out file

CLASSIFICATION CONFIDENTIAL
SECURITY INFORMATION

CENTRAL INTELLIGENCE AGENCY 25X1 REPORT [redacted]

INFORMATION REPORT

CD NO.

COUNTRY USSR (Sverdlovsk Oblast)

DATE DISTR. 28 November 1952

SUBJECT UAZ Aluminum Plant near Kamensk-Uralskiy

NO. OF PAGES 3

25X1

PLACE ACQUIRED [redacted]

NO. OF ENCLS. 2 (6 pages) (LISTED BELOW)

DATE OF INFO. [redacted] 25X1

SUPPLEMENT TO REPORT NO.

[redacted]

THIS IS UNEVALUATED INFORMATION

[redacted]

25X1

1. The Uralskiy Alyuminiyevyy Zavod - UAZ - (Ural Aluminum Plant) was located 10 to 12 km southeast of Kamensk-Uralskiy (56°22' N/61°52'E) on the right bank of the Iset River. The river was dammed at the plant and supplied water to the aluminum plant and to the electric power station. Short spur 25X1 tracks connected the aluminum plant with the UAZ railroad station and with a small shunting station. Both railroad stations were on the Kamensk-Uralskiy - Chelyabinsk (55°12'N/61°32'E) main line. (1)

2. [redacted] the construction of the aluminum plant and electric power station started in the early thirties. In 1939, the plant 25X1 began production. During the war the plant was considerably expanded with installations from the evacuated Zaporozhe (47°49'N/35°11'E) aluminum plant and the electric power station was also enlarged. No new buildings were 25X1 constructed in the plant between 1945 and 1948 except some small auxiliary buildings including the new iron foundry which was completed in 1946. Some large building projects, the foundations for which had already been excavated, were abandoned. The scheduled construction of a third group of electrolytic 25X1 workshops, which was considered in 1947, was not carried out. [redacted] [redacted] the wartime layout of the plant remained unchanged. They 25X1 did not observe any postwar construction work. [redacted] [redacted] the electrolytic cells were continuously improved and modernized, thereby increasing the plant production. (2)

3. The plant consisted of two alumina departments, an electrolytic department with foundries, and one electrode department. There were also a number of auxiliary installations including a forge, a mechanical repairshop, an electric repairshop, iron foundries, and a carpentry shop for the maintenance of plant facilities. Power was supplied by a large steam heating and electric power station located near the plant. (3)

25X1

4. [redacted] the number of workers employed in the aluminum plant in 1930 was 3,000 to 4,000 per shift. In addition, there were 300 PWs and between 350 to 500 Soviet convicts working in the plant. In the electrolytic department work was done in four 6-hour shifts. In all remaining departments, three 8-hour shifts were worked. From 40 to 50 percent of the 25X1 Soviet workers were women.

CLASSIFICATION CONFIDENTIAL

STATE	x	NAVY	x	NSRB		DISTRIBUTION											
ARMY #	x	AIR #	x	FBI													

5. Bauxite was supplied to the aluminum plant from mines located about 30 km from Kamensk-Uralskiy, and also from mines 200 km away. [redacted] bauxite was produced in open pits in the nearby mines. The alumina content of the bauxite supplied is said to have been 75 percent. Part of the bauxite shipments coming by rail were not unloaded at the plant but were sent on to Chelyabinsk. In addition to bauxite, cryolite and soda shipments packed in bags and barrels were continually observed arriving at the plant. [redacted] incoming shipments of dextrin (sic), quartz sand, and ore from the Degtyarka (56°40'N/60°09'E) copper mines which were used in the production process. (4)

6. Estimates as to the amount of aluminum produced daily by the plant varied between 225 and 350 tons. The production consisted of aluminum, Duralumin, and an aluminum alloy which two sources called silumin. The aluminum was cast in bars about 1 meter long and 120 mm square and in ingots of various sizes weighing from 20 to 50 kg. [redacted] following breakdown of the production:

20	percent	first grade aluminum in bars
20	"	second grade aluminum in ingots
30	"	third grade aluminum in ingots
30	"	silumin

The grade number in Roman numerals and the plant symbol UAZ were embossed into the ingots. [redacted] the greater share of the aluminum ingots and bars were sent to a rolling mill located 4 km from the aluminum plant, although some were shipped to Chelyabinsk and other unidentified localities. Utility items such as pots and aluminum fittings were produced in the plant on a small scale. (5)

7. The aluminum plant and the electric power station were surrounded by a high wooden fence and guarded by armed militia. Some buildings of the aluminum plant and the installations of the power station were under special guard.

[redacted] Comments.

(1) For location sketch of this plant, see Annex 1. [redacted]

(2) It is known from other records that the installations evacuated from Zaporozhe came from the Zaporozhe Aluminum Combine (DAK) (Dneprovskiy Alyuminiyevyy Kombinat), which had an annual capacity of 20,000 to 25,000 tons of aluminum. The electric power station of the DAK allegedly reached a capacity of 325,000 kw during the war. The lack of postwar expansion in the UAZ plant is probably due to the extraordinary expansion of the Krasnoturinsk (59°46'N/60°12'E) Aluminum Plant. Since the war, the Krasnoturinsk Plant, located near the richest Soviet bauxite deposits, has been considerably expanded with dismantled German equipment and was scheduled to reach a daily capacity of 400 tons of aluminum. [redacted]

(3) For details regarding the layout of the plant, see Annex 2. The layout sketch is based on information [redacted] It is believed the "glittering" material, mentioned as being produced in the building identified as 4d, is cryolite. The material mentioned in 22a is alumina. Both alumina departments apparently use the Bayer process.

(4) According to available information, the UAZ Plant is supplied with bauxite from the deposits in Krasnaya Shapochka near Krasnoturinsk, and in Sokolovskoye near Kamensk-Uralskiy. Open pit and underground mining is done in both areas. Both deposits have a high alumina
25X1 content ranging from 50 to 60 percent. An alumina content of 75 percent is not believed probable, because this bauxite is not concentrated before being shipped out. The bauxite shipments to Chelyabinsk were
25X1 possibly destined to the Chelyabinsk corundum plant. [redacted] incoming shipments of dextrin (sic). The use of dextrin in the aluminum production process cannot be explained. The use of quartz sand is
25X1 possibly connected with the production of silumin [redacted] Silumin is an alloy of silicon and aluminum. The UAZ Plant was supplied with cryolite by the plant in Polevskoy, Sverdlovsk Oblast, which had a prewar capacity of 8,000 tons of cryolite per year. Electro were produced by the UAZ Plant itself. According to the original building plan of 1940, the electrode department was scheduled to have an annual capacity of 15,400 tons of electrodes. It is not known whether this department has been expanded. Part of the electrode requirements of the plant are probably supplied by the electrode plant in Chelyabinsk since the plant presently requires almost 60,000 tons of electrodes per year.

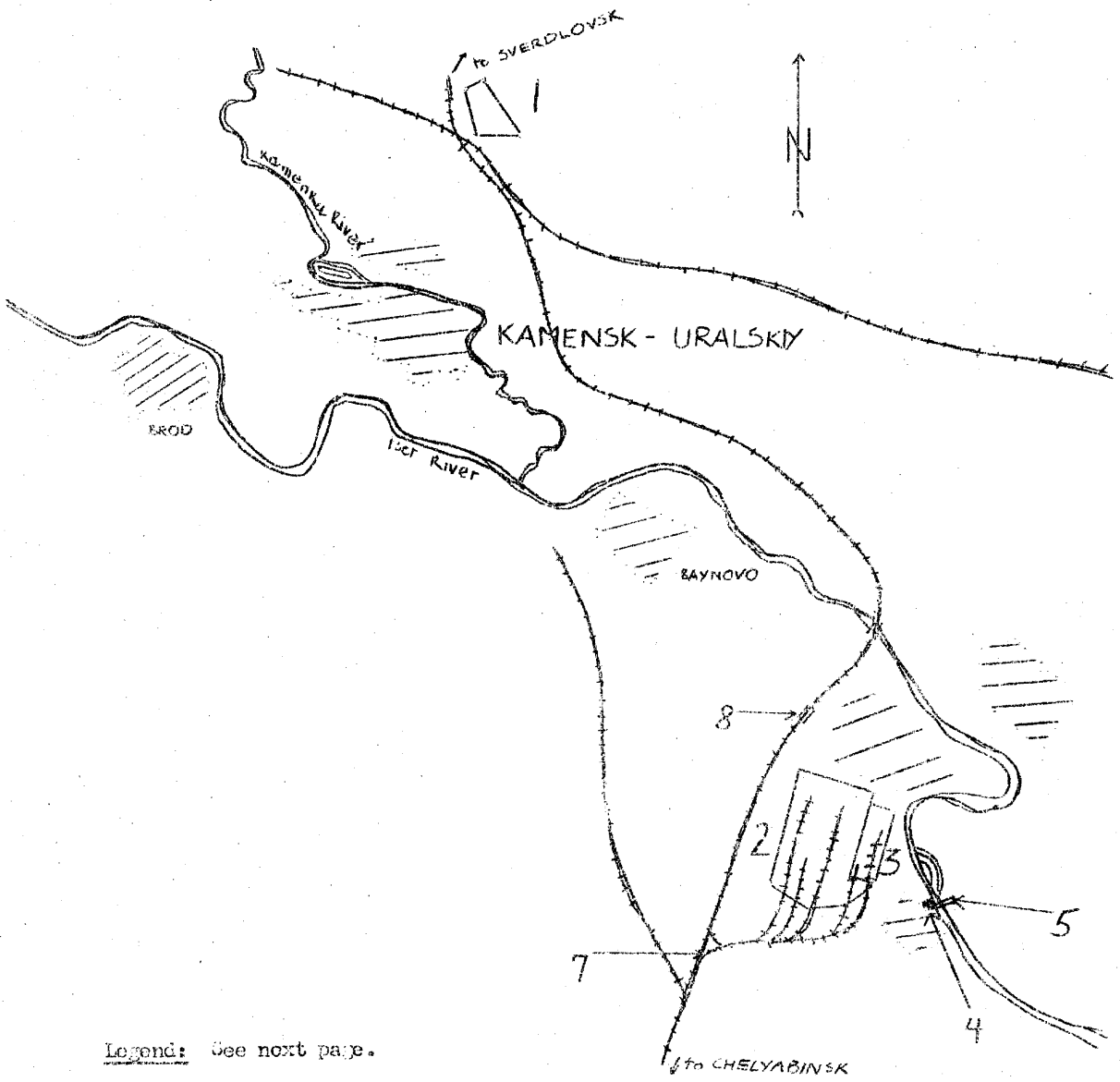
25X1 (5) Of the production figures reported, [redacted] a daily production of 250 tons, appears to be the most credible. This figure would indicate an annual production of 75,000 to 80,000 tons, which appears logical, based on the other data available concerning the plant. The originally scheduled prewar capacity of the plant was estimated at 30,000 tons per year. An annual capacity increase of 20,000 to 25,000 tons was achieved during the war by expanding the plant with the installations evacuated from the Zaporozhe Plant. In addition, a considerable increase of capacity must have resulted from the improvement of the electrolytic cells. This improvement program was initiated in the Soviet aluminum industry shortly before World War II as the so-called "intensifikatsiya" (intensification), i.e. increasing the usable amperage by improving the carbon lining. The amperage was scheduled to be increased from 23,000 amp. to 32,000 amp and later to 46,000 amp. If this intensification drive resulted in only a 50 percent capacity increase, this amount added to the original capacity of 55,000 tons per year would result in a total capacity of 75,000 to 80,000 tons of aluminum per year. The information concerning the daily aluminum production of the plant and the information as to the number of electrolytic workshops and electrolytic baths and the capacity of the baths is contradictory. It is certain that there were eight workshops, but the estimates as to the number of baths vary between 300 and 800. However, an annual production of 80,000 tons
25X1 would require a completely modern installation with 750 baths of 300 kw. The UAZ Plant would have to be equipped with more than 800 baths [redacted]
25X1 [redacted] a number of the UAZ baths were much less efficient than modern 300-kw baths. It is also possible that part of the aluminum was not produced by electrolytic reduction but was smelted directly from clay in electric furnaces, which is the method used in producing silumin.

25X1

CONFIDENTIAL

Attachment 1

Location Sketch of the UAZ Aluminum Plant.



Legend: See next page.

not to scale

CONFIDENTIAL

6

25X1

Legend:

1. Sinarsk Tube Plant.

2. UAZ Aluminum Plant.

3. TETS station.

4. Pumping installation.

5. Dam.

25X1 6. Rolling mill, [redacted] the plant had the numerical designation 263 or 268. It processed the aluminum products of the UAZ Plant to be delivered to the aircraft industry.

7. UAZ railroad station.

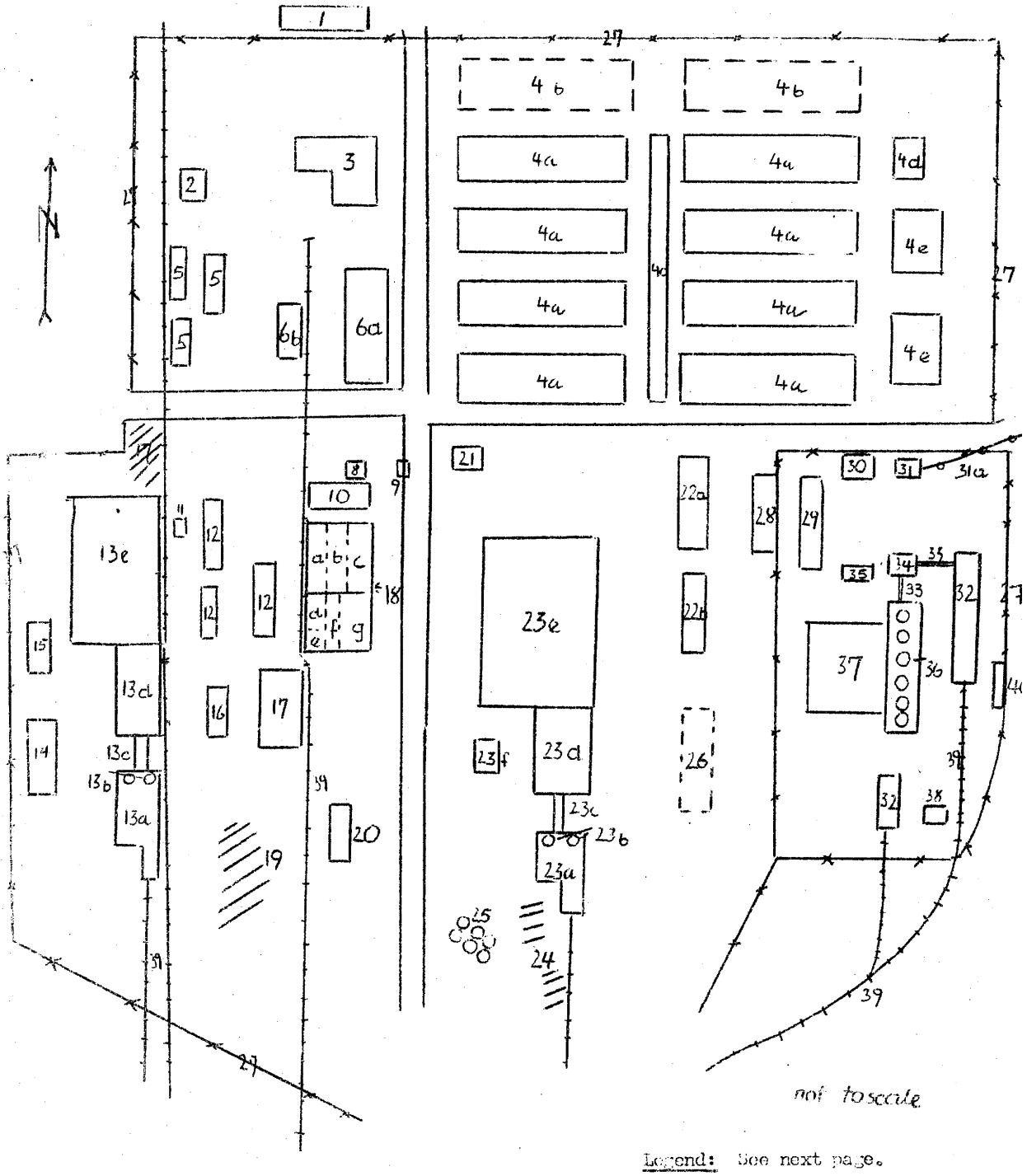
8. Small shunting station.

25X1

CONFIDENTIAL

Attachment 2

Layout Sketch of the UAZ Aluminum Plant and the TETS Power Plant.



Legend: See next page.

Legend:

1. Administration building.

2. Sawmill and carpentry shop. [redacted] the equipment of this shop included three multiple blade sawframes.

3. Administration building and laboratory. [redacted] transported soda and soapstone (sic) from this building to the alumina department. [redacted] caustic lye was produced in this building.

4a. Eight electrolytic workshops, arranged in two groups of four workshops each. The estimates as to the number of cells (Wannen) per workshop vary between 70 and 100. The cells were partly old-fashioned oval-shaped cells and partly modern, square-shaped cells. The cells were 4 x 3 meters and were 2 meters high. [redacted] the capacity of the cells to be 150 kw. [redacted] some cells had a working amperage of 5,000 amp. at a bath voltage of 4 to 6 v. [redacted] an amperage of 8,000 amp. [redacted] each cell was equipped with only one large electrode which measured 1.5 x 1 meter at its base. The cells were charged from dump cars elevated by cranes to the cell. The tapping was done into crucibles. The filled crucibles were loaded on cars by a 10-ton travelling crane. These cars were then hauled by small electric locomotives to the foundry for aluminum bars. During the electrolytic reduction process a light powder was continuously poured on the melting charge. The slag crust was removed with pneumatic hammers.

4b. Unconfirmed additional electrolytic workshops. [redacted] two groups of five or six workshops each.

4c. Transformer and rectifier installation.

4d. Workshop building with two furnaces. The furnaces were used in smelting a strongly glittering kind of rock material. According to information from Soviet workers, this material was added to the aluminum. The material was weighed before and after the melting process.

4e. Two similar workshop buildings. The aluminum coming from the electrolytic department was resmelted in these buildings and was cast into bars.

5. Several warehouses.

6a. Electrode department, equipped with four large ball mills and several large boilers where a coal dust and tar substance was mixed and cast into molds. Two sizes of blocks were cast. The small blocks, measuring about 250 x 120 x 60 mm, were produced for outside plants; the large blocks, measuring 1,500 x 1,000 mm, were used by the plant itself. [redacted] these larger blocks were 1,800 x 600 mm.

6b. Coal shed and tar machine of the electrode department.

7. Storage dump for aluminum bars.

8. Small repair shop.

9. Transformer station.

10. Boilerhouse which supplied hot water to the alumina departments.

11. Transformer station.

12. Several warehouses.

25X1

13a. Bauxite warehouse. [redacted] this was also a warehouse for soda. The railroad cars loaded with bauxite were taken into the building and the ore was dumped into semi-underground bunkers. 25X1

13b. Two stone crushers used for crushing bauxite. The bauxite was loaded by cranes onto two conveyor belts which moved the material to the stone crushers.

25X1

13c. Conveyor belts.

13d. Ball mill department for coarse and fine grinding of bauxite. [redacted] there were 10 to 11 mills. 25X1

13e. Department variously referred to by sources as the bauxite washing shop, the mixing shop, or the boiling shop. There were 20 to 30 large boilers, 6 meters high and 8 meters in diameter, some of which were equipped with stirring devices. The finely ground bauxite was mixed with the soda, which was already dissolved in hot water (sic), and the mixture was boiled. The final product was pressed through a linen filter on the upper floor of the same building, and was removed through underground pipe lines.

The buildings 13a through 13e were all part of alumina Department No 2.

14. Repairshop for cranes of the bauxite mines.

15. Welding shop.

16. Lubricating oil and fuel depot.

17. New iron foundry. There were 3 to 4, allegedly US-made, electric furnaces. The molding shop, equipped with two molding machines, was also housed in this building. Production included machine spare parts, such as cogwheels and balls, for the bauxite mills. [redacted] machine parts were also produced for other plants. 25X1

25X1

18. Machine shop, old foundry and forge, used for plant requirements.

a. Machine shop equipped with 20 to 30 metal-working machines. [redacted] 2 vertical boring and turning mills, 2.5 and 6 meters in diameter; 9 lathes, two-meters long; 1 lathe, four-meters long; 10 to 12 milling machines; 1 drilling machine; and 2 to 3 grinding machines. Machine spare parts were produced and repaired. Utility items made of aluminum waste were produced on a small scale. 25X1

b. Repairshop for electrical equipment, including electric motors and switchboards (Schalttafeln).

c. Messhall.

d. Forge equipped with 4 to 6 large steam hammers, 4 to 6 annealing furnaces, and several forge fires. The department included a hardening shop.

e. Apprentice workshop.

f. Tinsmith shop and plate cutting shop.

g. Old foundry equipped with 1 or 2 electric furnaces.

19. Iron dump for the foundries.

20. Warehouse.

21. Warehouse for bread.

22a. Workshop equipped with several mills and 3 or 4 horizontal revolving calcining furnaces (sic) 3 meters in diameter. The burnt and then finely ground bright material was supplied to the electrolytic department.

b. Part of same department as item 22a.

23a to 23f. Alumina Department No 1. It had the same layout as Alumina Department No 2.

23a. Bauxite and soda warehouse.

b. Two stone crushers.

c. Conveyor belts.

d. Ball mill department.

e. Bauxite boiling shop.

f. Old stone crusher, out of service.

24. Two bauxite dumps. They were filled up during the summer months to ensure a continuous and adequate bauxite supply for the plant during the winter.

25. Six oil tanks.

26. Abandoned building project.

27. Fence.

28. Mercury rectifier installation for the power system.

29. Power distribution installation.

30. Administration building of the TETS Plant.

31. Transformer.

a. Transmission line (90,000 v) leading to the rolling mill.

32. A large and a small coal shed.

33. Coal conveyor belts.

34. Coal mill.

35. Oil tank with pumping installation.

36. Boilerhouse with six smokestacks. The boilers were fired with oil and coal dust.

37. Turbine-generator building, equipped with 5 generator sets in operation. According to one source, the capacity was allegedly 150,000 kw.

38. Warehouse.

39. Railroad tracks.

40. Basin for cooling water.