REPORT [redacted] 25X1

INFORMATION REPORT

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SUPPLEMENT TO REPORT NO. [redacted] 25X1

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THIS IS UNEVALUATED INFORMATION

[redacted]

1. The Ordzhonikidze Ural Plant for the Construction of Heavy Machinery, with the Russian designation USTM im. Ordzhonikidze (Uralski Zavod Tyazhologo Mashinostroeniya im. Ordzhonikidze), also called the Uralmash plant, was located in Sverdlovsk (56°50'N/60°40'E), 4 to 5 km north of the town center. It had several spur tracks to the main railroad system. The plant also had a streetcar connection. Most of the employees were housed in the plant settlement built near the plant. *

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2. [redacted] the construction of the plant started in 1928. All important departments were in operation by late 1932. The plant was not completed until late 1937. The total annual production was scheduled to be 100,000 tons. This production was to be as follows: 70,000 tons of equipment for the metallurgical plants of the iron industry, including complete blast furnace installations capable of producing more than 1,000 tons of pig iron daily, complete open hearth plant installations with furnaces of 150 tons capacity, peat and coal gas producer installations, and complete standard equipment for all kinds of rolling mills; 5,000 tons of equipment for metallurgical plants of the nonferrous metal industry, including converters, water-jacketed furnaces, accessories for reverberatory furnaces and roasting furnaces and wire rolling mills; 17,000 tons of equipment for mines and concentration installations, including large crushing machines, ore and coal mills with a capacity of 1,000 tons per hour, heavy lifting and conveying machinery for mines and potash plants; 5,000 tons of forging and pressing machines, including steam hammers weighing up to 5 tons, heavy presses, shears, and hydraulic presses; 3,000 tons of spare parts for the above mentioned equipment. Depending on the type of incoming orders, the forge was to produce an additional 30,000 tons per year of forgings for other plants. According to available information, a small amount of AA guns, guns of various calibers, Degtyarev-type machine guns, and shells were produced as early as 1934. The production of armaments was considerably increased in 1941. In the autumn [redacted] of 1941, the plant was equipped with some machinery from Plant

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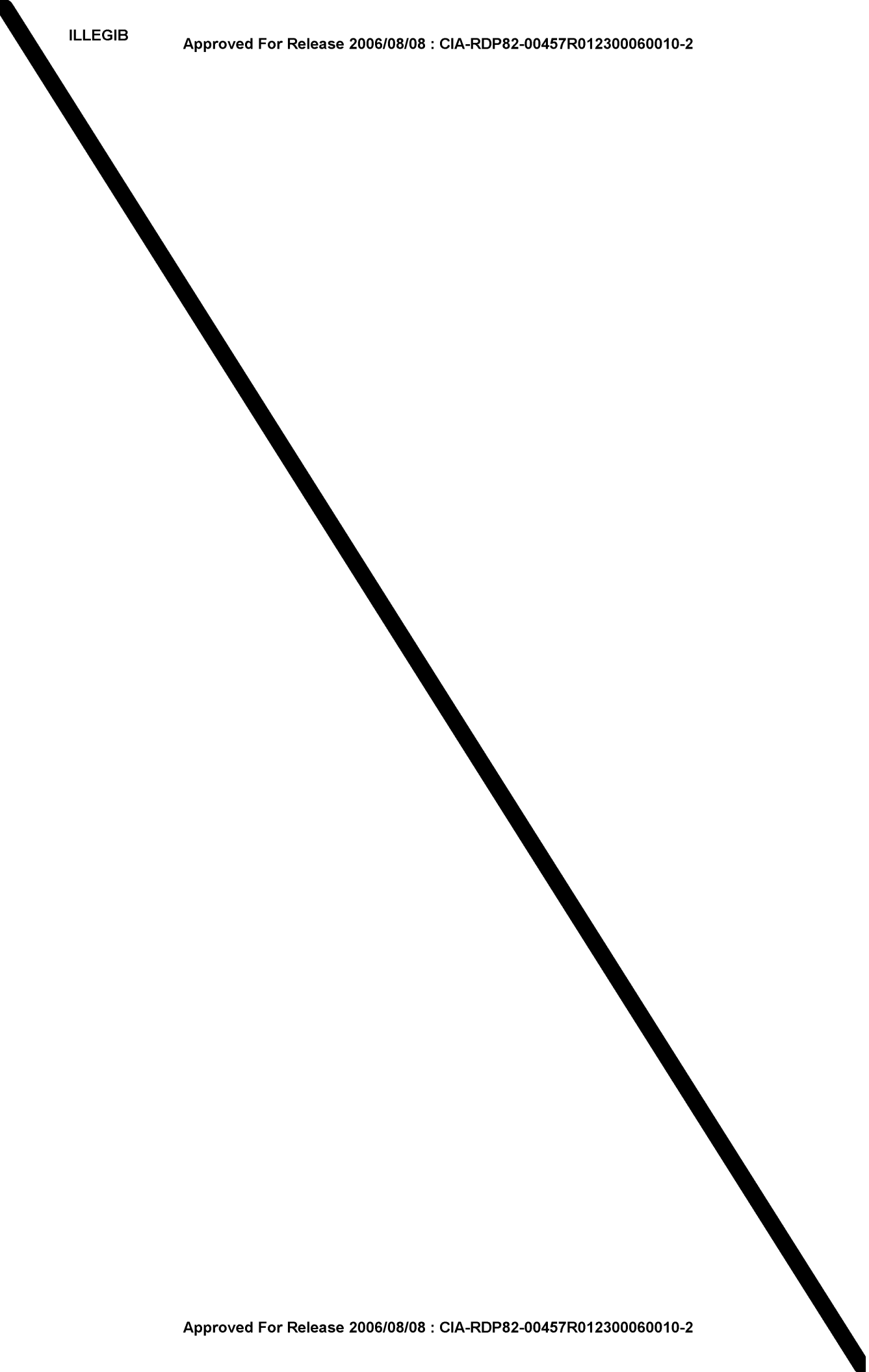

5. The annual production of the plant, originally scheduled at 100,000 tons of finished products and 30,000 tons of forgings for other plants, was already exceeded during the war, when the capacity was expanded by the construction of new workshops. According to available information, the monthly production in 1944 and 1945 was 500 medium tanks and SP guns which would correspond to an annual production of 192,000 tons. After deducting 12,000 tons for engines delivered from outside the annual production would amount to approximately 180,000 tons. According to Soviet press reports, the 1947 capacity of the plant was twice the 1940 capacity, but was only 120 percent of the 1946 capacity. These figures reflect the considerable wartime expansion of the plant. In 1942, the capacity was three times the prewar level. This estimate probably includes all new workshops. In 1949, the capacity of the plant increased to 3.5 times the prewar level. The plant, therefore, should have an annual capacity of 350,000 tons of finished products. These capacity figures, of course, do not refer to the actual production. According to Soviet press reports of 1950, the actual production of the plant in 1950 and the following years was to be increased by improvement of production methods without the construction of additional new workshops. Under the reorganization program, 4,000 square meters of the plant area were cleared for the installation of additional workshop equipment. According to the norm of the plant, the use of this additional equipment, in a machine shop for instance, would mean an annual capacity increase of about 10,000 tons. The production was also increased 20 percent from early 1950 to late 1950 by the decrease in the number of mechanical failures, which were still 23.3 percent in early 1950. A great number of improvements were introduced in some of the production methods, resulting in considerable production increases. The use of three-phase arc welding equipment doubled production and resulted in a saving of 30 percent in the use of electricity. The period of operating the steel furnaces between repairs could be extended considerably and the number of daily tappings could be increased. The cutting tools, especially for processing worm sections (Schneckenprofilen), were improved, thereby doubling or even tripling the cutting speed. Other improvements reduced the time required in the production of spindle heads from 1,138 hours to 400 hours and in the production of rolling trains (Rollgang-Walzen) from 168 hours to 56 hours. However, these efforts have not yet produced notable results. According to Soviet press reports, improvements introduced in the first half of 1951 were scheduled to save 100,000 to 120,000 man-hours. This would correspond to the annual productive capacity of only 48 workers of a total of 30,000 workers employed in the plant. There is still a considerable discrepancy between the capacity and the actual production. Soviet press reports of 1950 and 1951 criticized the "rushwork" (Sturmarbeit) in the Uralmash plant. For instance, in March 1950, 24.6 percent of the monthly quota was produced between 1 to 10 March; 13.4 percent between 11 to 20 March, and 62 percent between 21 to 31 March. The monthly targets could only be reached by accelerating production at the end of the month. The norms were low compared with the actual capacity of the plant. In March 1950, however, the schedule for the construction of rolling mill installations was only 73.9 percent fulfilled and the schedule for the production of spare parts was only 86.4 percent fulfilled.

6. The civilian requirements production was intensified in 1947. According to Soviet press reports, the 1947 production included 100 electric E-3-type excavators on caterpillar trucks. The excavators weighed 165 tons and the volume of the scoop was

3 cubic meters. They could load 10 forty-ton railroad cars in 30 minutes. In the following years the plant produced a rail rolling mill weighing 12,000 tons for the new ironworks in Nizhni Tagil (57°56'N/59°52'E); a roughing mill weighing 7,000 tons; a billet mill; a tire rolling mill, allegedly for the Karl Liebknecht plant in Dnepropetrovsk (48°27'N/34°59'E); a light gauge sheet rolling mill, allegedly for the Zaporozhstal plant in Zaporozhe (47°49'N/35°11'E); a tube mill, allegedly for the new ironworks in Rustavi (42°17'N/43°51'E); a blooming mill; mold vibrator tables (Formen-Schuettoltische) with a carrying capacity of 40 tons; equipment for blast furnaces; agglomerating installations; crushing plants; cement kilns; since June 1950 "Uralmash-2" type oil drilling equipment weighing 170 tons with a drill length of 300 meters and a capacity three times that of the old type; oil pumps; large ESh (Ekskavator Shagayushchiy) -4/40-type excavators (Schreitbagger) weighing 105 tons with an arm length of 40 meters and a capacity of 4 cubic meters; ESh-10/75-type excavators weighing 1,150 tons with an arm length of 75 meters and a capacity of 10 cubic meters; and ESh-14/65-type excavators weighing 1,150 tons with an arm length of 65 meters and a capacity of 14 cubic meters. An excavator with a capacity of 15 cubic meters was designed in 1951. Special machines were also produced, including a large planing bench and steel coils (Stahlspiralen) for suction dredges. The coils weighed 60 tons.

7. Information on the armament production of the Uralmash plant up to late 1949 is available. A new model of a T-34/85 tank was built in this plant. Since the second half of 1943, JS-3/122-type tanks have also been manufactured and SP guns, presumably a new model of the wartime SU-100-type gun were later produced. The gun production also included 76.2-mm, 85-mm, 122-mm, and 152-mm AA, AT, infantry and tank guns. Postwar production of machine guns and ammunition was not observed. The production of tanks and SP guns continued at the wartime rate during 1945 and was reduced for the first time in 1946 from about 500 units to about 150 units per month. 25X1 [redacted] the entire remaining production of tanks and SP guns was transferred to the northern section of the plant in mid-1947, and production declined to 100 units monthly in late 1947. The monthly production was increased to 120 units in 1948, when new models of tanks and SP guns were produced, and 150 units were produced in 1949. It is estimated that 20 to 25 percent of this production was SP guns. Tanks were repaired and old tanks were refitted on a large scale, especially in 1947 and 1948. In 1946, the gun production equalled the tank and SP gun production, i.e. 150 units monthly. After a temporary decline in 1947, the gun production increased again in 1948 and 1949 and reached a monthly output of 200 units in late 1949. The percentage produced by Gun Factory [redacted] in Sverdlovsk cannot be determined. The gun assembly work was transferred to the tank department of the Uralmash plant, apparently in order to vacate large sections of Gun Factory [redacted] for the construction of machinery. No details concerning this production are available. 25X1 25X1

8. Before the war when the annual capacity was 100,000 tons, the plant employed about 13,200 workers and technical personnel in the production departments. This number was divided among the various departments as follows:

	Workers	Office Employees
Main Mechanical Department No 1	2,935	392
Steel foundry	1,053	90
Gray iron foundry	1,284	57

	Workers	Office Employees
Forge and pressing shop	614	49
Hardening shop	122	36
Pattern-making department	290	29
Instrument department	371	23
Gas producer installation	101	25
Metal Construction Department	2,000	200
Department of the Chief Mechanic	500	50
Power and heating station	220	40
Remaining departments	2,600	100

Because of the complicated and continuously changing production of the plant, the Central Administration required about 1,200 employees of whom 151 were in the Technical Designing Office for Hoisting and Conveying Machinery, 115 in the Technical Designing Office for Rolling Mill Installations, 206 in the Technical Designing Office for Mining and Ore Concentration Installations, 72 in the Technical Designing Office for Metallurgical Installations, 44 in the Technical Designing Office for Forging and Pressing Machinery, 31 in the Technical Designing Office for the Construction of General Machinery, 110 in the Technical Designing Office for Metal Construction, 25 in the Office for Standardization and Instruments, 125 in the Drafting and Duplicating Department, (Zeichen- und Kopierabteilung), and 200 to 300 in the remaining departments of the Central Administration. As a rule, the ratio between engineers and workers was to be 3.3 to 100, and the ratio between technicians and workers 10.5 to 100. Only 18,000 to 20,000 workers were employed in the plant during the war despite the considerably increased production. At that time, however, two 12-hour shifts were worked. [redacted] after the war 25X1
three 8-hour shifts were worked. The total number of workers also 25X1
increased to 30,000. During the war, the manager of the plant was Boris Glebovich Muzrukov. In 1949, the Soviet press reported one Chumichev (fnu) as manager of the Uralmash plant, [redacted]
25X1 [redacted] Muzrukov was dismissed in the summer of 1948. Other leading employees known from the Soviet press are Grigori Koreyanov, chief of the Technical Designing Office for Ore Dressing Installations in 1948; Georgi Karapetyan, chief of the Technical Designing Office for Oil Drilling Installations in 1948; Georgi Khimich, chief of the Technical Designing Office for Rolling Mill Installations in 1950; Aleksander Vernik, chief technical designer of the plant in 1948; Popov (fnu), chief technologist of the plant; Roman Petrovich Fuzin, tank designer; Yuri Pavlovich Shkabatur, tank designer; L.I. Gorlitski, SP gun designer.

9. At an annual production rate of 100,000 tons, the estimated requirements of foundry pig iron and other types of iron (Sortenseisen) were 110,000 tons. About 15 percent of the requirements was for plates, 25 to 30 percent structural steel and the remainder foundry pig iron. Incoming daily shipments of 450 tons of scrap and iron ingots were observed in 1949. [redacted] 25X1
25X1 [redacted] the incoming daily shipments of iron ingots alone amounted to 60 tons in 1949. According to the original plan, peat from the peat beds, 25 to 40 km from the plant, was scheduled

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to be used as fuel. The annual requirements were estimated at 250,000 to 300,000 tons. Large amounts of coal were reportedly consumed after the war. [redacted] incoming coal shipments of 120 tons per day. Power was supplied from a plant-owned power station. In 1949, [redacted] additional power came from the SUGRES (Sredne Uralskaya Glavnaya Rayonnaya Electro-Stantsiya), a few kilometers north of Sverdlovsk.

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10. The plant had its own locomotive, railroad car, and motor vehicle park. Chassis of T-34-type tanks were allegedly used as prime movers. The plant was guarded by civilian and military personnel and was surrounded partly by a board fence and partly by a barbed-wire fence.

25X1 * [redacted] Comment. For location sketch of the plant, see Annex 1.

** Comment. For layout sketch of the plant, see Annex 2. This sketch is based on the original building plan taken from the booklet "Uralski Machinostroitelny Zavod", by B.N. Dobrovolski, published in 1931 by the GNTI (Gosudarstvennoye Nauchno-Tekhnicheskoye Izdatel'stvo - State Scientific-Technical Publishing House). Information as to changes and new construction since 1931 is based on PW reports and other data. For layout sketches of the various departments, see Annexes 3 through 14. Photographs of the plant and plant layout are available on loan from OCD/Graphics Register.

Attachments. 14 sketches on ditto and 8 photographs.

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Annex 1

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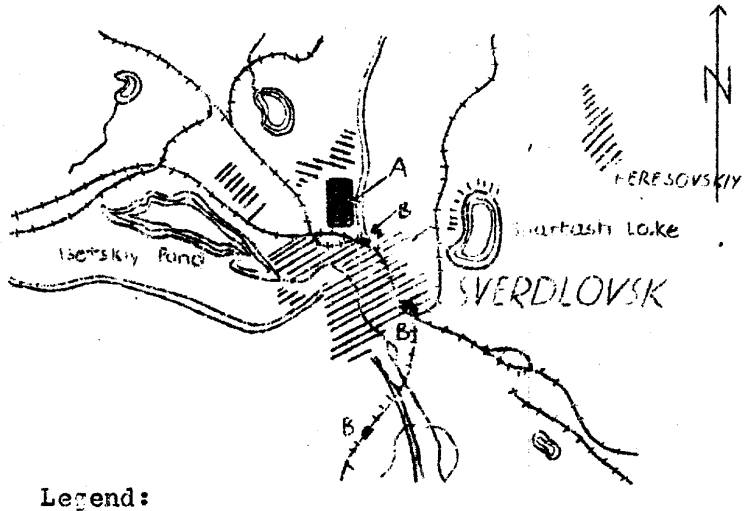
Location Sketch of the Uralmash Plant in Sverdlovsk



Legend:

A - Uralmash Plant

B - Railroad Station

Scale 1 : 300,000

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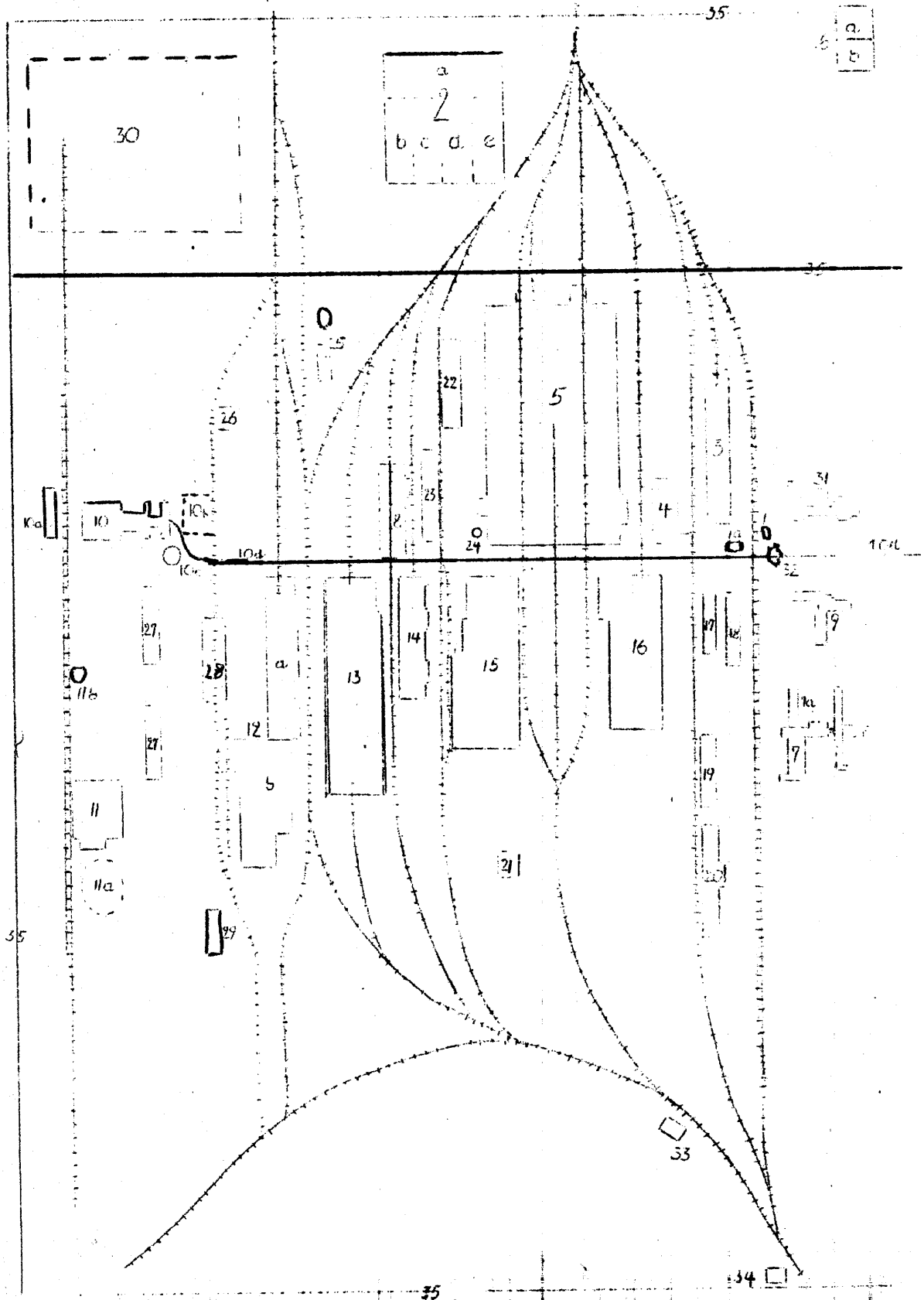
Annex 2/1

Layout Sketch of the Uralmash Plant in Sverdlovsk

Legend: See next page.



Legend:

1. Guarded entrance.

1a. Square with a tank monument.

2. Tank and gun department:

a. Welding shop and tank and gun assembly shop.

b. Machine Shop No 22.

c. Machine Shop No 23.

d. Riveting shop.

e. Machine Shop No 49.

This department was built during the war. In 1943, it was used by the Gun Factory [redacted] The tank and SP gun assembly shop was transferred to these premises in 1947. Since then, the production of weapons, tanks, SP guns and guns has been observed only in this workshop. 25X1

3. Main Mechanical Department No 2. Originally this building was scheduled to be a warehouse for finished products but during the war it was converted to a machine shop. During the war the Main Mechanical Department No 2 included Machine Shop No 99, in the northern section of the building, equipped with 10 welding compartments, 3 lathes, and 13 turning-and-boring lathes (during the war aircraft bombs were equipped with stabilizers in this shop); Machine Shop No 47; the tool making shop; and Machine Shop No 26 of Gun Factory [redacted] Machine Shop No 26 was subdivided into the preparation department, equipped with 5 "Heller" metal saws, 2 centering machines (Zentrierbaenken), 1 slotting machine (Stossbank), 2 high-speed planers, 1 planing machine, and 2 automatic lathes; the pattern department (Lehrenabteilung), equipped with 3 backing-off lathes, 11 shaping lathes (Kopierdrehbaenken), and some fitter's benches (Schlosserbaenke); the tool making shop, equipped with 22 turret lathes, 3 circular and 3 surface grinding machines, and 20 horizontal milling machines; the shop for the construction of punches and fittings, equipped with 6 drilling machines, 2 milling-and-drilling machines, 19 vertical milling machines, 1 shaping milling machine; the fitting shop; the hardening shop; the chrome-plating shop, and the testing laboratory of the technical control office. The tool making shop produced all the tools required by the plant. However [redacted] this building housed only a tool making shop and warehouse. 25X1

4. Machine Shop No 51. It was originally scheduled for the production of special machinery and control devices. It was equipped with 41 machines and employed 134 workers. During the war, it was used as a machine shop for Gun Factory [redacted] and in 1943 the production of this shop allegedly included cooling jackets, casings, and protective shields for machine guns. According to PW reports, the postwar production also included screws and wrenches. During the war, the special machine tools were apparently transferred to the Main Mechanical Department No 2. 25X1 25X1

5. Main Mechanical Department No 1. The building covered an area of 55,000 square meters. According to the original plan 11,000 square meters of this total were to be used for warehouses and auxiliary installations, and 26,000 square meters for the installation of machinery. An annual production of 1.36 tons of finished material per square meter of the 44,000 square meters of productive area was planned, thus totaling about 60,000 tons. The shop was subdivided into a machine shop, covering 26,000 square meters, and an assembly shop. The machine shop was to be equipped with 445 machine tools, of which 13 percent were to be planing machines, 6 percent milling machines, 7 percent horizontal drilling and milling machines, 10 percent drilling machines, 40 percent lathes, 10 percent gear milling machines, and 3.5 percent grinding machines. Each machine had its own motors. The total number of motors was 700. About 3,000 workers, including 600 assistants (Hilfsarbeiter), were employed. There were about 400 technical administrative employees. The available area per machine in the machine shop was 65 square meters. The area per worker was 14.75 square meters in the machine shop and 20.6 square meters in the assembly shop. The annual performance per worker was estimated at 34.4 tons in the machine shop and 123 tons in the assembly shop. The annual machine performance was estimated at 150 tons. In addition to the 60,000 tons produced by the machine shop, 40,000 tons produced by the metal construction department passed through the assembly shop. The machine shop consisted of various longitudinal sections. Bulky parts, such as large frames, plates and swinging arms, were processed in the first section. It was equipped with the largest planing benches, which were up to 12 meters long, with longitudinal milling machines of 5 meters and with horizontal drilling and milling machines with a spindle diameter of 250 mm. There were movable machine tools such as radial drilling machines and cross planers (Querhobel) for processing very large items. Large items such as crankshafts, conventional shafts and parts for hydraulic presses were processed in the second section of the machine shop. The largest lathe had a working height of 1,500 mm and a center distance of 20,000 mm. Cylinders, disks, drums, parts for blast furnace equipment and other material were processed in the third section. It was equipped with various types of lathes including boring-and-turning lathes of medium size. All small parts were processed in the remaining sections of the machine shop. They were equipped with smaller machine tools of the types indicated for the first three sections. Machine Shops Nos 29, 30 and 82 are known from available records [redacted] Casings (Gehaeuse) and turrets for tanks and SP guns were processed in Machine Shop No 29 during the war. Four to five drilling machines could 25X1 simultaneously be used on one casing. The processing period lasted from 6 to 8 hours, and from 12 to 30 casings daily, or 360 to 600 monthly, were completed. The postwar production of this shop consisted of large gear wheels, pump and excavator parts, and rolls for rolling mills, including rolls 10 to 12 meters long and 800 to 1,200 mm in diameter. Machine Shop No 30 is possibly identical with a workshop section indicated in previous reports as Assembly Shop No 5. During the war, it processed component parts for tanks and SP guns such as half-axles (Halbachsen), transmission shafts, main and auxiliary clutches and auxiliary gears, and also did assembly work. After the war, Machine Shop No 30 reportedly processed excavator parts and assembled excavators. Machine Shop 25X1 [redacted] was re-equipped after the war, according to information from 25X1 [redacted] The new equipment allegedly consisted of 3 medium boring-and-turning lathes of 25X1 25X1 [redacted] trademark "Niles"; 6 small boring-and-turning lathes 25X1 [redacted] 5 planing benches manufactured 25X1 [redacted] 2 large drilling machines of Soviet make; 2 gear wheel machines manufactured by firm in [redacted]

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25X1 and 1 hydraulic saw. Ball bearing races, 1 meter in diameter, to be used for excavators were produced in this shop. The races were processed in two stages on four lathes. The shift norm per machine was 10 to 12 races. This quota was usually 50 percent overfulfilled. In addition, cast disk-type flywheels were processed and 200 to 300 bevel gear wheels with an outer diameter of 200 to 250 mm were produced daily. Five to six brass bushings for the engine department were produced during the night shift. Excavators and cranes were welded and assembled in Welding Shops Nos 32 and 35. During the war, Assembly Shop No 101 was used for the final assembly of tanks and SP guns, and after the war for the assembly of large excavators.
25X1 , this shop was equipped with several cranes, a small furnace for brass castings, and electric and autogenous welding equipment.

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6a Machine Shop No 76. It was equipped with 52 lathes, 10 threading machines, 23 turret lathes, and 24 spindle lathes. Shells were processed in this shop during the war.
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6b. Garage. This installation, known from available records,
25X1 However, which is in the same building.

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7. Machine Shop No 72 was a tool-making shop of Gun Factory in Sverdlovsk. According to available records, it was equipped with 100 lathes, 36 milling machines, 4 gear wheel machines, 11 planing machines, 3 boring-and-turning lathes, 2 drilling machines, and 1 fitting shop. The machine shop also included an apprentice workshop with a gray iron foundry for the casting of shells and 82-mm mortars; a pattern-making shop which produced crates and cleaning rods for guns; a forge which produced blanks (Rohlingen) for tools and tank accessories; a welding shop for training; an electric welding shop; a plate shop (Blechnerei) which produced sheet metal containers; a leather shop which produced protective coverings (Schutzdecken) and harness; a tool shop which produced cutting and measuring tools and gauges. During the war, Machine Shop No 72 produced component parts for AA guns.
25X1 25X1 a plant repair shop and could not supply any information as to the production of this shop.

7a. Plant school.

8. Mechanical repair shop which covered an area of 4,400 square meters. Originally it consisted of a mechanical fitting shop, an electric repair shop, a forge and various auxiliary installations and was equipped with 50 machines. During the war, the shop was considerably expanded. According to available records, the wartime equipment of this shop included 60 lathes, 3 grinding machines, 4 boring mills, 4 drilling machines, 7 milling machines, 4 gear wheel machines, 2 boring-and-turning lathes, 4 planing machines, 1 slotting machine, 5 grinding benches (Schmirgelbaenke), 3 straightening plates, 1 test stand for machine tools, and several fitting benches. The electric repair shop continued to be affiliated with this shop. During the war, 20 lathes were used to process noses for 76-mm shells. The monthly production was between 9,500 and 10,000 shell noses. a plant 25X1 fitting shop and a fine mechanical department, but did not supply any data on the production.

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9. Central laboratory and plant school. Details were not known.

10. **TETs (Thermal Electric Station)** Power and Heating Plant. The original plan called for 4 vertical boilers with 4 more to be added later. Each boiler had a heating surface of 500 square meters. The machine hall contained 2 turbine-generators of 10,000 kw each, 1 turbo-compressor with an output of 10,000 cubic meters and 1 piston compressor with an output of 6,000 cubic meters of air per hour. An additional turbine-generator and 2 compressors were to be installed later. The steam left the boilers at a pressure of 32 metric atmospheres, a temperature of 425 degrees centigrade and with 784 calories per kg. The steam was first directed to the turbines, and then to the steam hammers and presses at a pressure of 13 metric atmospheres. The remaining steam was used for heating purposes in the winter, or was returned to the low pressure part of the turbines during the summer. Part of the steam was used at a pressure of 1.6 metric atmospheres to heat water for the plant settlement. The steam consumption of the plant settlement was 134,000 tons. The TETs plant was fired by peat which was stored in a nearby bunker. The bunker held several days' supply of fuel. The yearly consumption of peat was expected to be 250,000 to 300,000 tons. According to available records, the TETs plant had a capacity of 24,000 kw. [redacted] an open air transformer station with 15 transformers located west of the TETs plant. It is possible that the power supplied from the SUGRES plant was transformed in this station. 25X1

10a. Open air transformer station, allegedly equipped with 15 transformers.

10b. Peat dump.

10c. Cooling water tower.

10d. Underground steam and hot water pipe line.

11. Gas producer installation. According to the original plan, the installation was subdivided into one producer department, two departments for gas cleaning and gas cooling, and one department for the Bakelitierung (sic). The peat was carried by a conveyor belt to the top of the bunkers which were 21.5 meters high. The producer department was a three-story structure. On the first floor the ashes and impurities were removed in a watery solution. The steam drying installation and the control apparatus were on the second floor. The peat was loaded on the third floor. According to previous information, there were 24 kilns [redacted] 25X1

25X1 [redacted] Production figures were not known.

11a. Coke dump.

11b. Coke quenching installation.

12. Metal Construction Department. The initial daily production of 12,000 tons was increased to 40,000 tons by expanding the department. The department consisted of the following two sections:

12a. Assembly shop, used during the war as an acceptance shop for tanks and SP guns. Small defects discovered during tests were repaired here. There were 3 traveling cranes. [redacted] oil drilling equipment and pumps were assembled here after the war. 25X1

12b. Machine shop and shop for preparatory treatment (Mechanische und Vorbereitungsabteilung). This shop consisted of two longitudinal sections, each 15 meters wide, and of one side section. The installations included a welding shop, equipped with electric and autogenous welding equipment, and 5-ton and 10-ton cranes; a riveting shop; a metal working shop, equipped with universal shears, "Pels" type presses, punches, rolls for straightening and bending, an automatic multiple stamping press, a duplicator; an assembly shop with two 25-ton cranes and two 5-ton cranes; and a material depot with stocks for two months. [redacted] these shops were Machine Shops Nos 31 and 80, equipped with a rolling mill installation and a depot for iron plates. [redacted] Machine Shop No 31 was equipped with 3 large shears (Schlagscheren), two of which were of German make and one of Russian make, with a cutting length of 3 meters; 5 small shears, including two of Russian make, with a cutting length of 1 to 2 meters, 10 to 12 turret lathes, and sixteen 10-ton cranes. [redacted] Machine Shop No 80 was equipped with more than 40 boring-and-turning lathes and turret lathes, 20 milling machines, 15 planing machines, 50 to 60 drilling machines, and eight 2.5-ton traveling cranes. All machines were of modern design and in good condition. [redacted] component parts for oil drilling installations and oil pumps were manufactured and assembled in this department. [redacted] parts for excavators also were cut in this shop.

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13. Forge and pressing shop. According to the original plan this installation consisted of a forge, equipped with friction and eccentric presses, forging machines, and hammers weighing up to 750 kg; a hammer mill, equipped with hammers up to 5 tons, and presses of 800 tons; and a pressing shop, equipped with four presses, including a very heavy one. The medium presses were equipped with manipulators (Manipulatoren). The annual production of the forge and pressing shop was scheduled to be 55,000 to 60,000 tons of forgings, of which 60 percent were to be supplied by the pressing shop. The forge and pressing shop employed 1,000 workers. The forge and pressing shop could produce 75,000 tons per year if it were operated at capacity and if three shifts were worked. About 30,000 tons of forgings remained in the Uralmash plant for further processing. The rest was supplied to other plants. According to available records, the forge was Department No 50 and the pressing shop was Department No 37. [redacted] the pressing shop was Department No 37. During the war, the quantity and production of the machinery, especially in the pressing shop, was apparently considerably increased. The equipment consisted of one 10,000-ton press, eighteen 3,000-ton presses, twelve 1,000-ton presses, and 14 annealing furnaces. The forge was equipped with more than 74 steam hammers, 37 annealing furnaces, and 12 machine tools. [redacted] gather any details regarding the production of these shops. One source observed the manufacture of gun barrels.

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14. Hardening shop. According to the original plan this shop contained 3 large gas-fired annealing furnaces, and several electric annealing furnaces of various sizes. The hardening shop processed 10,000 tons of castings, forgings, punched items and tools. The shop was expanded before the war. According to available records the wartime equipment of the shop included 10 gas-fired annealing furnaces, 4 electric annealing furnaces, 5 hardening baths, and 4 special baths. All thermal treatment of tank and gun parts and shells was done in this shop. [redacted]

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15. Steel foundry. According to the original plan, the annual production was scheduled to be 30,000 tons of castings, and 25,000 tons of

25X1

ingots for the forge and pressing shop. The castings were mainly medium and heavy types, i.e., 40 percent were up to 500 kg, and 30 percent exceeded 2,000 kg. There was one very large open-hearth furnace with a capacity of 35 tons and equipped with a charging crane of 50 tons and one 5-ton electric furnace. The foundry and the smelting shop covered an area of 3,000 square meters and, therefore, produced more than 3 tons of castings per square meter of the working space, i.e., 6.3 tons of large castings, and 2 tons of small castings per square meter. The average production was scheduled to be increased to about 5 tons per square meter of working space by improved work methods. According to available records, the foundry had three 40-ton open-hearth furnaces and one 5-ton electric furnace during the war. Therefore, the installation was only slightly expanded. The 1943 production was 100,000 tons, with three tappings for the open-hearth furnaces and four tappings for the electric furnaces which was achieved by increasing the production from three tons to about five tons per square meter of working space, as scheduled in the original plan. 25X1 the existence of four furnaces. They also reported that the steel foundry was called Department No 4. Fly wheels, castings, shafts, and component parts for tanks were cast in the foundry. The molds were made by machine and by hand.

16. Gray iron foundry. The gray iron foundry covered an area of 21,000 square meters. The scheduled annual production was 30,000 tons, of which 11.2 percent were castings weighing up to 40 kg, 14.2 percent castings up to 150 kg, 20 percent castings up to 500 kg, 26 percent castings up to 2,000 kg, and 28.6 percent castings exceeding 2,000 kg. The foundry consisted of three longitudinal sections. The central section was 25 meters wide and was equipped with a 50-ton crane which was used for the casting of large and complicated pieces. One side section was 20 meters wide and contained drying kilns used for castings in molding boxes. The other side section was used for casting small parts. The cupola furnaces, the foundry cleaning shop, and the molding sand shop were in this section. There were 4 cupola furnaces of 2.5 tons each, 3 cupola furnaces of 7.5 tons each, one 1-ton electric furnace, and 41 cranes, including 1 gantry crane. The foundry for small parts weighing up to 40 kg, together with the molding shop, covered an area of 1,320 square meters and produced more than 1.5 tons per square meter of working space, the foundry for medium castings weighing up to 2,000 kg had a total area of 2,200 square meters and produced 4 tons per square meter, and the foundry for large castings had a total area of 4,500 square meters and produced 4 tons per square meter. Assuming 15 tappings for the cupola furnaces in 24 hours and 300 working days per year, the annual capacity of the gray iron foundry would be 146,000 tons of molten iron or 30,000 tons of finished castings. According to previous information, there were only four cupola furnaces, instead of seven, and the foundry had a capacity of 144,000 tons of molten iron. Two of these furnaces, with breast pans (Vorherd), had an hourly capacity of 20 tons each and the other two, without breast pans, had an hourly capacity of 10 tons each. It was also stated that either two 10-ton furnaces or one 20-ton furnace were simultaneously in operation. According to available records, the nonferrous metal foundry was located in the gray iron foundry department. The nonferrous metal foundry was equipped with a "Wechta-type" furnace and produced 525 tons of molten copper or 260 tons of finished copper castings per year. Two crucible furnaces were reported but no production figures were given. The crane installations consisted of one hand driven traveling crane of 500 kg, and 6 electric traveling cranes of 5, 15, 25, 35, 50 and

75 tons respectively. [redacted] the iron and nonferrous metal foundry were called Department 34. The molding shop, the drying shop for molds and the foundry cleaning shop were reportedly in the same building. Production figures were not known. 25X1

17. Machine shop. According to the original plan, this was to be a pattern warehouse. It was a three story structure consisting of three longitudinal sections. The building was 100 meters long, the sections were 8 and 3.4 meters wide. Heavy patterns were stored on the first floor and medium and small patterns on the upper floors. During the war, this shop was equipped to produce gear boxes made of cast aluminum. The machines set up on the second floor included 4 vertical milling machines, 1 boring machine, 1 long planing machine (Langhobelmaschine), 1 radial drilling machine, and 10 tubs for thermal treatment. The fitting shop was on the third floor. Gear boxes made of cast aluminum were processed and then given thermal treatment. Five boring mills and six drilling machines were scheduled to be added.

25X1 [redacted]

18. Pattern-making shop. It consisted of three longitudinal sections. The middle section was 15 meters wide, and the two side sections were each 10 meters wide. According to the original building plan, 46 machine tools were set up near the entrance of the middle section. Patterns, 5 meters long and weighing 3 tons, were produced in the central part of the middle section. The assembly work was done at the back of the middle section. Small and medium patterns were produced in the side sections. This building was shown in the original plan as being the warehouse for foundry

25X1 materials. [redacted] this building used as a pattern making shop and as a warehouse.

19. Pattern-making shop. The pattern depot was probably transferred to this building when the workshop originally scheduled for this purpose was converted to a machine shop. The wood drying depot and the drying installation of the pattern-making shop might also be in this building.

25X1 20. Carpentry shop. [redacted] the carpentry shop also produced furniture. 25X1

21. Department for utility items (Gebrauchsgegenstaende). [redacted]

25X1 [redacted] this department produced aluminum utensils. 25X1

22. and 23. Hardening shops. According to previous information, these buildings were hardening shops. [redacted]

25X1 [redacted]

24. Cooling tower.

25. Oil and fuel depot.

26. Concrete factory.

27. Two large new buildings. [redacted] they were under construction in 1947 and/or 1948 and one of these buildings was scheduled to be a rolling mill. 25X1

28. Tank engine department. [redacted] Some 25X1

25X1

25X1 [redacted] tank engines were repaired and tested, while
25X1 [redacted] new tank engines were constructed in this department. It is believed that this is only a testing installation and repair shop, as Plant [redacted] in Sverdlovsk supplies the tank engines to the Uralmash plant. 25X1

29. Automobile repair shop. [redacted]

30. Several small buildings located in a separately fenced enclosure in the northern part of the plant. Details were not known. Ball bearings were allegedly produced in one building and gun breech-blocks (Geschuetzschloesser) in another one. The buildings were probably used as workshops for tank and gun production.

31. Plant administration building.

32. Technical designing office.

33. Transportation office.

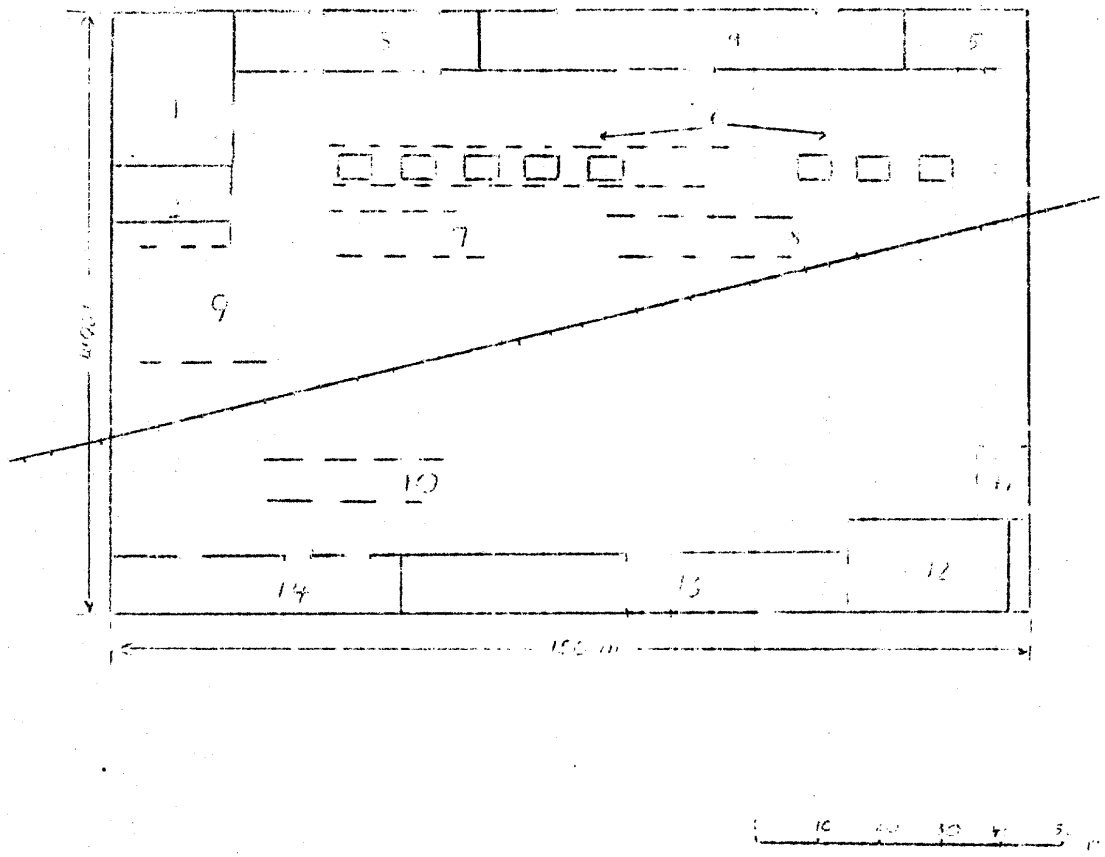
34. Plant railroad station.

35. Fences.

25X1

Layout Sketch of the Tank and Gun Assembly Shop

Legend: See next page.



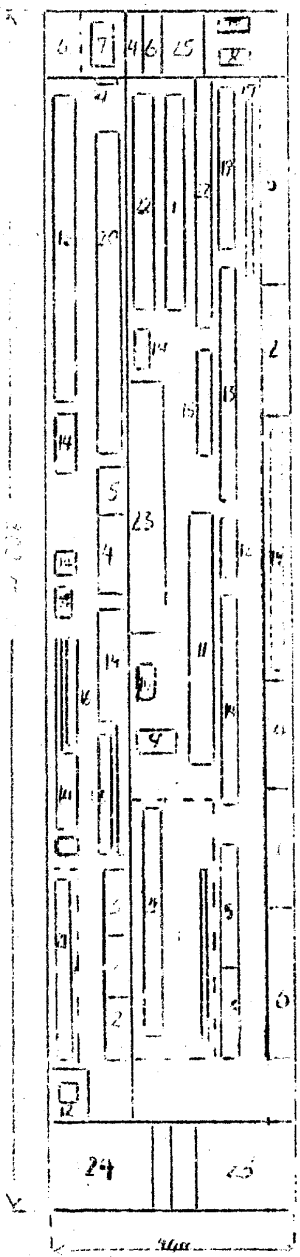
Legend:

1. Welding shop for tank hulls.
2. Forge.
3. Messhall.
4. Machine shop and lathe shop.
5. Warehouse for armor plates.
6. Conveyor belt for the assembly of tank tracks, with stands for 8 vehicles.
7. Stand for mounting engines.
8. Stand for mounting bogie wheels.
9. Stand for mounting tank turrets.
10. Gun assembly section.
11. Administration office.
12. Fitting shop on the first floor. Various unidentified shops on the second floor.
13. Storage rooms.
14. Tool shop.

25X1

Layout Sketch of the Main Mechanical Department No 2

Legend: See next page.



Scale 1 /1000

25X1

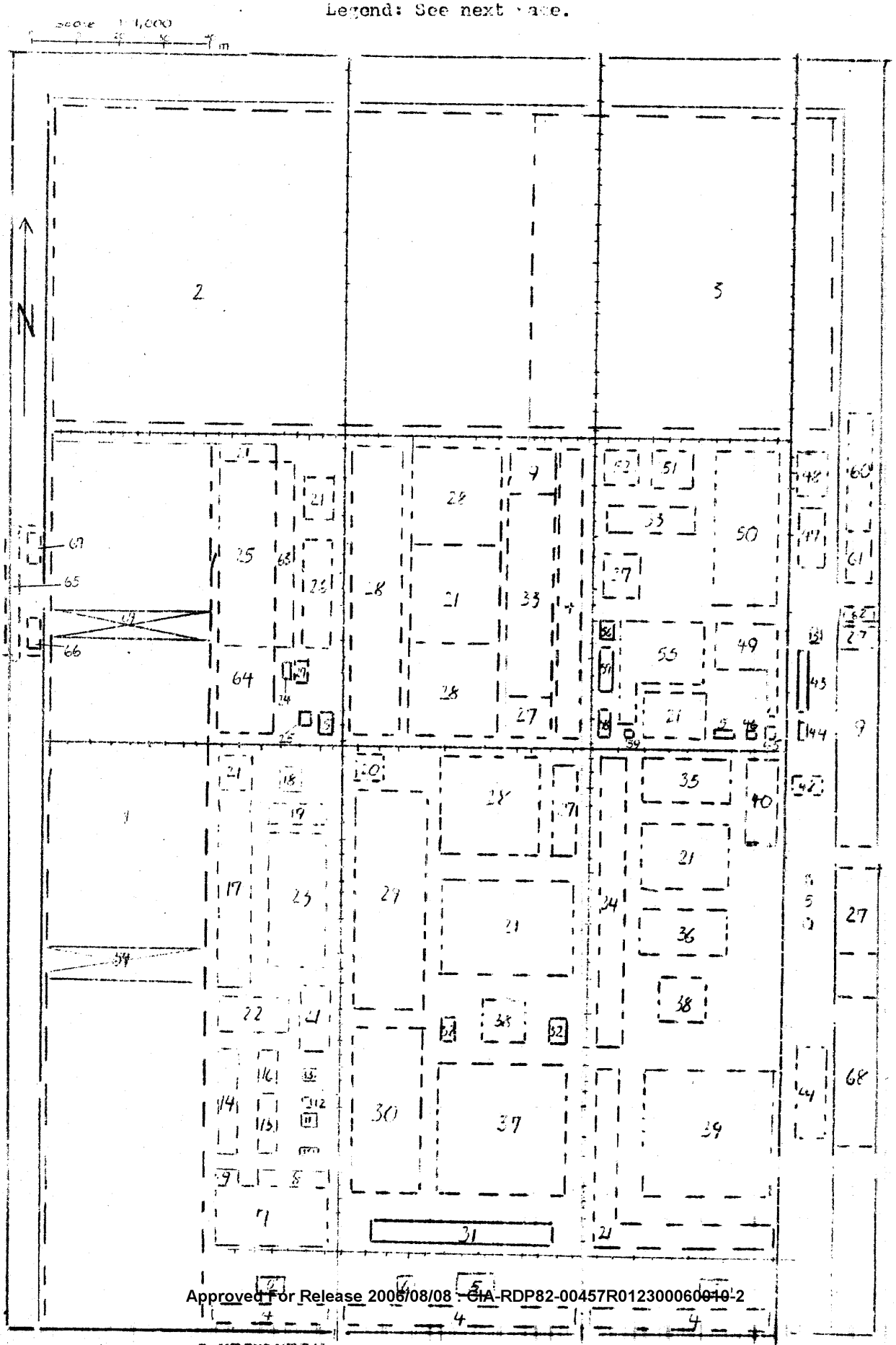
Legend:

1. Fitting shops.
2. Technical control (Technische Kontrollen).
3. Warehouse for finished products.
4. Tool warehouses.
5. Warehouses for blanks (Rohlings)
6. Grinding shops. Quantity
7. "Heller" metal saws. 5
8. Centering benches (Zentrierbaenke). 2
9. Drilling machines. 2
10. Profile milling machines (Kopierfraesmaschine). 1
11. Vertical milling machine. 1
12. Drilling and milling machines. 2
13. Horizontal milling machines. 1
14. Lathes and milling machines. 35
15. Boring-and-turning lathes. 13
16. Turret lathes. 22
17. Grinding machines. 6
18. Gear wheel milling machines. 2
19. Shop equipped with 1 drilling machine, 1 high-speed planer, 1 vertical milling machine, 2 automatic lathes, 3 backing-off lathes, and 1 slotting bench (Stossbank).
20. Shop equipped with 1 planing machine, 3 drilling machines, 1 horizontal milling machine, 1 high-speed planer, 1 vertical milling machine, and 11 profiling lathes (Kopierdrehbaenke).
21. Ten marking plates (Anreissplatten).
22. Ten welding compartments (Schweisszellen).
23. Shop for thermal treatment.
24. Chrome-plating shop.
25. Secondary rooms (Nebenraeume).

25X1

Layout Sketch of the Main Mechanical Department No 1

Legend: See next page.



Legend:

1. Assembly Shop No 101.
2. Welding Shop No 32.
3. Welding Shop No 35.
4. Storage area for semi-finished material.
5. Straightening plates.
6. "Heller" metal saws.
7. Work benches.
8. Material depot.
9. Tool depot.
10. Twenty-five drilling machines.
11. One gear wheel milling machine.
12. One drilling machine.
13. One gear wheel planing machine.
14. Ten lathes.
15. Five milling machines.
16. Three planing machines.
17. One planing machine.
18. One slotting machine.
19. One twin high-speed planing machine.
20. One high-speed planing machine.
21. Spare part depot.
22. Two planing machines.
23. One planing machine.
24. Six boring mills.
25. Twenty-one drilling machines.
26. Six boring mills.
27. Technical control.
28. Six boring mills.
29. Ten milling machines.
30. Three lathes.

25X1

31. One lathe.

32. Two lathes.

33. Unidentified equipment.

34. Three boring-and-turning lathes.

35. Ten boring-and-turning lathes.

36. Two gear wheel milling machines.

37. Fifty lathes.

38. Grinding machines.

39. Forty turret lathes.

40. Forty boring-and-turning lathes.

41. Twelve milling machines.

42. Three grinding machines.

43. Two keyway milling machines. (Keilnuten-Fraesmaschinen).

44. One high-speed planing machine.

45. One slotting machine.

46. One drilling machine.

47. Six milling machines.

48. Six high-speed planing machines.

49. Six boring mills.

50. Eighteen gear wheel milling machines.

51. Three gear wheel planing machines.

52. Two gear wheel milling machines.

53. Four " " " " .

54. One 50-ton lifting crane.

55. Eleven gear wheel milling machines.

56. Test stand for gear wheels.

57. One keyway milling machine.

58. One milling machine.

59. One drilling machine.

60. Fourteen grinding machines.

61. Six milling machines.

62. Six high-speed planing machines.

63. Fifteen lathes.

64. Eight drilling machines for deep drilling (Tiefenausbohrungen).

65. Twelve turret lathes.

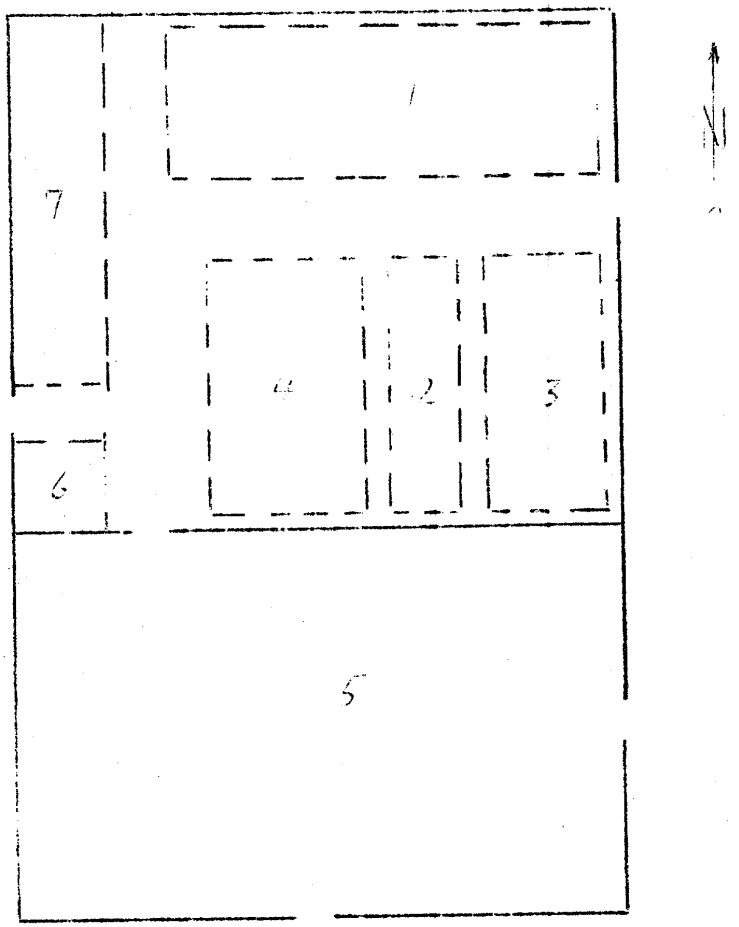
66. Two milling machines.

67. " " "

68. " " "

69. One 75-ton lifting crane.

Layout Sketch of Machine Shop No 76 and the Garage



Legend:

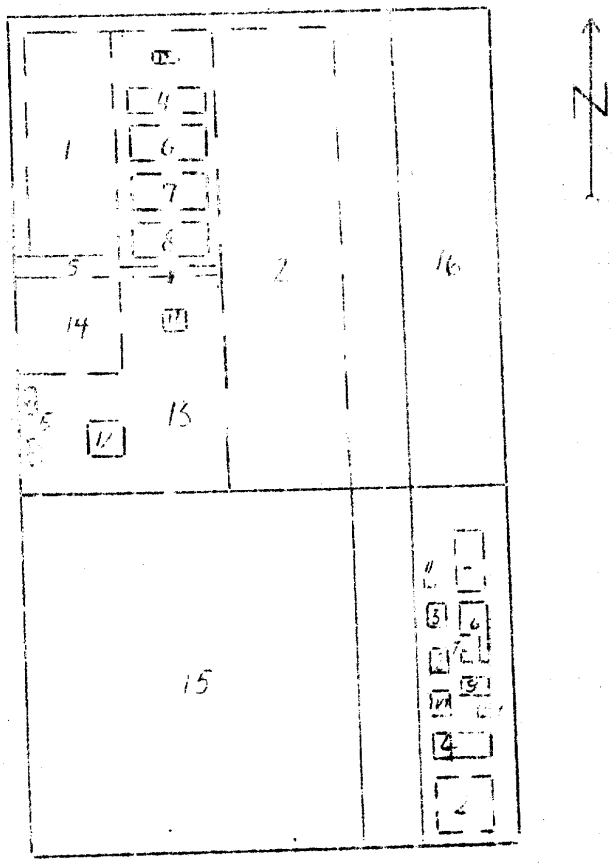
1. Fifty-two lathes.
2. Ten threading machines.
3. Twenty-eight turret lathes.
4. Twenty-four lead spindle lathes (Leitspindel-Drehbaenke).
5. Garage.
6. Technical control.
7. Offices.

Scale 1:1,000
0 10 20 30 40 m

25X1

Layout Sketch of the Mechanical Repair Shop

Legend: See next page.



Scale 1:5,000

0 5 10 15 20 (m)

CONFIDENTIAL

25X1

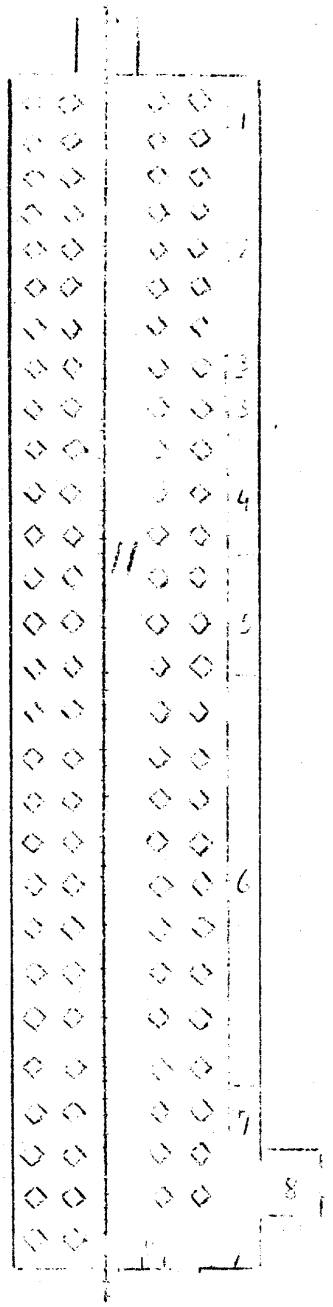
Legend:

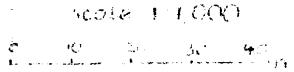
1. Twenty lathes.
2. Forty-eight lathes.
3. Three grinding machines.
4. Four boring mills.
5. Four drilling machines.
6. Seven milling machines.
7. Four gear milling machines.
8. Two turning-and-boring lathes.
9. Four planing machines.
10. One slotting machine.
11. Five grinding benches (Schmirgelbaenke).
12. Three straightening plates (Richtplatten).
13. Fitter's benches (Schlosserbaenke).
14. Test stand for machine tools.
15. Electric repair shop.
16. Technical control.

25X1

Layout Sketch of the Northern Section of the Metal Construction Department

Legend: See next page.

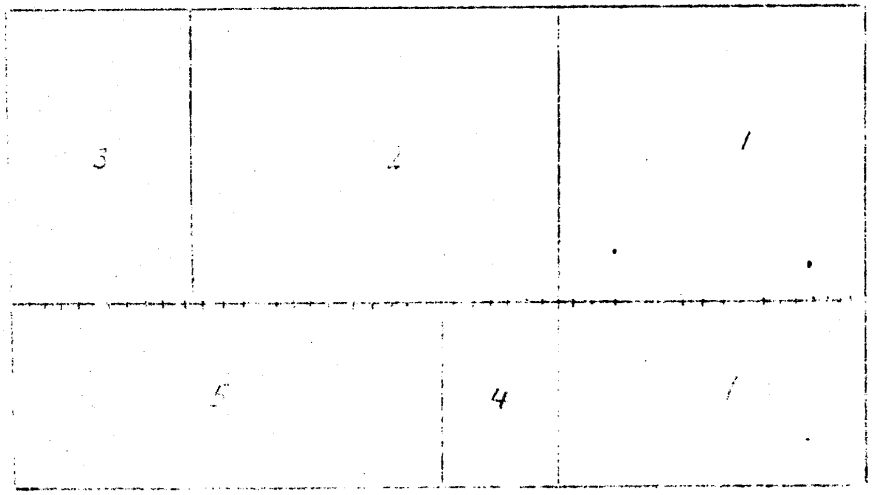




Legend:

1. Office for work distribution (Arbeitsverteilung).
2. Warehouse for completed spare parts.
3. Secondary rooms.
4. Office.
5. Spare parts depot.
6. " " "
7. Fuel and lubricants warehouse.
8. Shop where component parts were cleaned.
9. Office.
10. Water taps.
11. Main shop. Diamonds indicate work stations.

Layout Sketch of the Southern Section of the Metal Construction Department (Cutting of Armor Plates)



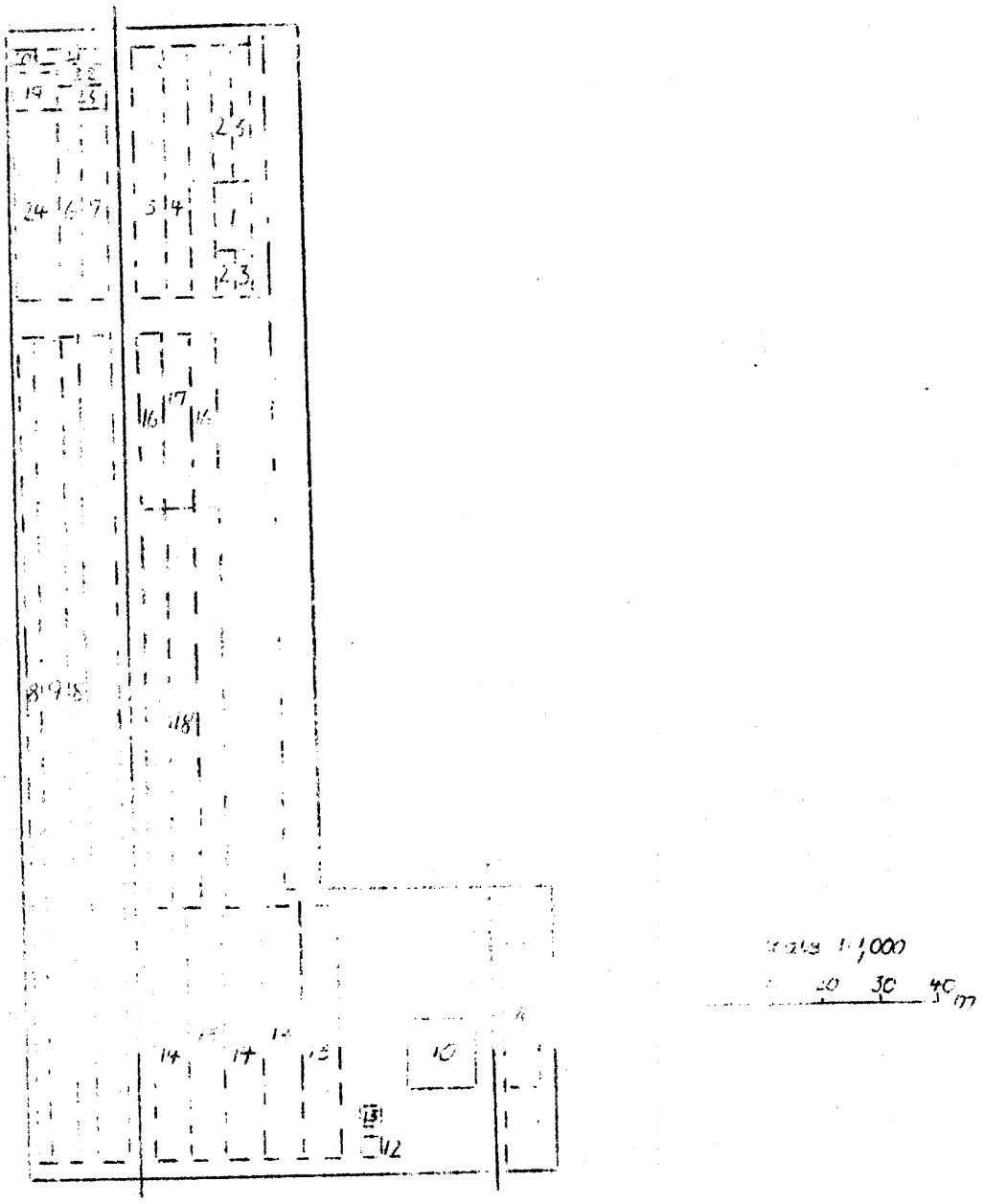
Legend:

1. Storage area for armor plates and department where plates are marked.
2. Department for cutting armor plates.
3. Department for automatic cutting of plates.
4. Secondary workshop.
5. Department for welding of small parts for tanks.

25X1

Layout Sketch of the Forge and Pressing Shop

Legend: See next page.

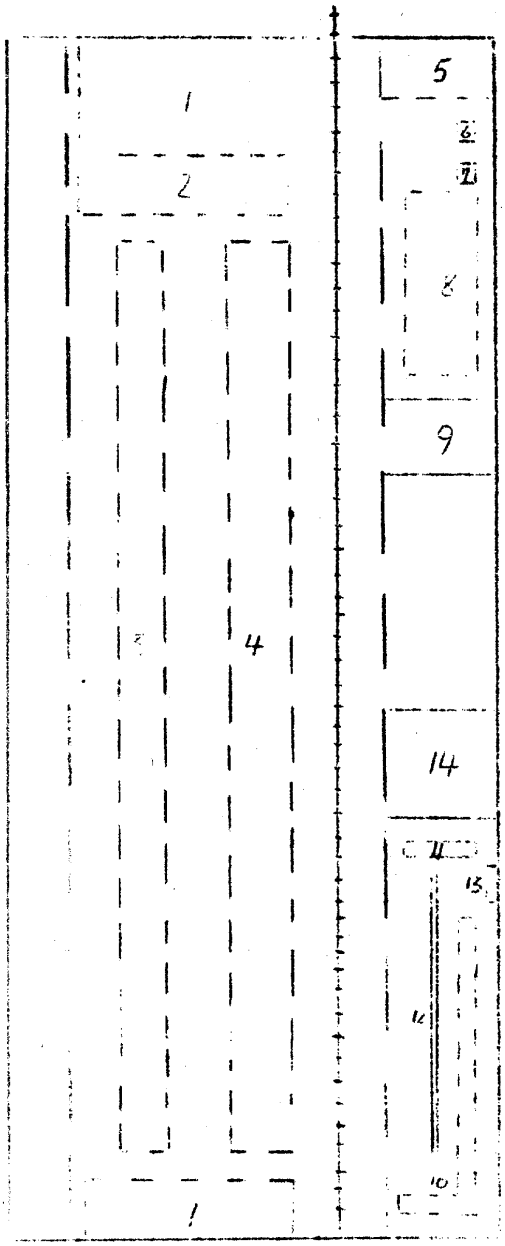


Legend:

1. Electric workshop.
2. Twelve steam hammers.
3. Six annealing furnaces, 1.5 x 1 meters each.
4. Ten steam hammers.
5. Five annealing furnaces, 5 x 2.5 meters each.
6. Twelve steam hammers.
7. Six annealing furnaces, 3 x 1.5 meters each.
8. Forty steam hammers.
9. Twenty annealing furnaces, 4 x 2 meters each.
10. One hydraulic press, 10,000 tons pressure.
11. Two annealing furnaces, 12 x 6 meters each.
12. Control stand for the 10,000-ton press.
13. 10,000-ton press installation.
14. Eighteen hydraulic presses, 3,000 tons each.
15. Six annealing furnaces, 3 x 4 meters each.
16. Twelve hydraulic presses, 1,000 tons each.
17. Six annealing furnaces, 6 x 3 meters each.
18. Raw meterials depot.
19. Fitting shop.
20. Two drilling machines.
21. Four high-speed planers.
22. Four vertical milling machines.
23. Two lathes.
24. Tool depot.

Layout Sketch of the Hardening Shop

Legend: See next page.



Scale 1:500

0 5 10 15 20 m

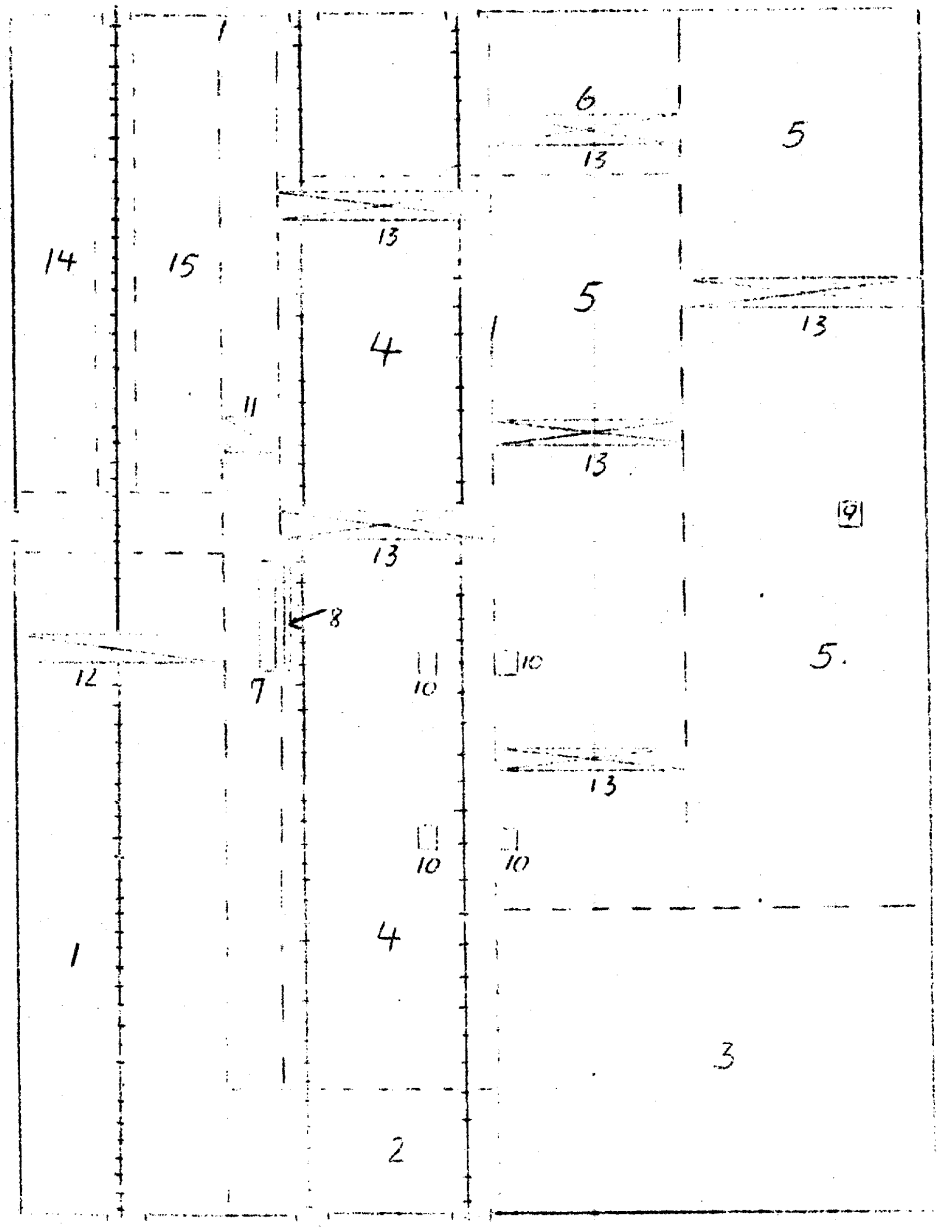
25X1

Legend:

1. Depot.
2. Depot of the technical control department.
3. Ten gas-fired annealing furnaces.
4. Five hardening baths.
5. Two forge fires.
6. Two salt baths.
7. T[illegible] l[illegible] baths.
8. Four electric annealing furnaces.
9. Technical control department of the tool shop.
10. Six lathes.
11. One lathe.
12. Chucking device (Spannvorrichtung).
13. Electric installation for the annealing furnaces.
14. Technical control of the spring department.

Layout Sketch of the Steel Foundry

Legend: See next page.



scale 1:1,000

0 10 20 30 40

Legend:

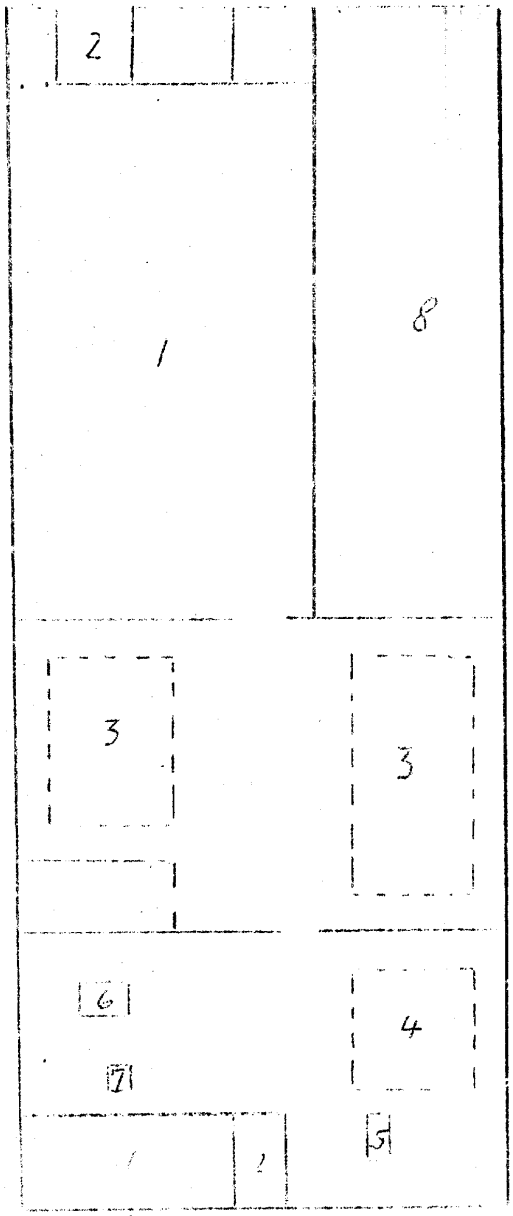
1. Mixing room (Moellerungshof).
2. Molding sand depot.
3. Workshop for the preparation of molding sand, equipped with a vertical drying kiln, a magnetic separator, a centrifugal mill (Schleudermuehle), and an edge-runner (Kollergang).
4. Section for large castings.
5. Section for medium and small castings.
6. Foundry cleaning shop. Its equipment included two sandblasting machines and pneumatic rams.
7. Three open-hearth furnaces.
8. Tapping gutter (Abstichkanal).
9. One electric smelting furnace.
10. Drying installations, equipped with four drying kilns for molds and cores.
11. Charging crane.
12. Magnetic lifting crane.
13. Six traveling cranes of 5 tons, 15 tons, 25 tons, 35 tons, 50 tons and 75 tons capacity.
14. Warehouse.
15. Offices.

Legend:

1. Molding sand depot.
2. Workshop for the preparation of molding sand equipped with one drying kiln, a magnetic separator, a centrifugal mill, and an edge-runner (Kollergang).
3. Nine drying kilns for molds and cores.
4. Four cupola furnaces.
5. Molding shop.
6. Foundry cleaning shop equipped with two cleaning drums.
7. Sand blasting room with blower.
8. One copper smelting furnace.
9. Two crucible furnaces.
10. Section for centrifugal castings (Schleuderguss) with ten fixtures (Vorrichtungen).

Layout Sketch of the Machine Shop for the Construction of Gear Boxes

Legend: See next page.



25X1

Legend:

1. Work stations for fitters.
2. Technical control.
3. Ten baths for the thermal treatment of parts.
4. Four milling machines.
5. One boring mill.
6. One milling machine.
7. One radial drilling machine.
8. Depot for finished and semi-finished products.