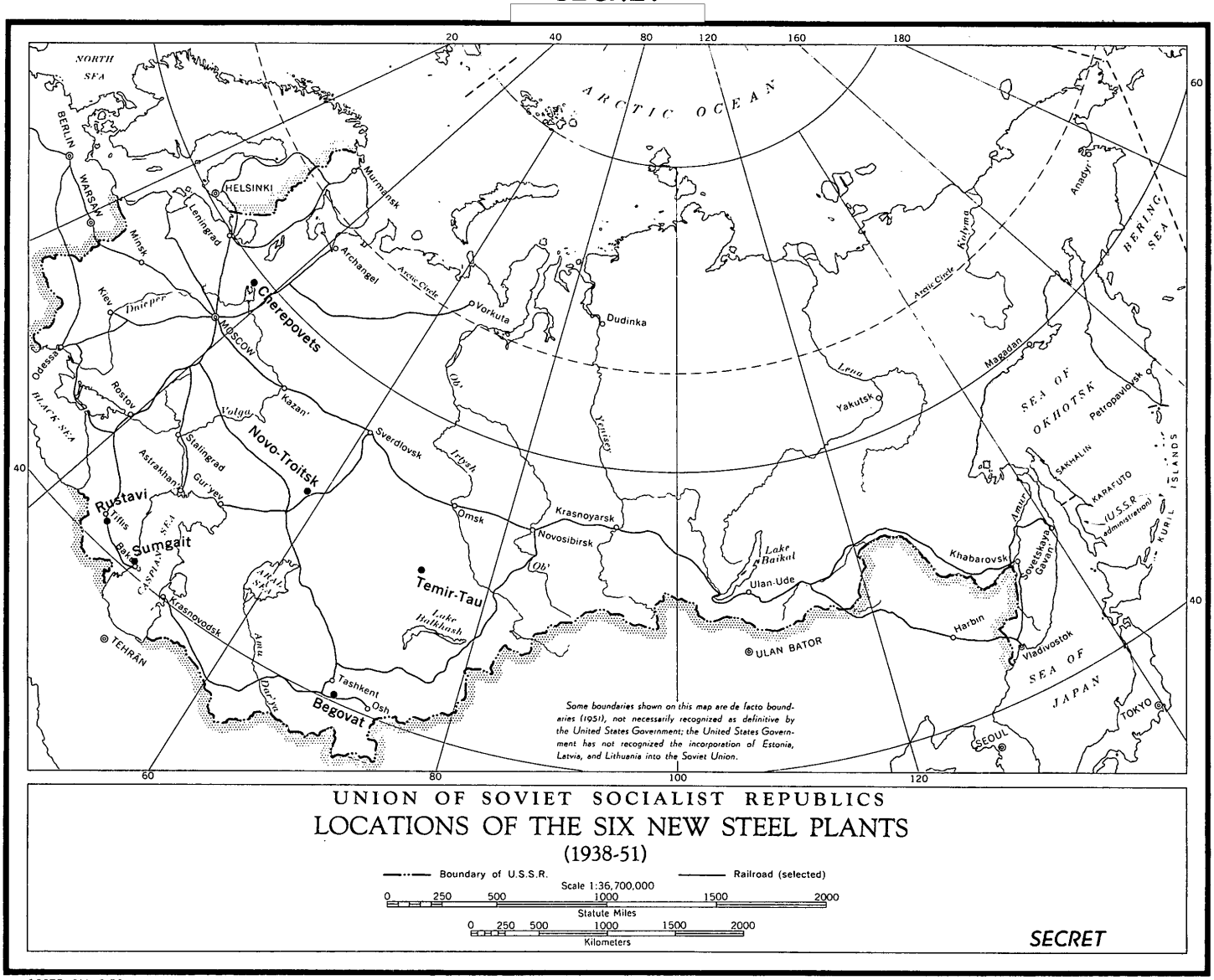

UNION OF SOVIET SOCIALIST REPUBLICS

LOCATIONS OF THE SIX NEW STEEL PLANTS

(1938-51)

Boundary of U.S.S.R. — Railroad (selected)

Scale 1:36,700,000

0 250 500 1000 1500 2000 Statute Miles

0 250 500 1000 1500 2000 Kilometers

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12275 CIA, 3-52

c. Kazakh Metallurgical Plant.

It was announced in 1942 that a steel plant would be built near Karaganda, which would serve the large Kazakh SSR and utilize the vast resources of raw materials available in the area. A suitable location was found about 32 kilometers northwest of Karaganda for the new steel plant and for a new town, Temir-Tau, to house the workers. The plant was to be finished in 1947. According to enlarged plans announced in 1946, the plant was to contain 4 blast furnaces with an annual capacity of 1,200,000 metric tons, 10 open-hearth furnaces with an annual capacity of 1,400,000 metric tons, rolling mills with an annual capacity of approximately 1 million metric tons, and a pipe mill with an annual capacity of 70,000 metric tons. A refractory brick factory and a large coke-chemical plant also were to be constructed. By the end of 1951 there was no evidence that even the foundations for the blast furnaces had been laid; only three open hearths were in operation; and three rolling mills were producing channel and bar steel, thin steel sheet, corrugated roofing tin, and rails for the Karaganda coal mines. Production for 1951 was estimated to be 85,000 metric tons of raw steel and 60,000 metric tons of rolled products.

d. Orsk-Khalilovo Metallurgical Combine.

Preliminary plans were announced in 1934 for the erection of a steel combine in the South Urals, the Orsk-Khalilovo Metallurgical Combine at Novo-Troitsk, which was to operate on raw materials available in the area. The iron ore found nearby, which contains iron, chrome, and nickel, was to be used in blast furnaces to produce a natural alloyed steel. Coking coal was to come from the Karaganda and Kuznets Basins, and manganese was to be shipped from the Kul'minskiy ore deposits. When completed, the plant was to provide the iron and steel products necessary to industrialize the Siberian and Central Asian republics.

Since 1941 there have been numerous changes in planned equipment and capacities. The latest announced plans call for four blast furnaces capable of producing 1 million metric tons a year, six or seven open-hearth furnaces with a similar output, and rolling mills which will produce 700,000 metric tons a year. Five Bessemer converters, five blooming mills, a refractory plant, and six coke batteries also are planned. The scheduled date of completion of the combine is not known.

Actual construction began at Novo-Troitsk in 1940, was suspended during World War II, and was resumed after the armistice. Work has proceeded very slowly, and the direction apparently has been unusually inefficient. From 1945 to 1947 there were two changes in building trust managers, and five different chief engineers were in charge of the plant.

By the end of 1947, only the refractory brick plant and a few auxiliary workshops were in operation. From the end of 1947 to the end of 1951, almost no information appeared on achievements at the combine. Since each accomplishment at other new steel plants was heralded by the Soviet press and radio, there is a strong presumption that construction at the combine ceased about the end of 1947, although it is unlikely that the project has been completely abandoned.

e. Transcaucasian Metallurgical Plant.

Some progress was made before World War II in the building of the Transcaucasian Metallurgical Plant at Rustavi, a site about 30 kilometers southeast of Tbilisi. Like the Baku Pipe Rolling Mill, the Rustavi plant was planned to support the huge oil industry in the Transcaucasus, and a considerable portion of its production would be further processed in the tube and pipe mills planned for the Sumgait plant. Raw materials are available in the area -- iron ore at the Dashkesan deposits, south of Kirovabad in Azerbaydzhan SSR, and coking coal from Tkvarcheli and Tkibuli coal fields in Georgian SSR. Plans for the Rustavi plant call for three small blast furnaces with an annual capacity of 430,000 metric tons, six to eight open-hearth furnaces with a rated annual output of 685,000 metric tons, a rolling mill with an annual capacity of 150,000 metric tons, and a pipe mill capable of producing 290,000 metric tons a year. A blooming mill and a coke-chemical plant also were included among the planned installations. The date of expected completion of the plant has never been announced.

Building of the plant was resumed in 1944, and considerable progress was made during the period 1945 through April 1950 with the assistance of 3,000 to 4,500 German and Austrian prisoners of war. By the end of 1951, one blast furnace was in operation; a second may have been in operation; a third furnace, which was to be used in reserve, was well along in construction; two open hearths were in operation, and six more were being built; a blooming mill and a rolling mill were in operation; and the construction of the coke-chemical plant was underway.

f. Uzbek Metallurgical Plant.

The construction of the Uzbek Metallurgical Plant began in 1943, and the plant is one of the important projects included in the Fourth Five Year Plan (1946-50). The plant, about 115 kilometers south of Tashkent, is intended to provide Central Asia with semifinished steel and iron and steel products now shipped into the area from the more industrialized sections of the USSR. Explorations conducted in 1944-46 revealed that there are several large deposits of a good quality of iron ore in the area surrounding Uzbek. A good quality of coking coal is available in the eastern part of the Fergana Valley, and quantities of iron and steel scrap,

fluxing agents, and quartz sand are located nearby. The mill is designed to have four blast furnaces with an annual capacity of 1 million metric tons, three open-hearth furnaces with an annual capacity of 1,250,000 to 1,350,000 metric tons, rolling mills with an estimated annual capacity of 900,000 metric tons, and a coke-chemical plant for the manufacture of metallurgical coke.

Progress at Uzbek has been much steadier than at the other new steel plants under construction in the USSR. Available information indicates that at the end of 1951 all three open hearths were completed and had produced 70,000 metric tons of raw steel from locally collected scrap and that three rolling mills -- a 300-millimeter, a 420-millimeter, and a 600-millimeter -- had been installed, although only the 300-millimeter mill was in operation. Plans to build four blast furnaces apparently have been postponed, for there is no evidence that the foundations have even been laid.

3. Estimated Status of Installations and Production in 1951.*

Work on the construction and operation of the new steel mills has been lagging far behind announced plans. Although work was begun on several of the plants during the period of the Third Five Year Plan (1938-42) little was accomplished until 1944-45, when the effort was resumed to increase steel production through the erection of new plants. Progress since then has been slow and uneven. Available evidence indicates that by the end of 1951, only 1 and possibly 2 of the more than 20 planned blast furnaces had been blown in, that 4 others were under construction, and that none had been started at the Cherepovets, Kazakh, Orsk-Khalilovo, and Uzbek sites. Of more than 40 open-hearth furnaces projected, approximately 10 were in operation, and 8 more were in various stages of building. Production of raw steel in the new plants during 1951 probably did not exceed 200,000 metric tons and represented principally the melting of scrap collected in the vicinity of the mills. A few small rolling mills were operating, but output probably amounted to less than 150,000 metric tons.

4. Reasons for the Slow Progress in the Construction of the New Steel Plants.

Soviet policy with reference to the construction of the new steel plants appears to have been to continue the construction of the mills as marginal projects entitled to some share of such labor, materials, and equipment as could be spared from the demands of World War II, the tasks of reconstruction, and the requirements of a high level of military preparedness. These claims have taken precedence not only over the construction of the new steel plants but also, to an undetermined extent, over the

* See Appendix A, Table 3, Estimated Status of Installations and Production in the Six New Steel Plants of the USSR in 1951.

development of the new mines and transportation facilities on which the mills must depend and of the new industries which the new steel mills are designed to serve. Construction materials and equipment have been and are among the chronic shortages in the USSR. The rehabilitation of the devastated Ukraine, including the large steel industry located there, was given highest priority in the postwar years. Until 1950, when it was largely completed, this undertaking constituted a drain on materials and equipment needed by other projects. The expansion and modernization of existing steel plants, with particular emphasis on the industry in the Urals, have had high priority also in the USSR and have denied installations and equipment needed for the new plants. The lack of skilled labor in those areas planned for industrialization has been a serious problem, not only in the building of new steel combines but also in the operation of completed installations. In addition, there is a special reason for delay in the construction of blast furnaces at all the new plants: a serious shortage, actual and prospective, of essential equipment, specifically of equipment needed in the furnace tops -- the "McKee"-type top with revolving distributors as well as large and small bell and hopper equipment -- and of steam or electrically powered turboblowers.

5. Estimated Status of Installations and Production in 1955.

The period 1951 through 1955 should bring more rapid progress in building and in bringing into operation the new steel mills in the USSR, with the easing of prior requirements for construction materials and equipment and for installations and machinery, specifically the requirements for the rehabilitation of the Ukraine and for the expansion and modernization of existing steel centers. At the same time, more skilled labor should be available with the completion of other projects and as a result of training programs. In spite of these trends, however, production in 1955 is due to fall far short of scheduled deliveries for that year and is likely to reach only approximately 23 percent of planned capacity.*

It seems probable that a strong effort will be made to place the new mills on a more firm operating basis by the completion of blast furnaces at the sites. It is not a sound economic practice to operate open-hearth furnaces on a large percentage of iron and steel scrap, as has been done in most of the new plants producing raw steel. If steel production in the new mills is to increase as planned, blast furnaces must be placed in operation to furnish a regular supply of pig iron for use with scrap in the open-hearth furnaces.

* See Appendix A, Table 4, Estimated Status of Installations and Production in the Six New Steel Plants of the USSR in 1955, and Table 2, Planned Capacities of the Six New Steel Plants of the USSR.

Estimated Soviet Iron and Steel Production
from the Six New Plants in 1955

	1955	Planned Capacity (Metric Tons)	1955 Percent of Planned Capacity
Pig Iron	1,950,000	8,630,000 to 9,130,000	21.4 to 22.6
Raw Steel	2,550,000	10,935,000 to 11,535,000	22.1 to 23.3
Rolled Products	1,375,000	7,400,000	18.6

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APPENDIX A

TABLES

Table 1

Timetable for the Six New Steel Plants of the USSR

Name of Plant	Location	Plans Announced Originally	Planned Date of Completion	Construction Begun
Baku Pipe Rolling Mill	Sumgait, 30 to 35 km NW of Baku, Azerbaydzhan SSR	Third Five Year Plan (1938-42)	1955-1960	1941
Cherepovets Metallurgical Plant	Cherepovets, about 450 km SE of Leningrad	January 1948	1960 (1st section, 1950)	Has not been started
Kazakh Metallurgical Plant	Temir-Tau, about 32 km NW of Karaganda, Kazakh SSR	1942	Unknown (original plan, 1947)	1943
Orsk-Khalilovo Metallurgical Combine	Novo-Troitsk, about 20 km W of Orsk, Chkalovskaya Oblast	Third Five Year Plan (1938-42)	Unknown	1940
Transcaucasian Metallurgical Plant	Rustavi, about 30 km SE of Tbilisi, Georgian SSR	1940	Unknown	Before World War II; resumed in 1944
Uzbek Metallurgical Plant	Begovat, about 115 km S of Tashkent, Uzbek SSR	Fourth Five Year Plan (1946-50)	Unknown	1943

Table 2

Planned Capacities of the Six New Steel Plants of the USSR a/

Thousand Metric Tons

Name of Plant	Pig Iron	Raw Steel	Rolled Products	Metallurgical Coke
Baku Pipe Rolling Mill	1,000 b/	600 b/	350 c/	N.A.
Cherepovets Metallurgical Plant	4,000 to 4,500	6,000 to 6,500	4,300 c/	N.A.
Kazakh Metallurgical Plant	1,200	1,400	1,000	N.A.
Orsk-Khalilovo Metallurgical Combine	1,000	1,000	700	1,050
Transcaucasian Metallurgical Plant	430	685	150	640
Uzbek Metallurgical Plant	1,000	1,250 to 1,350	900 c/	N.A.
Estimated Totals	8,630 to 9,130	10,935 to 11,535	7,400	?

a. Except as otherwise indicated (see notes b and c, below), these figures are taken from published sources.
b. Estimated.
c. Estimate based on ratio of rolled products to raw steel of 72:100, which is the average in US practice.

Table 3

Estimated Status of Installations and Production in the Six New Steel Plants of the USSR in 1951

Name of Plant	Blast Furnaces		Open-hearth Furnaces		Rolling Mills		Other Installations	
	Status	Production (Metric Tons)	Status	Production (Metric Tons)	Status	Production (Metric Tons)	Status	Production (Metric Tons)
Baku Pipe Rolling Mill	3 under construction	0	No. 1 in operation; Nos. 2 and 3 under construction; others not begun	?	1 mill in operation; blooming mill at site but not installed	?	N.A.	?
Cherepovets Metallurgical Plant	Project abandoned or indefinitely postponed							
Kazakh Metallurgical Plant	Construction not begun	0	Nos. 1, 2, and 3 in operation; others not begun	85,000	400-mm, 300-mm, and ?-mm mills in operation; pipe mill not begun	60,000	Coke-chemical and refractory plants not begun	0
Orsk-Khalilovo Metallurgical Combine	Project postponed						Refractory plant completed	0
Transcaucasian Metallurgical Plant	No. 1 and possibly No. 2 in operation; No. 3 (to be used in reserve) under construction	?	Nos. 1 and 2 in operation; Nos. 3 through 8 under construction	?	Blooming mill and rolling mill in operation; pipe mill not in operation	?	Coke-chemical plant under construction	0
Uzbek Metallurgical Plant	Construction not begun	0	3 in operation	70,000	300-mm mill in operation; 420-mm and 600-mm mills installed but not in operation	50,000	Coke-chemical plant not begun	0

Table 4

Estimated Status of Installations and Production in the Six New Steel Plants of the USSR in 1955

	Blast Furnaces		Open-hearth Furnaces		Rolling Mills		Other Installations	
Name of Plant	Status	Production (Thousand Metric Tons)	Status	Production (Thousand Metric Tons)	Status	Production (Thousand Metric Tons)	Status	Production (Thousand Metric Tons)
Baku Pipe Rolling Mill	2 in operation; 1 under construction	500	3 in operation; 4 not begun	300	1 rolling mill, 1 pipe mill, and 1 blooming mill in operation	200	N.A.	?
Cherepovets Metallurgical Plant	Project abandoned or indefinitely postponed							
Kazakh Metallurgical Plant	2 in operation; none under construction	500	5 in operation; none under construction	600	3 rolling mills and 1 pipe mill in operation	400	Coke-chemical and refractory plants in operation	600
Orsk-Khalilovo Metallurgical Combine	1 in operation; 1 under construction	200	2 in operation; 1 under construction	250	1 rolling mill and 1 blooming mill in operation	175	2 coke batteries, 2 Bessemer converters, and 1 refractory plant in operation	200
Transcaucasian Metallurgical Plant	2 in operation; 1 in reserve	350	8 in operation	600	2 rolling mills, 1 pipe mill, and 1 blooming mill in operation	100	1 coke-chemical plant in operation	400
Uzbek Metallurgical Plant	2 in operation; 2 under construction	400	3 in operation	800	3 rolling mills in operation	500	1 coke-chemical plant in operation	450

APPENDIX B

PLANT STUDIES

1. Baku Pipe Rolling Mill.

Alternate Designations.

The Baku Pipe Rolling Mill also is referred to by the following names: Trubostal, BTZ (Bakinskiy Truboprokatnyy Zavod), Truba Zavod, Bakinskiy, Trub, Truboprokatnyy, Nepoyelatskiy Trubo Zavod, Osmu I, and Sumgait Pipe (or Tube) Rolling Mill. So far as is known, a number designation has not been assigned to the mill by the Ministry of Heavy Industry.

Location.

The Baku Pipe Rolling Mill is being constructed at Sumgait, 30 to 35 kilometers northwest of Baku, on the shores of the Caspian Sea, at 40°35'N-49°38'E, in Azerbaydzhan SSR, Transcaucasus.

Plan for Construction and Operation.

The initial plans for the construction of a pipe and tube mill were part of the Third Five Year Plan (1938-42), and preliminary surveys were begun in 1940 at Sumgait. In 1941 it was announced that the plant was to be the largest pipe rolling mill in the USSR and would serve the oil fields of Baku, Azerbaydzhan SSR; of Groznyy, RSFSR; of Emba, Kazakh SSR; and of Turkmen SSR. 1/* In 1945 it was claimed that the capacity of the first unit of the mill would exceed the capacity of any existing pipe mill in the USSR and that its operations would begin with open-hearth steel and extend through the rolling and finishing of the pipe. 2/ [redacted] when the mill was in full operation, production would amount to 40 percent of the total prewar production of all categories of tubing. 3/ Various other announcements have given the planned production of the mill as 350,000 metric tons per year. 4/ 50X1

It was announced that the principal departments of the mill at Sumgait would be three blast furnaces, an open-hearth shop with seven open-hearth furnaces, a blooming mill, and a pipe rolling mill (including one 750-mm rolling mill). 5/ The following target dates have been set for the completion of the installation: for the building to house the open-hearth shop, May 1950 6/; for the completion of construction work on the mill, sometime in 1952 7/; for the full operation of the mill, 1955-60. 8/

[redacted] 50X1

Raw Materials.

Iron ore from the Dashkesan magnetic ore mines was to be used in the blast furnaces at Sumgait. 9/

Building materials being received at Sumgait [redacted] as follows: about 300 metric tons of limestone each day from quarries at Karadag, 35 kilometers south of the plant site, shipped by rail; approximately 50 metric tons of cement each day by rail via Baku, delivered in jute sacks of German origin; brick trucked from Sumgait; sand delivered by truck from the Caspian Sea; T and U girders 2 to 5 meters long, shipped by rail from an unknown source; and iron rods, 4 to 6 millimeters in diameter. 10/ 50X1 50X1

Progress of Construction.

Two firms have been actively engaged in the construction of the pipe mill at Sumgait. The South Transcaucasian Construction Enterprise of Moscow (Osmu I) was responsible for the actual construction of buildings. A Dnepropetrovsk firm known as KPP supplied and delivered the building materials. 11/

According to German prisoners of war who had been used on construction work from August 1945 through April 1949, the project was called Osmu I. As buildings were completed, jurisdiction of them was assumed by BTZ (Bakinskiy Truboprokatnyy Zavod), which installed equipment and directed operations. 12/

The chief of construction, in the period from October 1948 through April 1949, was reported to be Mirsachanov,* and the chief construction engineer was Chatschalurov.* 13/

Progress of construction by years on the mill at Sumgait was as follows:

1941. Preliminary surveys had been made, and construction of the plant had begun. 14/

World War II Period. The partially built plant was destroyed by order of Soviet authorities before the Germans could reach it. 15/

1944. In April 1944, authority was given to ship 20 tons of steel sheet to the South Transcaucasian Industrial Construction Enterprise at Baku for use at the mill, and by the end of the second quarter of 1944, 900 workmen were employed at the site. 16/

* Full name unknown.

1945. In March 1945, 4,500 metric tons of construction equipment were due to arrive in the port of Baku, and 225 railroad cars were needed to unload and to transport the cargo to Sumgait. By October the machine shop was completed, and part of the machinery was installed, including 10 Russian-built lathes, 2 US-built lathes, a US planing machine, 6 grinding machines, and 3 cranes with lifting capacities of from 1 to 10 tons each. 17/

1946. By October 1946, work on the mill reportedly had reached the following point: the machine and woodworking shops were said to be completed, and listed as nearing completion were the forge and foundry shop, the lumber mill, the paint shop, and the glass shop; stated as being under construction were seven open-hearth furnaces, one rolling mill (with large blooming mill train), the pipe-drawing shop, the pipe-finishing shop, and a number of secondary shops. [redacted] published the statement that construction of the pipe mill was not yet started. 18/ 50X1

1947. Slow progress in the construction work at Sumgait was reported for the first quarter of 1947, and only 52.1 percent of planned construction was completed. The lag was attributed to inadequate supplies of local construction materials such as limestone, gravel, and sand and to frequent interruptions in electric power from the Sumgait Thermoelectric Power Plant. 19/ In order to facilitate the delivery of limestone, a new railroad was begun in February from Karadag station to the foot of Karadag Mountain, where newly opened quarries were located. 20/ It was announced in April 1947 that preparations were underway for extracting the magnetic ores of the Dashskesan iron deposits for use at the Sumgait mill. 21/

At the end of 1947 the building for the machine shop was completed, and equipment, which included a number of German lathes removed from plants in Essen and Duisburg, was installed. 22/ The forge-boiler shop had started operations with the most modern equipment, including hammers, stamping machines, forges, and heaters. A press shears, which could cut sheets up to 75 millimeters thick, was installed. Production consisted of nonstandard technical equipment for the building of the foundry. 23/ The construction of the foundry still was underway, but the foundry was scheduled to begin operations in the third quarter of 1947. 24/ Three blast furnaces were planned, but erection had not begun. 25/ The building to house the open-hearth furnaces was under construction. 26/ All concrete work was completed on the pit for No. 1 open hearth, and two more were to have been started shortly. The furnaces were to be over 30 meters high, and only the open hearths at Makeyevka and Nizhniy Tagil were to be of an equal size. 27/

1948. Progress at the mill was still lagging in 1948. A German prisoner of war claimed that in June, only 6 buildings of the 52 planned for the mill were completed. 28/ In mid-1948 it was announced that the Uralmach factory would build three rolling mills for the Baku plant. 29/ During the year, harbor dredging in the Caspian Sea began for a new port about 2 kilometers from the town of Sumgait. 30/ Toward the end of the year a small shipment of iron ore arrived at the plant site and was stored in the open air. It was reported that the ore was to be used for future production tests at the mill. 31/

In the spring of 1948 a German prisoner of war was told by his Soviet coworkers that, although the plant was designed primarily for the production of tubes and pipe, it could be converted easily to the production of gun barrels, if necessary. 32/

Estimates of the number of laborers employed at the site varied but seemed to average from 1,200 to 1,500 Russians, 1,000 to 1,500 German and Austrian prisoners of war, and approximately 200 Soviet convicts. Only one shift of 8 hours, 6 days a week, was worked. 33/

In 1948, some shops were in production, but the furnaces were not yet in operation. Production of articles needed in the plant construction program began in the machine shop in May 1948. 34/ During the year the forging of steel bars, approximately 40 by 10 by 10 centimeters, into shapes for use in plant construction began in the forge shop. 35/ The first experimental casts were made in the foundry in November 1948. 36/ Observations on the erection of blast furnaces varied, and two sources claimed that foundations for four blast furnaces were laid, 37/ but another claimed that the blast furnaces were only in the planning stage. 38/ One prisoner of war claimed that of the eight open-hearth furnaces planned, seven were installed, the eighth was being built, and none was in operation. 39/ [redacted] 50X1

[redacted] No. 1 open hearth was completed but not in operation, that No. 2 was under construction, and that excavations for No. 3 were begun in the summer of 1948. 40/ 50X1

1949. In April 1949, German and Austrian prisoners of war, estimated at 900, were repatriated and left the Baku Pipe Rolling Mill. It was reported that they were to be replaced by Soviet convict labor. Little information from personal observation is available after 30 April 1949.

The plant manager at Sumgait was reported to be M. Plagermon, who also was the Minister of Heavy Industry for Azerbaydzhan SSR and who frequently flew to Moscow on business. 41/

As of 30 April 1949, construction had progressed as follows:

Equipment in the machine shop consisted of 45 to 60 lathes, the majority of which were of Soviet manufacture, marked "Krasno Proletaria," and several of German, US, and Japanese origin; several planing machines, including one large US planer; drills; and a small forge with a 150-kilogram pneumatic air hammer. Production continued to consist of items needed in the construction of the mill. 42/ The machinery observed in the forge shop included six to eight annealing ovens, several small furnaces, grinding machines, at least three pneumatic air hammers, and one US metal cutting machine, with a capacity to cut up to 25 millimeters. The shop was in operation. 43/ Three coke-fed furnaces were reported to be installed in the foundry, one 3-ton cupola furnace was in operation, but two 7-ton cupolas were not yet in production. 44/ Machinery also installed in the foundry were 20 joggling machines and 10 gantry cranes with lifting capacities of 1 to 30 tons. Two or three electric furnaces were planned for the foundry, and one 3-ton furnace was reported as being assembled. 45/ Foundations for three blast furnaces were laid. 46/ No. 1 open-hearth furnace was operating, the raw steel being used for construction work at the mill site. Three other open hearths were in various stages of construction. 47/

Observers differed as to the status of the rolling mill. One prisoner of war claimed that the building was complete and that a mill, built by Krupp, 70 to 80 meters long and 2.5 meters wide, which had been dismantled from an Upper Silesian steel mill, was installed but not in operation. 48/ Another observer claimed that construction work on the buildings to house the rolling mills had not been started. 49/ The director of the mill was reported to be Michties.* 50/

[redacted] military equipment was to be produced at Sumgait. [redacted] proof-casts for tank wheels and for heavy artillery in the machine shop. 51/ [redacted] 17.2-caliber gun barrels were produced first in January 1949 and that the event was considered to be an important occasion by the factory staff. 52/ 50X1 50X1 50X1 50X1

1950. The slow progress at the mill still was a matter of concern in 1950. Not only had the construction of the mill itself lagged, but also the building of workers' housing was behind schedule. On 1 August 1950, only 44 percent of the year's plan had been completed. 53/

* Full name unknown.

Summary.

Construction at Sumgait has lagged since 1944-45. In mid-1949 the only installations in operation were the No. 1 open-hearth furnace, the machine shop, the woodworking shop, the forge and boiler shop, and the foundry. Slow progress at the site still was a matter of concern in October 1950, and since that time there has been a complete absence in the press of announcement of any advancement. It is believed, therefore, that little headway has been made since mid-1949.

No information is available on the production of steel at the mill other than the fact that No. 1 open hearth went into operation in April 1949. Some ingots probably have been cast and placed in storage awaiting completion of the blooming and rolling mills.

2. Cherepovets Metallurgical Plant. 54/

Alternate Designations.

So far as is known, a number designation has not been assigned to the Cherepovets Metallurgical Plant by the Ministry of Heavy Industry.

Location.

The Cherepovets Metallurgical Plant was planned to be erected approximately 450 kilometers southeast of Leningrad at the town of Cherepovets, at 59°10'N-37°55'E, a point on the railroad running from Volkhov to Vologda. The main reason for locating a plant in this area was to utilize the iron and steel scrap of Leningrad, reportedly the largest scrap-generating center in the Soviet Union.

Plan for Construction and Operation.

In January 1948 it was announced that a new steel combine, designed to serve the important manufacturing area of Leningrad, would be constructed at Cherepovets. When completed in 1960, it would produce annually 4 million to 4.5 million metric tons of pig iron and 6 million to 6.5 million metric tons of raw steel.

It was planned to build the combine in sections, the first of which was to be completed in 1950 and would consist of two blast furnaces with a combined annual capacity of 1.2 million metric tons, open-hearth furnaces with an annual capacity of 2 million to 2.2 million metric tons, and a blooming mill with an annual capacity of 1.6 million metric tons.

Raw Materials.

According to the announced plans, open-hearth furnace charges would consist of from 55 percent to 65 percent scrap, obtained from manufacturing installations in the Leningrad area. Coal and coke supplies were to be received from the Vorkuta deposits in the Pechora Basin in the Northern Urals, a long rail haul of approximately 1,400 miles. Peat, which is in plentiful supply in the area, was to be used as much as possible as a substitute for coal, particularly in the generation of gas for use in the plant. Iron ore was to come chiefly from the Kola Peninsula, Karelo-Finnish SSR. While reserves are large, the ores are of a low grade, averaging 30 to 35 percent iron, and need to be beneficiated before use in blast furnace charges. The shipment of these ores would involve a long, costly rail haul.

Progress of Construction.

Plans were announced in the first half of 1948, and there has been no further information published on the construction of a steel plant in the Leningrad area.

Summary.

Since each successive accomplishment in the construction of other new steel plants in the USSR has been announced by the Soviet press and radio, it is believed that plans for building the Cherepovets Metallurgical Plant have been either indefinitely postponed or entirely abandoned.

3. Kazakh Metallurgical Plant.

Alternate Designations.

The Kazakh Metallurgical Plant also is known by the following names: Kazakhstan Metallurgical Plant, Temir-Tau Metallurgical Plant, Karaganda Metallurgical Plant, and Samarkand. It is not believed that a number designation has been assigned to the plant by the Ministry of Heavy Industry.

Location.

The Kazakh Metallurgical Plant is located at Temir-Tau, a town established to furnish quarters for workers at the plant, approximately 32 kilometers northwest of Karaganda, Karagandinskaya Oblast, Kazakh SSR. The plant is situated on the shores of the Samarkand Water Reservoir at 50°06'N-72°55'E.

Plan for Construction and Operation.

When the plant was planned in 1942, installations were to consist of blast furnaces and three open-hearth furnaces, 55/ and the mill was to be in operation by the end of 1947. 56/

Plans to expand the plant were announced in 1946. When the new addition was completed, it was to have the following equipment 57/: 4 blast furnaces with an annual capacity of 1.2 million metric tons, 10 open-hearth furnaces with an annual capacity of 1.4 million tons, rolling mills with an annual capacity of more than 1 million metric tons, a pipe mill with an annual capacity of 70,000 tons, a coke-chemical plant, and a refractory plant.

Raw Materials.

According to plan, the Kazakh plant was to operate on iron ore from the Ashchy-Su Basin east of Karaganda, on coking coal shipped by rail from the Karaganda Basin, and on manganese ore mined 250 to 420 kilometers from the town of Karaganda. Sufficient quantities of limestone, quartz, and white clay are available in the immediate vicinity of the mill. 58/

Progress of Construction.

Progress of construction by years on the plant at Temir-Tau was as follows:

1942. Plans were formulated for the construction of an iron and steel plant in the vicinity of Karaganda. 59/

1943. Installation of an open-hearth furnace was begun late in the year. 60/

1944. In early 1945 a report was made by plant officials on the status of construction at Temir-Tau. 61/ This report was substantiated by other press releases which appeared during the latter part of 1944. 62/ No. 1 open-hearth furnace was blown in on 31 December 1944. The open-hearth building, which contained two other furnaces still under construction, was completed, and 16,000 square meters of the charging floor were enclosed. Six kilometers of railroad track were laid within the plant, and 7,000 meters of communication lines were installed. Auxiliary shops were completed and operating, including the mechanical, forge, foundry, electrical repair, boiler, and woodworking shops. Eleven thousand square meters of housing were completed.

During 1944 the following personnel were assigned to the plant: Belov,* head of the Trust Kazmetallurgystroy, Narkomstroye; Bakst,* director of the plant; Gerardov,* chief engineer of the plant; and Baglimbayev,* chief of the charging floor of the open-hearth shop. 63/

1945. Early in 1945, plans were announced calling for the completion during the year of the construction of No. 3 open-hearth furnace, of the housing of the rolling mills, and of three rolling mills, which were to be put in operation. 64/ Construction of the rolling mill building was begun in February 65/ and completed in November. 66/

1946. Plans for extending the facilities at Temir-Tau to 4 blast furnaces, 10 open hearths, additional rolling mills, a pipe mill, a coke-chemical plant, and a refractory plant were announced in September. 67/

By the end of 1946 the following progress was reported:

Open-hearth Shop. Two open-hearth furnaces, each with a capacity of 150 metric tons, were completed, but only one furnace was in operation. 68/ No. 1 open-hearth furnace completed its 500th melt in November. 69/

Rolling Mill. The 400-millimeter rolling mill completed its test period and had produced 2,000 metric tons of rolled products by mid-November. 70/ When in full operation, this mill was to produce rails for the Karaganda coal mines and channel and bar steel. 71/ A rolling mill for producing thin steel sheets and corrugated roofing was being assembled in November. 72/

Blast Furnaces. No reference was made in 1946 to the status of construction of the blast furnaces. The source of pig iron for use in the open hearths was not mentioned, and it is assumed that the larger proportion of the open-hearth charges consisted principally of scrap iron and steel.

Employees. The population of Temir-Tau was reported to be 18,000, 73/ and 15,000 square meters of housing were completed. 74/ Bakst* still was director of the plant in 1946, and his assistant was mentioned as Yarmu-Khambelov.* 75/

1947. Plans proceeded during 1947 as follows:

Open-hearth Shop. Although three open-hearth furnaces were installed, only one furnace was operating until 27 October, when No. 2 furnace began to produce. 76/ During the first quarter of 1947,

* Full name unknown.

No. 1 open hearth produced 800 metric tons of raw steel above its quota. 77/ Some improvements were made in the technique of charging No. 1 open hearth, and it was claimed that, because charging time had been reduced from 5 to 2 hours, three instead of two melts were made each day. 78/ [redacted] 50X1 [redacted] 21,000 metric tons of raw steel were produced at Temir-Tau during 1947. 79/ 50X1

Rolling Mill. It was reported that the new rolling mill for producing thin sheet and corrugated roofing was reaching final assembly in August 80/ and that it was in operation by the end of October. 81/

Employees. In 1947, from 1,200 to 1,800 workers were employed at the plant on three 8-hour shifts. 82/ Of these employees, 380 workers were assigned to the open-hearth and rolling mill shops. 83/ The foreman of the 400-millimeter rolling mill was reported to be Kosmolets,* 84/ and the foreman of the forge shop was named as Salkimbayev.* 85/

1948-49. Early in 1948 it was announced that construction of the new addition to existing plant facilities would begin. 86/ [redacted] 50X1 [redacted] 50X1

Open-hearth Shop. [redacted] No. 3 open-hearth furnace was ready to go into production by the end of 1948, and it was expected that raw steel output for the year would reach 39,000 metric tons. 87/ [redacted] No. 1 open hearth, with a capacity of 150 metric tons, alone had produced 75,000 metric tons by November, when it completed its 500th melt. 88/ An article in the press on 1 January 1949 claimed that operations of the furnaces had improved considerably during the four previous years and, more specifically, that smelting time in 1948 had been shortened appreciably and the smelting weight increased 20 percent. 89/ A press story in November 1948 claimed that open-hearth furnaces at Temir-Tau were being relined and insulated to speed the smelting operation and to save fuel. 90/ 50X1 50X1

Rolling Mill. Changes also were made on the 400-millimeter rolling mill, which were expected to result in an increased output of 10 to 12 percent. 91/ In the pre-October competitions, each worker in the mill rolled an average of 620 to 625 ingots a shift, the best performance that had been achieved at the plant. 92/ This statement, although ambiguous, indicates that a drive to increase production was underway.

Employees. In 1948-49, approximately 2,050 workers were employed at the plant on three 8-hour shifts. 93/

* Full name unknown.

1950. The raw steel target for 1950 at Temir-Tau, as announced in early 1948, was 72,000 metric tons. 94/ In March 1950 the claim was made that the planned capacities of the open-hearth furnaces had been exceeded by 60 percent as a result of new operational techniques and that smelting time had been reduced to 5 hours and 15 minutes. 95/ Toward the end of the year the statement appeared that the planned target for 1950 had been exceeded by 18 November. 96/

1951. In a home service radio broadcast it was announced that the plant had increased its production capacity in the postwar years. According to this broadcast, new open hearths and three large rolling mills had been put in operation, and smelting time, which in the early operation of the open hearths had run from 10 to 12 hours, had been reduced to less than 7 hours. 97/ It is possible to make such a reduction in smelting time by using enough hot metal in the charge. Since there is no evidence of blast furnaces in operation, the claim is doubtful.

Summary.

Although it was planned originally to build at Temir-Tau four blast furnaces with an annual capacity of 1.2 million metric tons, there is no evidence that the construction of blast furnaces has even begun. Three open-hearth furnaces are in operation, each with a capacity of 150 metric tons. Three rolling mills probably are in operation, producing channel and bar steel, thin steel sheet, corrugated roofing, and rails for the Karaganda coal mines. The following auxiliary shops were built and are in operation: machine, forge, foundry, electric repair, boiler, and woodworking shops.

Little information is available on the output of the Kazakh plant. It is unlikely that production was greater than indicated by the claim that the 1950 target for raw steel was achieved on 18 November 1950. On the assumption that the 1950 target remained 72,000 metric tons, it is estimated that 75,000 tons were produced in 1950. From this figure is derived an estimate of 54,000 metric tons of rolled products, based on a ratio of rolled products to raw steel production of 72:100, which is the average of US practice.

4. Orsk-Khalilovo Metallurgical Combine.

Alternate Designations.

The Orsk-Khalilovo Metallurgical Combine also is referred to by the following names: Yuzhno-Uralskiy, Novo-Troitskiy Metallurgical Kombinat, South Urals Metallurgical Works, Khalilovo Steel Plant, and Khalilovskiy

Kombinat. It is not believed that a number designation has been assigned to the combine by the Ministry of Heavy Industry.

Location.

The Orsk-Khalilovo Metallurgical Combine is located at Novo-Troitsk, at 51°12'N-58°24'E, approximately 20 kilometers west of Orsk and 1.5 kilometers north of the Ural River in Chkalovskaya Oblast.

Plan for Construction and Operation.

Although preliminary plans for the construction of a large metallurgical combine in the South Urals were part of the Third Five Year Plan (1938-42), actual construction did not begin on a large scale until after World War II. Upon completion, the combine will become the basis for the development of an engineering industry in the Siberian and Central Asian republics. It also will be of importance in the development in those areas of other branches of industry using alloyed metals. 98/

As plans for the combine at Novo-Troitsk progressed, changes were made to increase the size of the installation. These changes in planned equipment and annual capacities are listed below as follows:

Planned Equipment and Capacity
1941 99/

Metric Tons

Equipment	Products	Capacity
Blast Furnaces, Two (Each with a Capacity of 1,300 Cubic Meters)	Pig Iron	800,000
Open-hearth Furnaces, Two	Raw Steel	950,000
Rolling Mills	Rolled Products	675,000
Coke-chemical Plant		

Planned Equipment and Capacity
1942 100/

Equipment	Products	Capacity (Metric Tons)
Blast Furnaces, Four	Pig Iron	950,000
Open-hearth Furnaces, Two	Raw Steel	950,000
Rolling Mills	Rolled Products	675,000
Coke-chemical Plant		
Steam Power Plants, Two		

Planned Equipment and Capacity
1943 101/

Equipment	Products	Capacity (Metric Tons)
Blast Furnaces, Four	Pig Iron	1,000,000
Open-hearth Furnaces, Six	Raw Steel	1,000,000
Bessemer Converters, Five		
Rolling Mills	Rolled Products	700,000
Machine Shop		

Plans in 1943 also called for the utilization of 30,000 employees and for a forge shop; a gas generating plant; a boiler room; a concentrating plant; a coke plant, including 4 batteries with 54 ovens each; and 2 heat and power plants, with a capacity of 60,000 kilowatts each.

Planned Equipment and Capacity
1946-47 102/

Metric Tons

Equipment	Products	Capacity
Blast Furnaces, Four	Pig Iron	1,000,000
Bessemer Converters, Three to Five		
Open-hearth Furnaces, Six to Seven	Raw Steel	1,000,000
Blooming Mills, Five		
Rolling Mills	Rolled Products	700,000
Coke Batteries, Six	Coke	1,050,000

Planned to be produced during 1946-47 were the following products: pig iron; ferroalloys; raw steel, plain carbon and alloy; rolled and forged steel, including structural shapes, rails, tire iron, railroad car wheels and axles, sheets, and wire; electrolytic tin (from scrap metal); Babbitt metal; bronze; coke; and chemical by-products of coke manufacture. 103/

Raw Materials.

Building materials for construction are available from local sources. 104/ Coking coal was to come from the Karaganda and Kuznets Basins. 105/ Deposits of suitable grades of iron ore are located in the vicinity of the plant, and the ore fields cover an estimated area of 2,000 square kilometers, containing several million tons. The ores contain iron, chrome, and nickel and would be used in blast furnaces to produce natural alloyed steels. Deposits lie close to the surface and are mined by the open-cut method. 106/ Manganese was to be shipped in from the Kul'minskiy manganese ore deposits. 107/

Progress of Construction.

Progress of construction by years on the Orsk-Khalilovo Metallurgical Combine was as follows:

1934. The State Administration for the Construction of the Khalilovo Metallurgical Kombinat-Khalilovo Kombinat Project was under the direction of the Main Administration of the Metallurgical Industry in the Southern and Central Regions (Glavnoye Upravleniye Metallurgicheskoy Promshlennosti Yuga i Tsentra). 108/

1940. Construction of the Orsk-Khalilovo Metallurgical Combine began. 109/

1941. Two blast furnaces, with a capacity of 1,300 cubic meters each and with a combined output of 800,000 metric tons a year, and two open-hearth furnaces, with a planned annual capacity of 950,000 metric tons, reportedly were under construction. 110/ Apparently not a great deal of progress was made.

1942-44. Little construction work was done during World War II. 111/

1945. Construction at Orsk-Khalilovo was resumed after the armistice of World War II. 112/

1946. In August it was announced that equipment for the blast furnaces, open hearths, coke batteries, rolling mills, and the heat and power plants was being received. 113/ By November the refractory brick factory had started production, the construction of the first coke battery was underway, the turbogenerator was to be installed, and the foundations for a blast furnace were to be laid. 114/ By the end of 1946 the No. 1 blooming mill, manufactured by Novo Kramatorsk, was to have been completed, 115/ and the machine shop was to be in operation. 116/

1947. According to press reports of May 1947, progress at the steel plant was not meeting plans. 117/ In 2 years the Orsk Metallurgical Trust, in charge of building, had been under the direction of three different managers and there had been five chief engineers. By the end of the year, 20,000 square meters of housing were to be completed, a goal which was not achieved. The article also claimed that in 5 years not one of the responsible officials, either from the Ministry of Ferrous Metallurgy or from the Ministry of Heavy Industry, had visited the site.

In May 1947 it was announced that a dam across the Ural River, in the Guberlinsk Mountains, 60 kilometers above the city of Orsk, was about 75 percent complete. At the junction of the Suunduk, Tanalyk, and Ural rivers a lake would be formed, the Orsk Sea, which would furnish water and power for the Orsk-Khalilovo Kombinat. 118/

Toward the end of 1947 the following installations were in operation: the refractory brick factory, the mechanical workshop, two sections of the forge shop, and several auxiliary workshops. Construction completed included 11,000 square meters of housing and the building for the industrial training school. The profile-casting shop, which was to contain two 10-ton and one 3-ton cupola furnaces for steel castings and one furnace for nonferrous metal casting, was nearing completion, as was the machine shop, which was to have 150 planing and vertical milling machines, turn lathes, and other equipment, installed. Plants under construction were the coke-chemical plant, for which the walls were being

erected and for which the coal pits and bunkers were being cemented, and the heating and power plant, for which all concrete work was finished. The mounting of boilers and a turbogenerator also was underway. No mention was made of blast furnace construction. 119/

1948-49. Progress at plant received little publicity in 1948 and 1949. It is not believed that much was accomplished. However, manufacture of a blooming and slabbing mill for the works was begun in January 1948 by the Stalin Heavy Engineering Works. 120/ In March 1949 it was announced that the dam and the hydroelectric power plant north of Orsk still were under construction. 121/

1950. Although it was planned to have two batteries of the coke plant, two blast furnaces, Bessemer converters, and open hearths in operation during 1950, no mention appeared in the press that such operations had been accomplished. 122/

Summary.

Publicity on the Orsk-Khalilovo Metallurgical Combine ceased in 1947, as far as information is available. By the end of 1947, only a refractory brick plant and a few auxiliary shops were in operation. A few others were nearing completion. Only a start had been made on the construction of the coke-chemical plant and the heating and power plant. In view of available information, the numerous changes in plans, the turnover in personnel, the failure even to lay foundations for the blast furnaces, open hearths, and other planned structures, it seems probable that plans to build an integrated steel mill at Novo-Troitsk have been postponed.

5. Transcaucasian Metallurgical Plant.

Alternate Designations.

The Transcaucasian Metallurgical Plant also is referred to by the following names: Transcaucasian Inland Metal Works, Zakavkazkiy, and Martin Zech. So far as is known, a number designation has not been assigned to the plant by the Ministry of Heavy Industry.

Location.

The Transcaucasian Metallurgical Plant is located at Rustavi, on the Kura River, about 30 kilometers southeast of Tbilisi, Georgian SSR, at 41°33'N-45°02'E.

Plan for Construction and Operation.

The decision to build an iron and steel plant in Georgian SSR was made by the Ministry of Heavy Industry in the fall of 1940. Surveys were made, and some preliminary work was begun before World War II. Construction of the plant was suspended during hostilities and resumed in 1944. An announcement of planned annual production for the installation was not made until April 1946 123/:

	Metric Tons
Pig Iron	430,000
Raw Steel	500,000
Rolled Products	380,000

The above production plan figures were modified on 29 September 1947 in a budgetary speech made by the Georgian Deputy N. A. Georgadze, who announced that annual production would be as follows 124/:

	Metric Tons
Pig Iron	430,000
Metallurgical Coke	640,000
Raw Steel	685,000
Pipe	290,000
Rolled Metal	150,000

In the spring of 1947, two articles appeared in the Soviet press which announced the following equipment planned for the Rustavi plant: two blast furnaces, six to eight open-hearth furnaces, a blooming mill, two coke batteries of 61 ovens each, an agglomeration plant, and a series of rolling mills, which were to include a sheet mill and a pipe rolling mill. 125/ When completed, the steel plant was to employ 15,000 engineers,

technicians, and workers. 126/ Directors of the plant were to be Gomelaur* and Kashakashvili.*

Raw Materials.

Raw materials were to be received principally from Georgian SSR and Azerbaydzhan SSR. 127/ Iron ore would come from the Dashkesan deposits, located 35 kilometers south of Kirovabad, Azerbaydzhan SSR. Ores occur almost exclusively as magnetite, with an average iron content of 39.7 percent. Tests have shown that the ores are easily concentrated, with a resultant iron content of 50 to 60 percent. Iron ore reserves in North Caucasus and Transcaucasus are estimated at 315.8 million metric tons. Operations of the mines were expected to begin in 1948 and to produce approximately 2 million metric tons annually upon reaching full capacity. Coking coal would be mined in the Tkvarcheli and Tkibuli coal fields in Georgian SSR, and a combination of coal from these two fields has proved to be satisfactory for the production of metallurgical coke.

Progress of Construction.

German and Austrian prisoners of war in considerable numbers, 3,000 to 4,500, were used on construction work at Rustavi from 1945 to 1 May 1950. In view of available information, however, the employment of a large number of prisoners of war does not necessarily indicate that any special urgency was attached to the completion of the Rustavi project, which appears to have gone forward with delays and inefficiency.**

Progress of construction by years on the plant at Rustavi was as follows:

1946. Housing for over 20,000 workers was under construction and nearing completion, and the building of many auxiliary workshops was completed. Foundations for a building to house six open-hearth furnaces were laid, the thermoelectric power station was begun, and a bridge across the Kura River was started. 128/ The Novo-Kramatorsk Heavy Machinery Plant accepted an order for a blooming mill, which was to be completed by late 1946. 129/

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* Full name unknown.

** Information obtained from these prisoners of war upon repatriation is used in the rest of this study; [redacted] 50X1-50X1

1947. In the first quarter of 1947 the mechanical repair, metal construction, and forge shops were put into operation, and the first section of the new railroad station was to be completed in the fourth quarter of the year. 130/ Foundations for No. 1 blast furnace were completed, and, though foundations for No. 2 were begun, construction was reported as being abandoned a few months later. In November 1947 it was publicly announced for the first time that construction work at Rustavi was lagging. 131/

1948. A summary of the accomplishments achieved at the plant in 1948 was published in an article early in January 1949. 132/ Listed as being in operation were the iron and steel mill, the electrorepair shop, the woodworking shop, the cross-tie impregnating shop, and the oxygen plant. Under construction were the framework for the open-hearth plant, the blooming mill, and the coke-chemical and pipe-casting plants. One blast furnace was 60 percent completed; 6 open-hearth furnaces were 70 percent completed; and one electropower station was 50 percent completed. The article claimed that the over-all construction of the mill was 65 percent complete. It also admitted that, because of a shortage of building materials, work stoppages lasting as long as 4 days were occurring.

Other press articles claimed that No. 1 blast furnace of 700 cubic meters' capacity, which would produce 2,000 metric tons of pig iron a day, was to be put into operation during the first quarter of 1948 and that the water system to service the plant would be laid down during the year. 133/

In February the workers at Rustavi addressed a letter to Stalin in which they promised to do their utmost to turn out the first steel from the plant by the fourth quarter of 1948 and to complete the blooming and pipe mills by the end of the year. 134/

Prisoners of war engaged in construction work on the project gave considerable information about the accomplishments of 1948. The building to house open hearths, or Martin Plant No. 1 (so-called from the Siemens-Martin furnaces used), was finished during the year, and the laying of the foundations for two open hearths was begun in the summer of 1948. By the end of the year, two of the furnaces were only 50 percent complete. Eight open hearths were planned, but Martin Plant No. 1 could house only five. Only temporary rail lines had been laid within the plant area. Production of tools and equipment necessary for plant construction began in April 1948, and at the end of the year the section producing this equipment was the only section of the plant in actual operation.

1949. According to items concerning the plant which were published in various newspapers during the year, workers at Rustavi pledged to Stalin that the greatest effort would be made to produce the first lot of pig iron

during the third quarter of 1949. 135/ This was an admission that No. 1 blast furnace, planned to be put in operation during the fourth quarter of 1948, had not been completed.

Other items gave information that the newly constructed electropower plant was put into operation early in the year and that two open-hearth furnaces were constructed. The building of the blooming and rolling mills was reported to be progressing. 136/ A 3-ton electric smelting furnace, with a daily capacity of 15 metric tons, which would be used for making steel equipment for new shops under construction, had been installed, and its initial output would consist of steel hot beds for molds for the open-hearth plant. 137/ The Novo-Kramatorsk Heavy Machine Building plant was working on a pipe rolling mill for Rustavi and at the same time was building a holding furnace for molten pig iron for the steel mill. 138/

Former prisoners of war at Rustavi reported considerable information about the status of the project as of December 1949. Three blast furnaces were said to be planned, the third furnace to be used as a reserve. No. 1 blast furnace was completed, but one of three hot blast stoves had not been finished. Construction of blast furnace No. 2 was estimated to be 10 to 20 percent complete. There was no mention of initial construction of No. 3. Two observers were emphatic that work on the blast furnaces had stopped in 1948 and, furthermore, had never been resumed.

According to the prisoners of war that had been at Rustavi, plans were made in mid-1949, and the foundations were completed in December 1949 for open-hearth building No. 2, which was many times referred to as an extension of the original open-hearth shed. No. 1 and No. 2 open hearths were completed during the year. Chimneys for the furnaces also had been completed, but during the late summer the chimney for No. 2 collapsed during a storm, reportedly because of faulty welding, and would have to be completely rebuilt. Foundations were completed for Nos. 3 and 4 open hearths, and excavations were completed for Nos. 5, 6, 7, and 8. Most reports agree that 8 open-hearth furnaces were to be constructed, but several observers stated that there was to be a total of 10. A Soviet-designed charging crane was installed on a track to service the furnaces, which were to be operated in groups of twos. Several observers reported that the open hearths were temporarily adapted to operate on either gas or oil.

According to prisoner-of-war observers, in 1949 the building for No. 1 rolling mill was completed, three rollers were installed, and the foundations were laid for a continuous mill. Only the excavation work on No. 2 rolling mill was finished. A number of observers reported that the pipe and tube rolling mills were at the site and were being assembled. Construction of the building to house the machine shop was

completed, and the following equipment was installed: one US-built planer, one gear-cutting machine, and a number of lathes and drilling machines. The foundry building was finished, and six electric furnaces were being installed. Two observers estimated the size of these furnaces as being 2 meters in diameter and 3 meters in height. The metal construction shop was reported to be in operation. Steel plates were processed in the shop for use in construction of the plant, and installed machinery included a plate-cutting machine, a bending machine, and welding apparatus. The building for No. 1 electropower plant was completed late in the year, and one German turbogenerator was in operation. No. 2 plant still was under construction. The electrorepair and woodworking shops were in operation. Two coal-storage bunkers with a capacity of 2,000 metric tons each and two with a capacity of 4,500 metric tons each were completed. The building to house the limestone processing plant was completed, but no equipment was installed, and the coke-chemical plant was under construction.

No production of iron and steel was underway, and no key personnel for the organization of work, preliminary to the manufacture of steel, had arrived at Rustavi by the end of 1949.

1950-51. In March 1951 a Georgian newspaper announced that No. 1 open-hearth furnace went into operation in April 1950, that No. 2 open hearth was placed in operation on 24 February 1951, and that No. 1 blooming mill began operation several months later. During 1950, several thousand tons of steel were smelted, and the production of rolled steel began. 139/ The newspaper article also admitted the following shortcomings in the operation of the open-hearth and blooming shops: (a) the technical training of workers was organized poorly; (b) there still were losses of metal in pouring or instances where steel remained in the furnace for too long a time; (c) the charging of the furnaces often took too much time; (d) heads of shops or shifts were not always present when a melt was completed; (e) work areas were cluttered with scrap and useless equipment; (f) machinery too frequently was idle because of the absence of repair schedules; (g) Socialist competition had not been developed fully; and (h) there was no close cooperation between the open-hearth and rolling shops.

In mid-July 1951 a speech broadcast over Radio Moscow reported "the building of the Transcaucasian Metallurgical Works is being successfully carried out." 140/ "Building" was stressed, but no mention was made of the plant being in operation.

Five observers, former prisoners of war who had worked at Rustavi, reported that operation of No. 1 open-hearth furnace was scheduled for January 1950, but an observer who had been at the plant through April 1950 reported that such an operation had not been accomplished. [redacted] no raw materials had arrived at Rustavi and that the plant was not producing iron and steel at the end of April 1950. 50X1

Summary.

One blast furnace probably is in operation at Rustavi, and possibly two are producing pig iron. It is estimated that only two of the six to eight open-hearth furnaces are in operation, and it is not believed that more than one of the planned rolling mills is in operation. No. 1 blooming mill probably went into production in mid-1950. The necessary auxiliary shops to support present output are completed and in operation. Progress has been slow, and it is estimated that planned installations and equipment will not be completed and in operation for at least five more years.

No information as to the amount of pig iron, raw steel, and rolled products being produced at the Rustavi plant has been published. Some production of each category undoubtedly is being realized, but the amount cannot be estimated.

6. Uzbek Metallurgical Plant.

Alternate Designations.

The Uzbek Metallurgical Plant also is referred to by the following names: Uzbekpromstroy, Farkhad-Stroy, Begovat Metallurgical Plant, UMZ (Uzbek Metallurgical Zavod), UMZK (Uzbek Metal Zavod Kombinat), Uzbekskiy Metallurgical Zavod, and Central Asian Metallurgical Works. It is not believed that a number designation has been assigned to the plant by the Ministry of Heavy Industry.

Location.

The Uzbek Metallurgical Plant is located at Begovat, Uzbek SSR, about 115 kilometers south of Tashkent, at 40°12'N-69°18'E, on the right bank of the Syr-Darya River, not far from the Farkhad Hydroelectric Power Station.

Plan for Construction and Operation.

The construction of an iron and steel mill at Begovat was part of the Fourth Five Year Plan (1946-50), and on completion it will provide Central Asia with iron and steel products which now must be imported from other Soviet areas. Planned production targets on completion of plant construction were as follows:

Planned Targets of the Uzbek Metallurgical Plant 141/

	Metric Tons
Pig Iron	1,000,000
Raw Steel	1,250,000 to 1,350,000 142/

Planned production targets for 1950 were as follows:

1950 Targets of the Uzbek Metallurgical Plant 143/

	Metric Tons
Pig Iron	60,000
Raw Steel	86,000

In addition to the production of metallurgical coke, iron, and steel, the Uzbek plant eventually is to produce ferrosilicon, ferromanganese, ferrotungsten, and ferromolybdenum.

Raw Materials.

Surveys and explorations in the Uzbek area during the years 1944-46 disproved earlier beliefs that Central Asia is poor in resources of iron ore. The Soviets claim that 150 deposits have been found conveniently located in the vicinity of Uzbek. Three of these deposits have been studied thoroughly, and it has been determined that the one of Abail contains mainly siderite; the ore of Suzingen, iron oxide of 80 to 83 percent Fe_2O_3; and the one of Turganly, an average iron content of 46 percent, the latter deposit being of more immediate value to the Uzbek plant.

A suitable quality of coking coal is available in the eastern part of the Fergana Valley, and it was planned that the exploitation of those reserves would begin in 1947.

Large quantities of iron and steel scrap, fluxing agents, and quartz sand of a high quality required for casting are located within easy access to the plant.

Progress of Construction.

Progress of construction by years on the Uzbek plant was as follows:

1942. Preliminary surveys and the laying-out of the plant began in the fall of 1942. 144/

1943. In March 1943, Pravda announced that construction was progressing and was far advanced on the building of the open hearths, the rolling mill, and machine, forge, and press shops and that the foundations for the first open-hearth furnace would be laid in May. 145/

1944. By the end of the year 1944, two open-hearth furnaces had been completed, one of which began operation in February, and a third furnace was being constructed. The machine and forge shops and the foundry and rolling mill were being built, and it was claimed that foundations were being laid for four coke-burning blast furnaces. 146/ No regular production of iron and steel took place, but workers during the year were trained in smelting practices, probably at Magnitogorsk. 147/

1945. In March 1945 the second open-hearth furnace was put into operation, 148/ the boiler room and repair shop were completed, and materials were being assembled for the heating and electric power plant and the rolling mill. 149/ The regular production of raw steel began sometime during the year, and 12,000 metric tons were reported to have been poured by the end of December. 150/

1946. In August 1946 it was announced that the rolling mill department of the Uzbek plant would consist of three mills -- a 300-millimeter, a 420-millimeter, and a 600-millimeter -- and that Rolling Mill "300" had been placed in operation. 151/ The initial operation of the mill was confirmed by a message of congratulations to the workers of the Uzbek plant from Stalin late in October. 152/ Rolling Mill "300," designed to roll 60,000 metric tons per year, was producing angle, strip, and bar iron. 153/ By the end of October, only 1,125 metric tons were rolled experimentally, 154/ and the regular operation of the mill did not begin until November.

In September the press announced that two open-hearth furnaces were completed and in production and that a third furnace was to be installed by the end of the year. 155/ It was estimated that 17,000 metric tons of raw steel were produced in 1946, with one furnace operating continuously.

[redacted] in mid-October [redacted] all construction work for the Uzbek plant was completed. 156/ In recognition of success in completing the governmental assignment for construction work at Uzbek, in late November three officials of the plant were awarded the Order of Lenin. 157/ 50X1 50X1

Claimed to be in operation 158/ by the end of 1946 were the open-hearth, Rolling Mill "300," the central power plant with a capacity of 4,000 kilowatts, 159/ the machine shop, the communication system, and the railroad. The following individuals held key positions at the Uzbek plant 160/: manager of the enterprise trust, Krasnokutskiy;* chief of construction, S. C. Aytemtov; director of the plant, F. F. Ryazanov; chief engineer of the enterprise, Ivanov;* chief engineer of the plant, Kurbatov;* chief of the rolling mill, A. L. Sergienko.

1947. In early January 1947 it was announced publicly that preparations for the building of coke ovens, blast furnaces, and a large ferroalloy plant would be launched at Uzbek during the year, 161/ although in 1944 it had been claimed that foundations for four blast furnaces were begun in that year.

By December, No. 3 open-hearth furnace was completed and was to be put into operation shortly thereafter. It also was claimed that the production achieved during 1947 had reached 28,000 metric tons of raw steel and 27,000 metric tons of rolled steel. 162/

[redacted] 50X1
[redacted] production at 50X1
the plant consisted of tank bodies and tracks, bogie wheels, band and 50X1
plate steel up to 70 to 75 centimeters thick, and profile iron and that shipments of 20 to 25 tank bodies and 20 freight cars, weighing from 15 to 20 tons each, of tank parts were sent to Tashkent each day for assembly. He also claimed that a power plant of 200,000 kilowatts for emergency use, using coal and gas as fuel and equipped with German reparations machinery, was completed during the year. 163/

1948. No announcements were made in the press during 1948 concerning developments at Uzbek, [redacted] 50X1
[redacted] 50X1

Operations were under the direct supervision of the Production Department of the Ministry of Metallurgy. Twenty-two million rubles were allotted for the year for further construction work and for the installation of equipment.

Two open-hearth furnaces worked almost continuously throughout the year, and operational techniques were improved. During the year the output per square meter of furnace in 24 hours reached 5.1 metric tons and was considered satisfactory. Men employed in the shops numbered 276, and average output per man was 157 metric tons,** a figure, however, which

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* Full name unknown.

** Production of raw steel on this basis would have been approximately 52,000 metric tons. [redacted] estimates raw steel production 50X1
in 1948 as 43,000 metric tons.

did not compare favorably with other plants. Pig iron consumption was 420 kilograms per metric ton of raw steel.

On the average, the rolling mill employed 415 men during the year and produced 123 metric tons of rolled products per man. To reach an estimated rolled steel production of 51,000 metric tons, steel ingots poured earlier were removed from the factory's reserve for processing. In November 1948 a 25-meter extension to the rolling mill was started.

Production in 1948 was estimated as 43,000 metric tons of raw steel and 47,000 metric tons of rolled products. The principal output at the plant in 1948 consisted of crude steel and rolled products, but there also was some production of castings, forgings, ingot moulds, and consumer goods and agricultural implements made from rolling mill scrap. By the end of the year, approximately 2,100 workers were employed, of whom 1,500 were engaged in production. New employees for the Uzbek plant received technical training at Magnitogorsk before assuming duties in the mills. Three shifts a day were being worked in the basic departments of the plant. 164/

During the year the director of the plant, F. F. Ryazanov, was replaced by his deputy, Engineer Sh. Khodzhayev. In addition to his responsibilities, the chief engineer of Uzbek, Kurbatov,* was made deputy to Khodzhayev. 165/

1949. An allotment of 24 million rubles was made for further construction and installations in the plant for 1949. 166/

In July it was announced publicly that during the first 6 months of 1949, several thousand more tons of steel were produced with two open-hearth furnaces than had been produced during the same period in 1947. 167/ Melting time had been reduced from a norm of 8 hours to 6 hours and 40 minutes. 168/ No. 3 open hearth, which was supposed to have been put into production in 1947, 169/ still had not been fired. 170/

Several changes took place in the rolling mill in 1948 and 1949. In July, five modifications and improvements were announced. 171/ The rolling mill frame of the driving rollers in front of the blooming train was being reconstructed and replaced by a more powerful frame. Ball rocket bearings were being installed on the shears, and the electrical system for the 600-millimeter rolling mill was being modified completely. The dragging device in front of the 420-millimeter mill was being rebuilt, although it is not believed that either the 600-millimeter or the 400-millimeter mills ever reached the operational stage up to this time. The final improvement of the year was the installation

* Full name unknown.

of a mechanized rack and pinion cooler, the most important task confronting the mill. The work performed by the cooler had been a manual task requiring 60 men, which resulted in a lowered quality of the rolled product.

The production targets for the first 6 months of the year were claimed to have been completed on 6 June and those for all of 1949 to have been completed on 25 December 1949. 172/

1950. Production targets for 1950 were given as 62,000 metric tons of raw steel and 55,000 metric tons of rolled products by Rolling Mill "300."

Personnel.

In February 1949, Engineer Sh. Khodzhayev, in his capacity as director of the Uzbek Plant, 173/ submitted an estimate of raw steel production, but in October 174/ and December, 175/ the director of the plant was I. Mukhamedov.

1951. In the spring of 1951 it was announced that there were no blast furnaces operating at Uzbek. The three open-hearth furnaces were operating only on scrap metal, and the rolling mill had begun to produce fine-gauge sheet and half-millimeter roofing tin. 176/

Summary.

On the basis of available information, the following equipment and installations are believed to be at the Uzbek Metallurgical Plant in 1951:

Four blast furnaces were planned, but none has been constructed. Three open-hearth furnaces were planned, and three are in operation. All are operating on scrap iron and steel. Three rolling mills, a 300-millimeter, a 420-millimeter, and a 600-millimeter, were planned. All three are believed to be installed, but only the 300-millimeter furnace is believed to be in operation. The 300-millimeter mill was designed for a capacity of 60,000 metric tons a year. All auxiliary workshops necessary to support present operations at Uzbek are believed to be completed and in operation.

It is believed that the target of rolled products for 1950, 55,000 metric tons, is too high. In the years 1945 through 1948 a backlog of raw steel was accumulated at the Uzbek plant, and claimed productions of rolled products for those years are reasonable. By 1949 the raw steel reserve was consumed, and it is estimated that from 1949 through 1951,

rolled production was not more than the theoretical ratio of production of rolled products to the output of raw steel: that is, 72:100.

Estimated Production at the Uzbek Metallurgical Plant

Metric Tons

	1945	1946	1947	1948	1949	1950	1951
Raw Steel	12,000	17,000	28,000	43,000	50,000	62,000	70,000
Rolled Products	0	1,200	27,000	47,000	36,000	44,700	50,000

APPENDIX C

METHODOLOGY

Plant studies and briefs were written from available information which covered the following for each plant: alternate designations, its location, the plan for construction and operation, the sources of raw materials, the progress of construction, and a summary of the status of construction at the end of 1951. Production estimates for 1951 of raw steel and rolled products were based upon a survey of equipment in operation and upon Soviet production claims. Explanation of the slow progress of the construction of the new plants and prediction of the status of new plants and production in 1955 were based upon a knowledge of the availability of construction materials and equipment, the status of the rehabilitation of the steel industry following World War II, the situation in the expansion and modernization of existing steel plants, the adequacy of skilled labor, and the availability of installations and equipment for the new steel plants.

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