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Date 18 Sept 1951

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Part II -- Verkhne-Neyvinskiy (~~SECRET~~)

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GEOGRAPHY OF THREE SOVIET URBAN REGIONSPART I -- KYSHTYMI. Location

Kyshtym is located on the piedmont along the eastern slope of the Central Urals (Sredniy Ural). This sector of the Urals, generally defined as lying between 54°30'N and 59°30'N, is noted for its well-developed mining, industry, and transportation net. The city of Kyshtym (55°42'N - 60°32'E) lies within Chelyabinsk Oblast, 89 kilometers northwest of the oblast seat. The Sverdlovsk-Chelyabinsk railroad, which passes through the city, connects it with the main railroads leading east to Siberia and west to various parts of European U.S.S.R.

Within the same industrial complex, though not administratively associated with Kyshtym, are the cities of Kasli (55°33'N - 60°46'E), 26 kilometers northeast, and Karabash (55°28'N - 60°15'E), 32 kilometers southwest. Smaller settlements within the same general industrial area are: Mauk (55°54'N - 60°28'E), 22 kilometers north; Metlino (55°43'N - 60°54'E), 22 kilometers east; and Kuznetskoye (55°30'N - 60°38'E), 24 kilometers south of Kyshtym.

II. Description of the AreaA. Physical Setting

The piedmont on which the city of Kyshtym is located is a narrow longitudinal zone that lies between the foothills of the Urals on the west and the West Siberian plain on the east. To the east, the nearly featureless Siberian plain continues for approximately 2,400 kilometers to the Yenisey River. To the west are the low foothills and hill-like mountains of the Central Urals, which extend westward for a distance of about 75 kilometers. South of Kyshtym, for over 250 kilometers, the general elevation of the Urals is about 960 meters, with individual peaks rising as high as 1,560 meters. For approximately 400 kilometers north of Kyshtym, the Urals have a general elevation of about 480 meters, but individual peaks rise to 930 meters.

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An outstanding physical feature in the immediate vicinity of Kyshtym is the piedmont plain that surrounds the city on the north, east, and south. It is relatively flat with elevation ranging from 225 to 260 meters. This plain is marked by features of fluvioglacial origin: a disorderly drainage pattern, and many swamps, marshes, lakes, and ponds. Among the lakes and ponds that are outstanding physical features in the Kyshtym area are Lake (Ozero) Irtyash, northeast between Kyshtym and Kasli; Lake Sugomak, just west of the city; Lake Uvil'dy, 18 kilometers southwest; and Kyshtym Pond (Prud), which extends in a north-south direction through the city.

Immediately to the west of the city, a definite break in relief occurs between the 260-meter and 280-meter contours. Here the ridges and disconnected short ranges of hills characteristic of the area are separated by wide swampy longitudinal valleys and by short narrow latitudinal gaps. The most outstanding physical feature in the foothill area is the Sugomak Mountains (Gory Sugomak). This range, which is located approximately two kilometers west of the city of Kyshtym, rises abruptly from the piedmont and is the highest of the foothills in the Kyshtym area. The range extends in a north-south direction for about 13 kilometers; its highest elevations are Mount (Gora) Sugomak, 689.8 meters, and Mount Yegoza, 609.4 meters. The rock formations of the Sugomak Mountains are generally favorable for the construction of underground installations. Limestone caves are known to exist in this area, but the exact location and extent of the caves are unknown.

Throughout the piedmont plain, a clay deposit generally underlies the surface layer of humus, which rarely exceeds one meter in thickness. Under the clay deposit are alternate layers of sand and clay that extend down to bed rock. The Sugomak Mountain area is, for the most part, rubble on thick rock formations, with little or no surface humus.

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B. Hydrography

Kyshtym lies within the Siberian drainage system, with the drainage of the region eventually connecting with the Ob River, which flows into the Kara Sea. Within the Kyshtym region are many lakes and rivers, and a considerable part of the area is in swamps or marshes. A few very small basins have interior drainage. Some of the rivers and lakes are used industrially. Although neither the rivers nor lakes are suitable for navigation, it is possible that some may be used for floating logs.

The following information is available concerning some of the more important lakes and rivers of the Kyshtym area:

1. Lake Sugomak, 55°42'N - 60°30'E, is located directly west of Kyshtym, the western shore forming the 1936 western Gorodskoy Sovet (town council) boundary. Lake Sugomak is 2.6 square kilometers in area and has a maximum depth of 2.8 meters and an average depth of 2.3 meters; its greatest width is 1.4 kilometers and its greatest length 3.5 kilometers. The volume of this lake is approximately 5,900,000 cubic meters. Soviet sources disagree on its elevation above sea level, which is variously given as 243.4 meters, 255 meters, and 257 meters. The Sugomak River enters the lake from the west and two small streams flow from it, one to Kyshtym Pond and one to Dukhanov Pond.

2. Lake Bol'shaya Nanoga, 55°45'N - 60°40'E, is located approximately 8 kilometers northeast of Kyshtym. It has a surface of 5.9 square kilometers, but the maximum and average depth and the volume of the lake are unknown. It is connected with Lake Irtyash by a small channel, and another stream flows southwest through Kyshtym into Kyshtym Pond. A third small stream connects with Lake Malaya Nanoga.

3. Lake Irtyash, 55°48'N - 60°45'E, is located northeast of Kyshtym between Nizhniy Kyshtym and Kasli. The lake is 227 meters

above sea level and is reported to be 70 square kilometers in area and have a maximum depth of 13.5 meters. The average depth and volume are not known. The greatest width is 7.8 kilometers and the greatest length 16 kilometers. Of the several rivers and streams that flow into Lake Irtyash, one flows through Kasli and connects with Lake Kasli (also named B. Kasli). As mentioned under Lake Bol'shaya Nanoga, a channel connects Bol'shaya Nanoga with Irtyash. A small river, the Techa, flows southeast into Lake Kyzyltash and thence east to Metlino.

4. Kyshtym Pond lies for the most part just south of the city, but a narrow northward extension cuts through the city in a north-south direction. The Yegoza River enters the pond from the north, and two streams connect it with Lake Sugomak and with Lake Bol'shaya Nanoga. In the southwest, the Kyshtym River flows into the main body of the pond. Kyshtym Pond has two outlets -- one flowing south through a chain of lakes to Lake Uvil'dy and the other flowing southeast through a chain of lakes to Lake Akulya. No information is available on the area, depth, or volume of Kyshtym Pond, but it is generally believed to be very shallow, with a depth of not much over four meters.

5. Lake Uvil'dy, 55°31'N - 60°32'E, lies approximately 18 kilometers south of Kyshtym. It is 273.5 meters above sea level in elevation and has a surface area of 71.4 square kilometers and a volume of 9,000,000 cubic meters. The maximum depth is 28.3 meters and average depth 14.2 meters.

6. Other small- and medium-sized lakes in the Kyshtym area are: (1) Lake Galitskoye, directly north of Kyshtym; (2) Lake Buldym, east of Kyshtym and directly south of the southwest shore of Lake Bol'shaya Nanoga; (3) Lake Tatysh, southeast of the Tatysh railroad station; (4) Lake Akakul', approximately 10 kilometers southeast of Kyshtym; (5) Lakes Anbash and Malaya Akulya, between Kyshtym Pond and Lake Akulya; (6) Lakes Temnoye and Taygi, directly south of Kyshtym Pond; and (7) Dukhanov Pond, west of the southern shore of Kyshtym Pond and connected with it by the Kyshtym River.

C. Vegetation

The most outstanding vegetation feature in the Kyshtym area is the forest. In the west, the foothills of the Urals are predominantly in pine and pine-larch forest. The piedmont, from the foot of the Urals eastward, is principally forest-steppe land on which the dominant growth is birch interspersed with patches of larch, particularly where the underlying rock is granite and peridotite. Occasional stands of pine are also found within the piedmont.

Cereals occupy approximately 80 percent of the cultivated land in the Chelyabinsk Oblast and potatoes 10 percent. The chief cereals produced are wheat, barley, and oats. Wheat is produced on approximately 70 percent of the total land in cereals. Sugar beets and tomatoes are also grown in the Kyshtym region.

D. Minerals

1. Exploited

a. Metallic -- Many important metallic minerals are found on the eastern slope of the Urals. Those of industrial use in Kyshtym include copper, magnetite, limonitic, and titaniferous iron ore. Most of the copper is found south of Kyshtym in the vicinity of Karabash. It is processed at the Kyshtym copper plant, where selenium, tellurium, platinum, gold and silver are obtained as by-products.

b. Non-metallic -- The most important non-metallic mineral deposits located in the Kyshtym area are graphite, corundum, kaolin, and marble. Graphite gneiss is found in the region south of the city, but this crystalline graphite is generally inferior to that of the Ukraine, and requires enrichment. Extraction is difficult because the mineral occurs in pockets. Corundum-plagioclase deposits occur on the upper Borovka River, 12 kilometers north of Kyshtym, and northeast of Kyshtym are the Techensk and Kyzyltash corundum deposits, consisting of limestone rocks containing a number of porphyries and

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porphyrites. On the east shore of Lake Irtyash, these rocks border on a belt of ottrelite-sericite-chlorite schists with a considerable corundum content. The area also contains important emery reserves.

Southeast of Kyshtym there is a kaolin deposit that is currently being exploited. Although the Al_2O_3 content of this deposit is 15-40 percent, it is not known whether the deposit is being exploited for the aluminum. At present, the kaolin is being used for porcelain products manufactured at the kaolin plant in Kyshtym. Refined kaolin is also shipped to other parts of the Soviet Union.

Marble deposits occur in a wide belt 5.5 kilometers long that extends in a southwest-northeast direction from the foot of Mount Sugomak. This marble is used as a fusing agent and for burning lime. As it contains no metal oxides and is absolutely non-conducting, it can be used in the electrical industry. Quartz is also found in the form of vein accumulations and as individual rock crystals of various sizes. This quartz has been quarried for a long time and has been used almost exclusively in the production of refractory bricks. One deposit of quartz is located on the southern shore of Lake Irtyash and extends in a broad north-south vein for a distance of approximately 1.5 kilometers. The analysis of an average sample of this deposit shows a SiO_2 content of 98.1 to 98.6 percent, and a Fe_2O_3 content of 0.4 to 0.8 percent.

2. Not Exploited

a. Metallic -- Though nickel and molybdenum deposits occur in the Kyshtym region, there are no reports of their being exploited for industrial use and no known metallurgical plants in Kyshtym process either nickel or molybdenum. Cobalt, barite, and cerium minerals are also found in the Kyshtym region.

b. Non-metallic -- Other non-metallic minerals that are found in the Kyshtym region are semi-precious stones and serpentines.

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3. Radioactive Minerals and Deposits -- In the alluviums of the Borsovka River area, a mineral deposit has been discovered whose content is approximately: titaniferous iron ore (79-86 percent), orthite (7-8 percent), bastnasite (5-7 percent), lessingite (2 percent), and cerite (0.6-2.1 percent). The bastnasite and lessingite show slightly radioactive properties. The latter contains 0.64 percent thorium oxide. At Kasli, Lake Sungul' is known to contain radioactive muds that are worked on a small scale. Lakes with radioactive sources are also known to be located south of Kyshtym, the most important being Lakes Turgoyak, Kisegach, and Miass.

E. Climate

Although climatic data for Kyshtym are not available, records are available for Chelyabinsk and Sverdlovsk, approximately 90 kilometers to the southeast and 120 kilometers to the north, respectively. Both of these stations are within the same general climatic region as Kyshtym.

For the Kyshtym area the continental air masses are of primary importance, with only occasional intrusions of maritime air. The prevailing winds are from the north and northeast in the summer and from the west in the winter. For this reason, the eastern slopes of the Urals generally have less snow than the western slopes. The winter storms from the east are characterized by penetrating cold. Maximum cloudiness occurs in autumn and winter and minimum cloudiness in early summer. Precipitation is highest during the summer months, with July reaching a high of approximately 3.2 inches. Maximum temperature is also reached in July, which has a mean temperature of approximately 73°F.

CLIMATIC DATA FOR CHELYABINSK AND SVERDLOVSK

1. Mean Precipitation (inches)¹

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann.	Year's Record
Chelyabinsk	0.6	0.4	0.3	0.4	0.9	2.4	3.5	2.0	1.1	0.9	0.9	0.8	14.3	8
Sverdlovsk	0.6	0.5	0.5	0.7	1.9	2.6	2.9	2.5	1.5	1.1	1.1	1.0	16.9	18

2. Least Monthly and Annual Precipitation (inches)²

Chelyabinsk	0.2	0.1	*	*	0.1	0.5	1.6	0.9	0.2	0.1	0.4	0.2	7.9	8
Sverdlovsk	0.1	0.2	*	*	1.0	1.3	1.2	0.6	0.6	0.2	0.2	0.4	14.8	10

* Less than 0.05 inch.

3. Maximum Precipitation in 24 hours (inches)³

Chelyabinsk	0.6	0.3	0.2	0.3	0.6	1.4	1.8	1.6	0.7	1.0	0.5	0.5	1.8	8
Sverdlovsk	0.6	0.3	0.6	1.0	1.3	1.8	3.0	1.8	1.3	0.8	1.1	0.6	3.0	18

4. Mean Number of Days with Snowfall⁴

Chelyabinsk	10	6	8	4	1	0	0	0	*	3	6	10	50	6
Sverdlovsk	12	10	7	6	2	*	0	*	2	10	15	16	80	18

* Less than 0.5 day.

1. NIS 26 - III, Chapter II, Section 23, Figure 23-17.
 2. Ibid., Figure 23-19.
 3. Ibid., Figure 23-20.
 4. Ibid., Figure 23-22.

5. Mean Number of Days with Snow on the Ground¹

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann.	Year's Record
Chelyabinsk	30	28	29	10	*	*	0	0	*	5	19	31	153	6
Sverdlovsk	30	28	31	18	1	0	0	0	1	5	21	30	165	6

* Less than 0.5 day.

6. Mean Temperature (°F) at 1300 L.S.T.²

Chelyabinsk	14	16	26	48	62	74	76	73	62	49	29	15	45	6
Sverdlovsk	5	15	26	42	57	66	70	66	55	38	19	8	39	20

7. Mean Daily Minimum Temperatures (°F)³

Chelyabinsk	1	1	8	30	42	52	56	53	42	33	16	5	28	6
Sverdlovsk	-5	1	10	26	40	49	54	50	41	28	11	-1	25	18

8. Highest Temperature (°F) at 0700, 1300 and 2100 L.S.T.⁴

Chelyabinsk	37	39	50	75	90	95	95	102	88	77	61	37	102	6
Sverdlovsk	40	38	58	74	88	92	94	88	86	89	50	39	94	28

1. Ibid., Figure 23-23.
2. Ibid., Figure 23-10.
3. Ibid., Figure 23-11.
4. Ibid., Figure 23-21.

III. Administration

According to standard Soviet procedure, Kyshtym became a city in 1934.¹ Later, when Kyshtym Rayon was established, the city was elevated to the rank of rayon center. Sometime between 1940 and 1945, the Kyshtym Rayon was dissolved, and Kyshtym became an "Oblast City." This is significant, since it implies that some specific and important characteristic of the city requires that it be directly subordinate to the oblast administration.² On 21 October 1948, the Severnyy Rabochiy Poselok (North Workers Settlement) was placed under the administration of Kyshtym Gorodskoy Sovet. The 1936 Gorodskoy Sovet boundary is shown on the accompanying base map, Kyshtym, 1:25,000 (CIA 11740 and CIA 11773). No other information as to changes in the boundary is available. Kyshtym remains an oblast city within the Chelyabinsk Oblast, R.S.F.S.R.

IV. Population

The population of Kyshtym for 1935-36 is given by several Soviet sources as 38,400. Although there are no official Soviet figures available for the present population, estimates from former PW's stationed in the city and vicinity have placed the population figure as high as 100,000. It is improbable that 100,000 persons are living within the administrative limits of the Kyshtym Gorodskoy Sovet. As a result of the heavy industrial development that has taken place within the Kyshtym region, however, the population is believed to be at least 60,000, with perhaps another 100,000 within a radius of 20 kilometers.

1. The primary criterion for differentiating between a city and a workers' settlement is the presence or absence of urban functions (developed transportation, communications, sewage and water facilities, public buildings, institutions, etc.). When a workers' settlement attains a minimum adult population of 1,000, of whom no more than 25 percent are engaged in agricultural pursuits, the settlement becomes a city if and when designated by the Union Republic.

2. The Oblast is in actual fact the most important administrative unit in the U.S.S.R. since it is the basic unit for all economic planning.

The ethnic composition is not specifically known, but evidence indicates that the major ethnic group is Great Russian. Other reports indicate the presence of large numbers of Volga-Germans, former members of Vlassov's army, other political prisoners, and Soviet Army labor battalions.

V. Public Utilities and Transportation

A. Power

The exact location of the main Kyshtym power plant is unknown, but it is probably located on the southern outskirts of the city. Some of the industrial installations are also believed to have their own power plants, but it is not known how much of their power requirements are supplied by these plants. A 1934 Soviet source lists three industrial power plants in Kyshtym.

A transformer station is also located at Kyshtym. The destruction of this station would interrupt the entire "Central Ural Network." The operating voltage of the transformer station was reported to be 110/35/6.6 kv. in 1944. A 110 kv. conductor line is reported to run from Sverdlovsk to Kyshtym, and a triple 110 kv. line to Chelyabinsk. Another triple 110 kv. line connects with Karabash. In 1944, a 35 kv. line supplied the Kyshtym neighborhood, but it is doubtful if this line could now supply all the power requirements. The power assignments as of May 1939 were: 1,300 kw. to the electrofoundry, 35 kw. to the graphite plant, 400 kw. to the mechanical foundry, 200 kw. to the city administration, and 300 kw. to the Miass gold mines. The Kyshtym transformer station is presumably a large, open-air installation located on the southeastern edge of the city about 300 meters east of the railroad line to Chelyabinsk. The three-cable line that connects it to the power plant is suspended from wooden masts.

B. Water

There is no information as to the source of the water supply for Kyshtym. Industrial requirements are probably met by drawing water from

the nearest lake or stream. City water may be obtained in the same manner or from wells, since the Kyshtym area contains suitable ground water. Natural springs in the mountains could also be used for water supply, but information is lacking concerning any such use.

C. Transportation

1. Local -- There is no information as to the existence of a public transportation system within Kyshtym.

2. Railroads -- The city of Kyshtym lies on the main Chelyabinsk-Sverdlovsk railroad line, approximately 90 kilometers north of Chelyabinsk. A few reports have indicated that the line is double-tracked and electrified, but this has not been substantiated. It is well known that the Soviet Government has long planned to double-track and electrify this section, but the actual accomplishment to date is not known. Probably the line is double-track from the Tatysh station to the Kyshtym station for marshalling and shunting purposes. A standard 5-foot gauge track to Karabash was recently completed, and a narrow-gauge track to Karabash has long been in operation. There are usually narrow industrial-gauge tracks to and within the industrial installations, some of which are connected to the standard 5-foot gauge transportation net. A 13-kilometer track with 5-foot gauge is reported to terminate at the graphite plant southeast of Kyshtym and another at the atomic installation northeast of Kyshtym.

The main Kyshtym railroad station is located at the northern end of Verkhniy Kyshtym, and a small freight station is reported to be located three kilometers farther southeast. The Tatysh station is approximately 10 kilometers south of the main station. Another station, Tyubuk ($55^{\circ}49'N - 60^{\circ}28'E$), is situated approximately 11 kilometers north of Kyshtym; this station should not be confused with the Tyubuk northeast of Kasli ($56^{\circ}04'N - 60^{\circ}57'E$). Reportedly, there is also a station on the narrow-gauge railroad approximately 2.5 kilometers southwest of the main station.

3. Roads -- Two main roads run south from Kyshtym, one to Kuznetskoye and the other to Karabash. Two others connect Kyshtym with Kasli. Of these, one runs along the east shore of Lake Irtyash and the other along the west. Although both roads are rated as first-class on Soviet maps, it is not known to what degree or extent these roads are hard-surfaced. Many country roads and paths also radiate from Kyshtym to the neighboring settlements of Metlino, Kurtachikova, and Kizil.

D. Communications

Kyshtym has both postoffice and a telegraph office, but the location of them is in doubt. A 1904 Soviet source indicates that the city also has a telephone system, but no description of its present operation and facilities is available. Although there is no known radio station in Kyshtym, a 1949 source reports a radio station in Kasli with the call sign of RSRD and a frequency of 2795. Its power is given as .05 kw., and its emission is continuous and modulated-continuous wave.

VI. Industrial Installations

The economic structure of Kyshtym is based on industry. This report is concerned primarily with the location and products of the various industrial installations of the area rather than with the amount of production and number of people employed. Lacking specific locational and functional data for the industrial installations, an attempt has been made to interpret PW reports and sketches on the basis of confirmed information. The PW's, however, were generally untrained in the use and preparation of sketch maps, and their movements were restricted. In many cases, their reports conflict or the locational and functional data given is vague and unconfirmed.

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using the accompanying base map of Kyshtym and the general interrogation requirements that were prepared to accompany this report.¹

1. See appendix A.

The following industrial installations in the Kyshtym area have been obtained from interrogations and map sources:

A. Aluminum Plant

Several reports indicate that the ground work for an aluminum plant approximately four kilometers west of Kyshtym was completed as of 1946. It is not known whether the plant itself has been completed and put into operation.

B. Atomic Energy Installation

The exact location and operation of this installation is doubtful. PW reports indicate that the Soviet authorities have imposed strict security regulations in this area, which prohibited the use of PW labor and even the entrance of PW's into the area. Consequently, the PW reports are very vague, conflicting, and based largely on rumor. Nevertheless, a locational pattern has emerged from examination of these reports, and an attempt has been made to interpret this pattern in relation to geographical setting.

A majority of the reports locate the atomic energy installation from 6 to 35 kilometers east of Kyshtym, in a wooded area on a shore of a lake. The reports generally agree that opposite the installation is an island on which a kolkhos (collective farm) is located. A comparison with other reports indicates that the lake mentioned is Lake Irtyash and that the installation is situated on the southeast shore of the lake in the area directly west of the Techensk factory, between the Kyshtym-Kasli road and Lake Irtyash.

A number of the reports indicate that the atomic installation is constructed underground, either under the lake or in the side of a hill. The area indicated above includes several hills as well as Lake Irtyash, and the rocks of the area are chiefly granite and gneiss, which are very suitable types of rock for underground installations.

The area is reported to be served by a single-track railroad of standard 5-foot gauge, which branches off the main-trunk Kyshtym-Karabash

railroad approximately three kilometers south-southeast of the Kyshtym station. The main Kyshtym-Kasli road east of Lake Irtyash passes approximately 1.5 kilometers to the east of the area. The latest Soviet map, Karta SSSR, 1:2,500,000, Sheet 19, which was compiled in 1944 and published in 1946 by the Principal Administration of Geodesy and Cartography (GUGK), does not show this road. Its omission may have been merely a matter of cartographic choice of routes, or it may signify that the eastern route has been closed for security reasons. The eastern route is the oldest established road to Kasli and the best from the standpoint of terrain.

Though the various reports have identified the installation in various ways (tank plant, aircraft factory, armament plant, guided missile center, aluminum plant, uranium processing plant, and chocolate factory¹), it is generally believed to be an atomic energy plant. The operations performed at the plant are unknown at present.

One report mentions that an office connected with the installation is located on "Mamina Sibiryaka" Street, but the location of this street within Kyshtym is not known.

It is possible that more than one atomic plant may be located in the vicinity of Kyshtym. One report mentions an "atom-town" under construction at "Medlino," which might very well be the town of Metlino (55°43'N - 60°54'E), located approximately 22 kilometers east of Kyshtym.

C. Bread Factory

According to available information, this installation is located approximately 1,000 meters north of the main Kyshtym railroad station.

1. It may be of some importance to notice the similarity between the word "chocolate" and the Soviet abbreviation "Chug.Lit." (Chugomolityeny) for iron foundry. Persons not completely familiar with the Russian vocabulary might very well misconstrue the abbreviation for the word "chocolate."

A road leads southeast from the factory area to an underpass just east of the railroad station and thence to the center of Kyshtym. Another road farther west leads past the graphite plant, to the underpass and station.

D. Brick Factory

This factory is located approximately 1,200 meters east of the main Kyshtym railroad station. The installation is identified on the Soviet Karta Kyshtym skogo Rayona, 1:150,000, 1936.

E. Construction Firm

A source with an October 1947 information date mentions a "Stroyka" (construction) firm. No locational data is available.

F. Copper Plant

Though Kyshtym contains the oldest copper refinery in the U.S.S.R., it has not been possible to locate this installation accurately. It is generally believed to be situated somewhere between the southern tip of Lake Bol'shaya Nanoga and the main Kyshtym railroad station. Byproducts of the copper plant are: sulphuric acid, copper sulphate, nickel sulphate, nitric acid, selenium, tellurium, platinum, gold, and silver. The refinery uses the electrolytic process. A spur line from the plant area connects with the main Sverdlovsk-Chelyabinsk railroad.

Several reports and sketches have indicated the existence of a second copper (smelting) plant south of Kyshtym. It is reported to be located on the southern shore of Lake Anbash.

G. Dynamite and Nitrogen Factory

This factory is known as the "Kyshtym Dynamite Factory Number 5." According to a 1941 source, its products are nitroglycerine, nitrobenzene, and picric acid. A 1942 source lists this plant as a producer of chemical-warfare agents. Its location is unknown.

H. Electric Wire and Cable Factory

Available information indicates that the construction of this factory was planned to begin in 1940, but there is no evidence as to its location or that it was ever completed.

I. Equipment Plant

Reports indicate that a plant producing polishing equipment (called "Shilfzerno") is in operation in the Kyshtym area, under the direction of the Commissariat for Machine Tools. No locational data are available.

J. Graphite-Corundum Combine

Two plants in the Kyshtym area (and possibly a third) are under the administration of the Graphite-Corundum Combine. Of the two graphite plants, the newest is located approximately 13 kilometers south-southeast of the main Kyshtym railroad station, with the graphite mine or pit approximately 500 meters farther south. A single-track line with standard 5-foot gauge is reported to connect the plant with the Kyshtym-Karabash line southeast of the main Kyshtym station. A narrow industrial-gauge track runs between the mine and the plant.

This graphite plant and mine were probably developed to offset the loss of the Ukrainian crystalline graphite during the period of German occupation in World War II. The quality of the Ural crystalline graphite, however, is inferior to that of the Ukraine and requires additional enrichment. Extraction is also difficult because the mineral occurs in pockets.

The older, northern graphite plant is located approximately 200 meters north of the main Kyshtym station. This plant, according to available information, refines the crude graphite from the southern plant and from other areas east of the Urals. A narrow industrial-gauge track extends from the railroad station to the plant area. Several roads leading out from the area to Kyshtym also pass the plant.

The third plant that is reported to work in conjunction with the Combine and that may be under its administration is the Techensk factory, located approximately 13 kilometers northeast of Kyshtym on the Techa River. An important emery deposit is located in the immediate vicinity of the plant, and the Kyshtym-Kasli road passes through the plant area.

K. Iron Foundry

A foundry located approximately 1,700 meters east of the main Kyshtym railroad station is shown on the Soviet map, Karta Kyshtymskogo Rayona at 1:150,000, 1936. Prior to 1917, it was known as the Verkhniy Kyshtym Iron Smelter and Rolling Mill and had its headquarters in Petersburg.

L. Kaolin Combine

A kaolin plant is generally believed to lie between the Kyshtym-Kuznetskoye road and the Chelyabinsk-Sverdlovsk railroad, approximately eight kilometers south-southeast of the main Kyshtym railroad station. It is served by a single-track spur of standard 5-foot gauge that branches off the line to the southern graphite plant. A narrow industrial-gauge track connects the plant with the clay pits, which are located immediately to the east of it.

M. Locomotive Repair Shop

Most sources place this plant at the end of the spur line that branches off the narrow-gauge Kyshtym-Karabash line and crosses the northern half of Kyshtym Pond to the main part of the city. A chapel with a steeple is reported to be a landmark in the area. No ~~additional~~ information about ^{a standard-gauge} ~~the~~/track leading to the plant area is available.

N. Marble Plant

The exact location of the plant is in doubt, but it is believed to be the plant located approximately five kilometers west-northwest of the main Kyshtym railroad station. Soviet sources show the marble deposits as extending for 5.5 kilometers in a southwest-northwest direction along the base of Mount Sugomak.

O. Munitions Plant

One report mentions a munitions plant that is located in Kyshtym on Ulitsa (street) Sovietskaya; other information indicates that this may possibly be the electro-mechanical plant Number 312. No further information on the location is known.

P. New Industrial Area

A new industrial area is reported to be located approximately nine kilometers southeast of the city limits, along the northeast shore of a lake, believed to be Lake Ulagach. A spur line from the Sverdlovsk-Chelyabinsk railroad is reported to extend to the area.

Q. Rosin and Turpentine Plant

A plant is reported to produce rosin, turpentine, and charcoal products. Its location is unknown.

R. Sawmill and Woodworking Plant

The Soviet map, Karta Kyshtym'skogo Rayona, 1:150,000, 1936, shows the location of two sawmills at Kyshtym. Whether these plants are still located in the same places or have been moved to new sites is not known.

S. Shoe Factory

A so-called "shoe" factory is mentioned as being in construction under Kyshtym Lake. It is believed that the report refers to Kyshtym Pond. A single-track spur of standard 5-foot gauge is reported as connecting this installation with the Kyshtym-Karabash line.

T. "Taiginstroi" Plant

The exact location of this plant is unknown, but it is reported to be located south of Kyshtym. The similarity of its name with Lake Taygi suggests that it is located in the vicinity of the lake. The size of this installation and the products manufactured are unknown.

U. Tank Plant

Reports have generally placed this installation on the west shore of Lake Uvil'dy, but its exact location is unknown. A railroad spur and electric power lines are reported to enter the plant area. Some reports indicate that the plant is underground.

V. Warehouse

Reports have located this warehouse approximately three kilometers south of the main Kyshtym station. The size of the installation is not known.

VII. Non-Industrial Installations

A. Schools

The Soviet base map of Kyshtym Rayon (Karta Kyshtym'skogo Rayona, 1:150,000, 1936) shows the location of one school. It is uncertain whether the symbol shows the exact location or is merely an indication of the fact that there is a school in Kyshtym. One report also mentions a Politekhnikum (Technical School) located within the city.

B. Churches

Three churches (or chapels) at Kyshtym and one in Nizhniy Kyshtym are located on the Soviet base map of Kyshtym Rayon. Though not so indicated, they are probably Russian Orthodox Churches.

C. Parks

A "Kul'turnyy" park is reported to be located adjacent to the east side of the main Kyshtym railroad station.

D. Hospitals

Several reports mention a hospital, and the Soviet base map of Kyshtym Rayon indicates that a medical point as well as a veterinary point is located in Kyshtym. Again, it is uncertain as to whether the symbol merely indicates the presence or shows the actual location of a hospital in Kyshtym.

E. Cemeteries

The Soviet base map of Kyshtym Rayon gives the location of a cemetery on the east side of Kyshtym at the point where the Kyshtym-Kasli road enters the city. It is believed that PW camps also had their own cemeteries.

F. PW Camps

Though PW camps no longer exist as such, the location of the former camps is of importance when interpreting PW reports because many PW reports locate other features in relation to the camps.

1. PW camp number 7613 -- This camp is reported to be located at kilometer 7 on the Kyshtym graphite railroad, within the acute angle formed by the line and the spur line to the kaolin plant.

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2. PW camp number 7614 -- This camp is reported to be located one kilometer southeast of the Kyshtym railroad station.

3. Other PW camps that have been reported as located within the Kyshtym area are: 68/4, 102/16, 102/25, 102/26, 180/1, 180/2, 670/13, 1601/1, 7613/16, and 7615. The exact location of these camps is not known.

G. Others

1. A "Krayevedcheskiy" Museum is reported to be located in Kyshtym, but the site is not known.

2. A former Kyshtym theater is reported as now being used for MVD (Ministry of Internal Affairs) billets, but the location is not given.

3. A police prison and fire brigade is reported to be located near the locomotive repair shop.

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