INFORMATION REPORT INFORMA

CENTRAL INTELLIGENCE AGENCY

50X1-HUM

S-E-C-R-E-T

50X1-HUM

COUNTRY USSR (Belorussian SSR)

REPORT

SUBJECT Town Plan Information on Brest, Kurenets, and Pruzhany

DATE DISTR. 7 May 1962

NO. PAGES 1

REFERENCES RD

DATE OF INFO.

PLACE & DATE ACQ.

50X1-HUM
50X1-HUM

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

Attachment 1: Brest town information (12-page attachment).

describes industrial installations, government buildings, the public transport system, power plants, railroad stations, and military installations. Construction was begun in 1957 of a military plant seven kilometers from Brest, near the civil airport. The plant was still under construction in 1959. When completed, the plant was to employ about 3,000 workers. In a listing of government offices, PVO Headquarters as located on ulitsa Karla Marksa.

50X1-HUM
50X1-HUM

Attachment 2: Kurenets town information (3-page attachment with sketch).

A brief run-down is given on civil installations in Kurenets and a sketch of the town proper locates eleven such installations: sawmill, porcelain factory, mechanical bakery, flour mill, seed station, hospital, school, RR station, town council, post office, cattle market, and a cinema.

50X1-HUM

50X1-HUM

Attachment 3: Pruzhany town information (3-page attachment).

Streets are listed on which local Air Force units are located and two airfields are mentioned. One airfield about three kilometers northeast of Pruzhany was referred to as Kuplinskiy and the other, about three kilometers west, was called Zasimovitskiy (Zasimovichi). Pruzhany had no large industrial enterprises.

50X1-HUM

5
4
3
2
1

S-E-C-R-E-T

STATE	X	ARMY	X	NAVY	X	AIR	X	NSA	X	OCR	X	DIA	X	NIC	X

(Note: Washington distribution indicated by "X"; Field distribution by "#".)

INFORMATION REPORT INFORMATION REPORT

In 1958, the city of Brest in the Belorussian SSR had a population of 96,000, of whom (according to figures quoted at town council sessions) 12,000 to 13,000 were soldiers and officers of the Brest garrison. Of the civilian population about 70 percent were Belorussians, 25 percent Russians, and the rest Ukrainians and other minorities.

Industry

2. Although Brest had no large industry, it had many small factories and cooperatives which were subordinate to the Local Industry Directorate and which employed a maximum of 150 workers. Among the few larger plants were three subordinate to the Belorussian

Sovnarkhoz, which was housed in the seven-story Government Building (Dom Pravitelstva) on Sovetskaya Street in Minsk. These plants were:

a. The electro-mechanical plant, established after World War II on Ordzhenikidze Street, 200 to 300 meters from the railroad passenger station, on the site of a tobacco factory which was destroyed during the war. The plant employed 200 to 250 people in two shifts and was engaged primarily in armature winding for transformers and electrical appliances. In early 1959, it began the production of gas stoves. The plant consisted of four single-story buildings, three of which served as production departments and the fourth as stores and administrative offices. According to the plant director, another building was to be added for the expansion of gas stove production.

b. The alcohol distillery at 2, Sovetskaya Street, at the corner of Ordzhenikidze Street, near the electro-mechanical plant. The distillery was damaged during World War II but was reconstructed. It employed about 100 workers in two shifts. The main building was a two-story U-shaped structure. A spur from the main railroad passenger station ran to the distillery and continued to the electro-mechanical plant and the Gotrop fuel warehouses, where it terminated.

c. The largest brick factory of Brest, about six kilometers from the city, close to the large southern military camp (Yuzhniy Gorodok). The factory employed 200 to 250 people and had an

output of 3,000,000 bricks a year. (There were other small brick factories in town which belonged to the Local Industry Directorate.)

3. All small enterprises of the town belonged to the Gorpromkombinat, which was subordinate to the local industry department of the Oblispolkom. The combine included carpentry shops, tailors shops, clothing and tricot goods factories, and leather goods factories.

4. Cooperatives (artely) of Brest and the region were subordinate to the Oblpromsovet, a regional body located at 64, Lenina Street. The Oblpromsovet was subordinate not to the local authorities but to the Bel-Prom-Sovet (Industrial Council for Belorussia) in Minsk.

Public Transportation

5. Public transporation in Brest was by means of buses and taxis only. There were about 20 bus routes on which approximately 60 buses were operated. a large number of these buses was often not running because of either being under repair or lacking tires. The town received about four or five new buses a year, but the number was not sufficient for local requirements. Buses were supposed to run at 15-minute intervals, but in practice it was necessary to wait at least half an hour during rush hours.

50X1-HUM

6. Brest had three motor transportation companies (avtotransportniye kontory), two of which were subordinate to the Ministry of Motor Transportation (Ministerstvo Avtotransporta) in Minsk, and the third to the Belorussian Ministry of Trade. Offices of the first two companies were located

close to each other at the end of Moskovskaya Street (formerly Jagielonska Street?) in the Tryshyn Quarter. One company had about 400 taxis and 60 to 70 buses, providing public transportation in the town and region, and the other company had 200 freight trucks. The Ministry of Trade company, which had 50 to 60 trucks, was on Kashtanova Street, not far from the town's second military camp, the Northern Cantonment (Severniy Gorodok).

Power Stations

7. Brest had two power stations, both pre-World War II thermal installations:

a. The main power station (Gorodskaya Elektrostantskya) was near the Mukhovets River, within the city limits. The station was renovated and expanded in 1957 and included a new building for the installation of additional equipment. This project cost 6,000,000 rubles and during construction was supplied with current by a mobile power station (elektropoyezd) which was brought from Minsk and was returned after completion of the construction.

b. The railroad power station (zheleznodorozhnaya elektrostantsiya) was near the main passenger station. This plant, which was connected to the main power station, supplied current to the main passenger station and the five freight stations.

In 1956, construction was begun of a large new power station in the vicinity of Bereza Kartuskaya (Berëza) [redacted]. The

station, which was being built by the Minsk Sovnarkhoz, was still under construction in 1959 and was to be completed by 1961. It was said that this plant would supply electricity to Minsk and the surrounding area.

Railroad Stations

8. The Brest Severnaya station was the main freight railroad station which handled transfer of goods, chiefly heavy cargoes, from Poland to the USSR. The station building was rather small, but it had large warehouses, numerous cranes, and a long scaffold bridge for coal-conveying. The Brest-Mukhovets and Brest-Bug stations also handled freight transportation from Poland to the USSR. All three stations were constructed after World War II and were located close to each other. Other freight stations were the Brest-Vostochnaya and the Brest-Poleskaya. It was said that 1,000 railroad cars per day transited the five freight stations.

9. In 1957, construction was completed of three buildings at the main passenger station, the Brest Tsentralnaya. The buildings were luxurious three-story structures, considered among the finest of their kind in the USSR. One of them served local passengers; another, on the third floor of which was a hotel, was reserved for foreign tourists; and the third consisted of offices. A tunnel led to the platforms from a point about halfway between the first two buildings. Constructions of the buildings and the tunnel cost 12,000,000 rubles.

[redacted] 50X1-HUM

Military Installations

10. Construction was begun in 1957 of a [redacted] military plant [redacted] seven kilometers from Brest, near 50X1-HUM the civilian airport of the city. Upon its completion [redacted] the plant was to employ about 3000 50X1-HUM workers.

11. The Southern military camp, the larger of the two military camps in Brest, started about four kilometers from the city, on the left side of the asphalt road to Kovel' /N51-13, E24-43/. The camp dated back to Polish rule but had been expanded by the Soviets. It consisted of several large three and four-story barracks with red tile roofs, where possibly many regiments of armored artillery and other troops were billeted, totaling some 8000 soldiers. The commander of the camp was a Major-General.

12. The Northern Military Camp, also a pre-war camp, housed about 4000 soldiers and was located 200 to 300 meters northwest of the main railroad passenger station. This camp commander was also a Major-General.

13. The Brest garrison headquarters was located on a small side street off Lenina Street. In addition to the garrison commander (a Lieutenant-General) and the two camp commanders, seven other generals were stationed in Brest.

[redacted] 50X1-HUM

14. There were no air force units stationed in Brest or its vicinity. The closest military airfield, in Pruzhany /N52-33, E24-287, was said to be a large installation with possibly many air force units.

15. Brest had a civilian airfield, situated not more than one kilometer northwest of the main railroad passenger station. The airfield had no paved runways, only packed soil and turf surface. No military aircraft had been seen on this field.

Offices and Institutions

16. There were the following offices and institutions in Brest:

a. Oblispolkom, in a four-story building at 7 Lenina Street.

b. Obkompartii, in a four-story building at 9 Lenina Street.

c. Gorkompartii, in a three-story building at 18 Pushkina Street.

d. Gorispolkom, in a four-story building at 49 Sovetskaya Street.

e. Regional M.V.D., in a four-story building on Moskovskaya Street.

f. Regional K.G.B. offices, in a three-story building at 3 Lenina Street.

g. Town police directorate, in a two-story building at 38 Komsomolska Street.

h. State Bank regional branch, in a three-story building at 5 Lenina Street.

i. Central post office, telephone exchange, and telegraph office, in a four-story building on Moskovskaya Street.

j. Teachers' high school, at the end of Lenina Street.

k. Regional hospital, in a large four or five-story building at 11 or 13 Lenina Street.

l. Hospital for contagious diseases, in single-story buildings [redacted] on Moskovskaya Street.

m. Oblovoenkomat, on Lenina Street.

n. Armoured Artillery Defense Headquarters (Shtab P.V.O.), on Karla Marksa Street.

o. Garrison Hospital, on Pushkina Street.

Construction

17. Construction work in the city was hardly noticeable until 1956 or 1957, when it was started on a large scale. Mainly apartment houses of at least four stories were being built, the ground floors being reserved for shops, workshops, and offices. New buildings were constructed mostly on Karla Marksa, Pushkina, Lenina, and Moskovskaya Streets. The general building program for 1957 envisaged an investment of 100,000,000 rubles, but building was executed only to about 70 percent of the planned sum. The building programs of 1956, 1958, and 1959 were also only partly carried out. For example, the construction of a four-story department store at 14, Sovetskaya Street was completed at a cost of 4,000,000 rubles in 1958, instead of 1956, as planned. A luxurious restaurant, the Brest, was completed in 1958 at the corner of Pushkina and Sovetskaya Streets. The construction, which cost 2.5 million rubles, had been planned in the program of 1957. A

50X1-HUM

three-story hotel, which also formed part of the 1957 construction plan, was completed in 1958, at the corner of Lenina and Ordzhenikidze Streets, at a cost of 1,200,000 rubles. The 1956 construction program included a 23 million-ruble carpet factory in back of the department store at 14, Sovetskaya Street. [redacted] however, only the frames of its two three-story buildings were ready. 50X1-HUM

18. In spite of the construction work in progress [redacted] a shortage of apartments was still badly felt. [redacted] 50X1-HUM 8000 people were still critically in need of housing. By Soviet regulations, each person was entitled to living space of nine square meters (except in Moscow and Leningrad, where the norm was seven square meters). Calculations showed that in Brest the index figure did not equal more than four square meters per person. The following example illustrated the seriousness of housing conditions in the city: five Belorussian families which had emigrated [redacted] 50X1-HUM in 1934 or 1935 returned to Brest in 1957, following an extensive repatriation propaganda campaign. When the families arrived in town, no apartments could be found for them. They were housed for some time in a hotel, which they were later asked to leave, and they were dispersed as lodgers among various households, with the result that members of one family were separated.

19. About 70 percent of the buildings in Brest were connected to the central water supply system, which provided drinking water from the

[redacted] 50X1-HUM

50X1-HUM

Mukhovets River; the main pumping station was on the river bank, not far from the main power station. [redacted] the remainder of the buildings still received water from street pumps and open wells. The sewerage system, which existed only in the central part of the city, was pre-World War II and had not been expanded. 50X1-HUM

20. A gas pipe was being laid in 1958 between Riga and Minsk, via Bereza-Kartuskaya. The Brest town council applied to the Belorussian Party Central Committee for inclusion in this network. The CC approved the application, and in 1960 Brest was to have received gas by a pipeline from Bereza-Kartuskaya.

21. [redacted] the following personalities in Brest: 50X1-HUM

a. (fnu) Avramenko was the director-designate of the numbered military plant and was supervising the construction work, still in progress [redacted] 50X1-HUM

b. Stepan Nikolayevich Bachin was director of the regional Oblpromsovet, at 64, Lenina Street.

c. Viktor Ivanovich Bichkovskiy, a Russian transportation engineer, had been second secretary of the town Party Committee since 1951.

[redacted] 50X1-HUM

[redacted] 50X1-HUM

e. Vasily Nikolayevich Lutskin, a Belorussian, was appointed chairman of the Brest Oblispolkom in 1959. Prior to that time, he served as second secretary of the regional Party Committee in Brest,

f. Roman Naumovich Machulskiy was chairman of the Oblispolkom from 1953 to 1959, when he was ousted from his post and transferred to Minsk.

A Belorussian,

g. (fnu) Masherov had been first secretary of the regional Party Committee in Brest since 1954, prior to which time he worked at the Central Committee of the Belorussian Party. A Belorussian,

h. Gavril Nikolayevich Oleynik, a Belorussian, had been first secretary of the town Party Committee since 1957. He had previously been first secretary of the district Party Committee of Zhabinka [N52-12, E24-01];

i. Colonel Ivan Ivanovich Yanushka, a Belorussian from Minsk, had been commander of the Brest regional police since 1953.

j. Sergey Sergeyevich Zhukov had been chairman of the Brest town council since 1956. He had previously been first secretary

50X1-HUM

of the town Party Committee in Baranovichi [N53-08, E26-02].

A Belorussian,

50X1-HUM

50X1-HUM

50X1-HUM

1. In 1959, the town of Kurenets /N54-33, E26-57/ in Vileyka district had a population of some 3500, about 80 percent of whom were Belorussians. The town's streets were of unfinished stone and most of the buildings were made of wood, except a few made of stone which housed offices and official institutions. Some of the town's inhabitants were members of the local Put Lenina kolkhoz. The local police station was manned by one militiaman.

2. The principal buildings in Kurenets were a sawmill (lesopilny zavod) with some 200 workers, a porcelain factory (kafelny zavod) with about 100 employees, a mechanical bakery (khlebozavod) with

50X1-HUM

about 50 workers, a water-powered flour mill, a seed distribution station and experimental laboratory, a 10-grade school, a hospital with approximately 150 beds, a railway station with five sets of tracks and a station which was constructed in 1951 to replace the one destroyed in World War II, the office of the town council (sel-sovet), a post office, a cattle market (zagot skot), and the Komsomolets cinema.

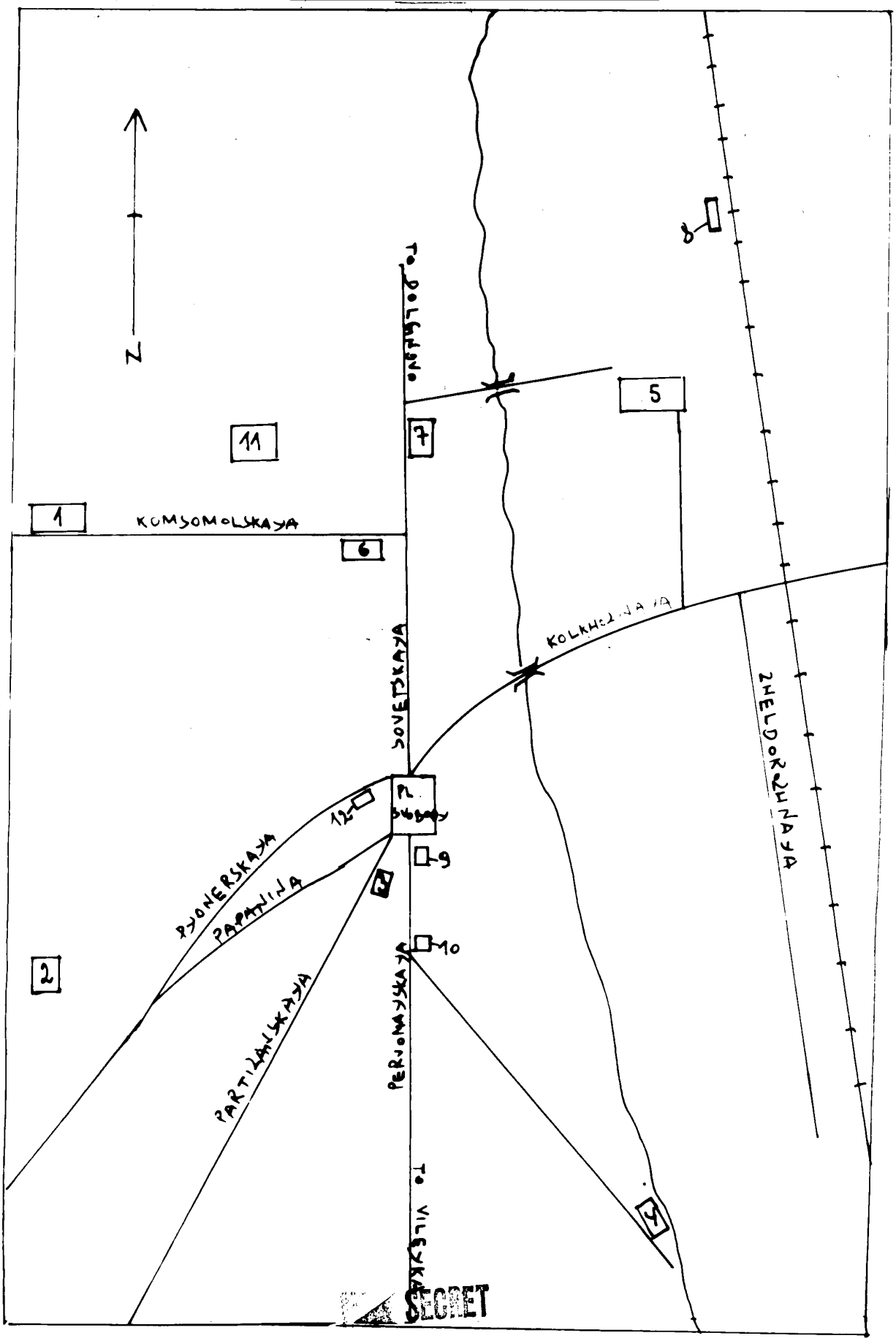
3. Attached is a sketch, with legend, of Kurenēts and its main buildings.

Legend

1. Sawmill.
2. Porcelain factory.
3. Mechanical bakery.
4. Flour mill.
5. Seed distribution station.
6. Hospital.
7. School.
8. Railway station.
9. Town council office.
10. Post office.
11. Cattle market.
12. Komsomolets Cinema.

SECRET

50X1-HUM



50X1-HUM

SECRET

1. Pruzhany /N 52-33, E 24-28/, a district center in Brest Oblast, had a population of 13,000 to 15,000 [redacted]. Most of the town was destroyed during World War II and was rebuilt very slowly. Most of the buildings were made of wood, and it was only in 1955 that the first brick buildings were erected. The new, two or three-story buildings were constructed primarily for the use of the air force unit which was stationed in Pruzhany.

2. The streets were entirely unsurfaced except for the main thoroughfares, which were paved with stone. There were no central sewage or water supply systems nor any urban bus lines, with the exception of one which provided transportation every half-hour to Oranchitsy railway station /N 52-28, E 24-32/.

3. The highest-ranking military officer in Pruzhany was an air force colonel. The local air force unit was stationed at the following locations:

SECRET

[redacted]

a two-story brick building which apparently served as barracks, on ul. Kobrinskaya at the corner of ul. Brestkaya; a two-story brick building which contained the units's headquarters, on ul. Pochtovaya opposite the Belorus cinema; several wooden cabins on ul. Pochtovaya, near the garrison's infirmary; and three two-story brick buildings on ul. Dombrovskaya, which housed officers' families.

4. The unit's airfield was located about three kilometers northeast of Pruzhany, near the village of Kuplin. It was called the Kuplinski Aerodrom by the local population, to distinguish it from the so-called Zasimovitski Aerodrom which was two or three kilometers west of Pruzhany, near the village of Zasimovichi, where the unit serving the Kuplin airfield was stationed.

5. Pruzhany had no large industrial enterprises. Its main employers were the following:

a. The municipal industrial combine (gor. prom. kombinat), which employed about 300 workers and included a flour mill, a sawmill, a mechanical carpentry shop, a metalwork shop, and a workshop for production of felt overshoes.

b. Artels for shoe and clothing manufacture and for the barbering trade, which were located in a three-story building constructed after World War II on ul. Dombrovskaya at the corner of ul. Kobrinskaya, and which employed about 150 workers.

c. An abattoir and sausage factory.

d. A dairy on ul. Sovetskaya which employed about 50 workers.

50X1-HUM

6. Pruzhany's electric power station, which began operation after World War II, supplied current to the town and the airfields nearby. It was housed in a former church on ul. Brestkaya.

7. The town hospital (gor. bolnitsa), with 150 to 200 beds, was in an old building on ul. Sovetskaya.

8. The town had two 10-grade schools and an agricultural tekhnikum which offered three-year courses.

50X1-HUM

9. Public officers, such as the militia, the District Party Committee, and the District Executive Committee, were located on ul. Sovetskaya, the main street of Pruzhany.

50X1-HUM

10. the following personalities in Pruzhany:

a. Lt. Colonel Mikhail Chernodub, was attached to the air force unit stationed in town.

50X1-HUM
50X1-HUM

c. Lt. Colonel Snezhko (fnu), was chief medical officer of the air force unit.

d. Verkhovets (fnu), born in the village of Khorova near Pruzhany, had been a District Court judge for many years. A Communist Party member

50X1-HUM

50X1-HUM

CENTRAL INTELLIGENCE AGENCY

C-O-N-F-I-D-E-N-T-I-A-L

COUNTRY Hungary

REPORT

50X1-HUM

SUBJECT Brochure Describing a Hungarian Electrode Regulator for Electric Arc Furnaces

DATE DISTR. 20 April 1962

NO. PAGES 1

50X1-HUM

REFERENCES

DATE OF INFO.

PLACE & DATE ACQ.

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISA

Attached is a German-language brochure of the Hungarian foreign trade agency NIKEX describing an electronic-hydraulic electrode regulator for electric arc furnaces.

50X1-HUM

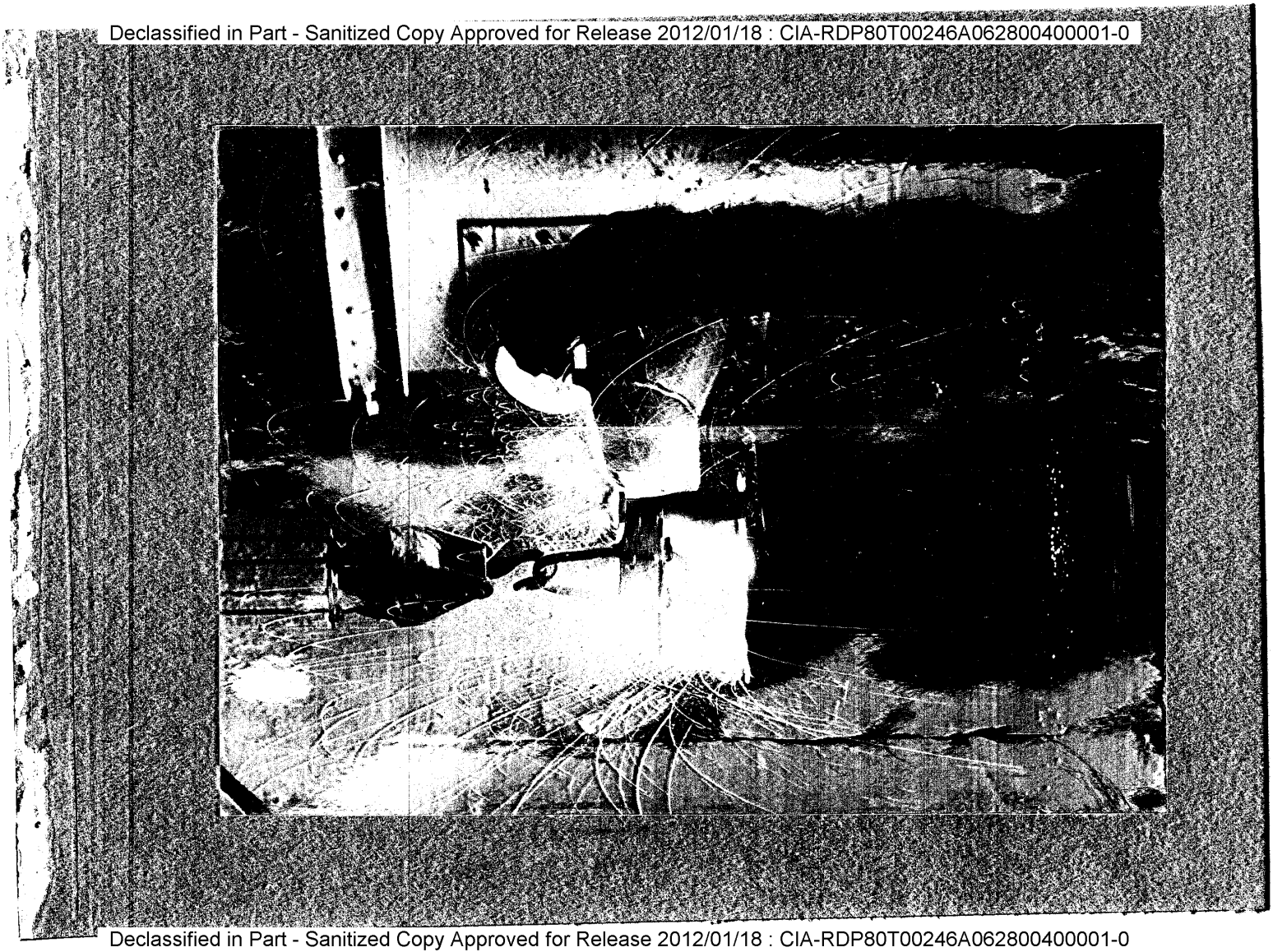
5 4 3 2 1 C-O-N-F-I-D-E-N-T-I-A-L 5 4 3 2 1

STATE		ARMY		NAVY		AIR		NSA		FBI					

(Washington distribution indicated by "X"; Field distribution by "#".)

ELEKTRONISCH - HYDRAULISCHER

ELEKTRODENREGLER FÜR LICHTBOGENÖFEN



NIKEX

UNGARISCHES AUSSENHANDELSUNTERNEHMEN
FÜR DIE ERZEUGNISSE DER SCHWERINDUSTRIE

Budapest V., Dorottya-u.6.
Postfach: 51 Budapest 25.
Telegramme : Nikexport .

Elektronisch - hydraulischer Elektrodenregler für Lichtbogenöfen

Es wird eine elektronische Elektroden-Regeleinrichtung für Lichtbogenöfen mit hydraulischer Elektrodenverstellung beschrieben.

Während des ganzen Schmelzvorganges ändert sich im Lichtbogenofen die Lage des festen, später flüssigen Einsatzes und damit auch die Lichtbogenlänge fortwährend und zwar sehr schnell. Infolge dieser Bewegungen ändern sich die drei Phasenströme und die Leistungsaufnahme des Ofens gleichzeitig mit derselben Geschwindigkeit.

Die Aufgabe des Elektrodenreglers ist die möglichst schnelle Wiederherstellung der richtigen Lichtbogenlänge durch Verstellung der Elektroden im entsprechenden Sinne und Masse, um eine gleichmässige, für den Ofenbetrieb optimale Leistungsaufnahme zu sichern und die auftretenden Kurzschlüsse zu beseitigen. Eine wirk-

same Ausnützung jeder Sekunde der Betriebszeit und jeder Kilowattstunde der verbrauchten Energie ist nur auf diesem Wege möglich.

Die richtige Elektrodenregelung übt eine äusserst wichtige Wirkung auf den Ofenbetrieb in wirtschaftlicher und technischer Hinsicht aus. Die Regelung beeinflusst die Schmelzzeit und den Energieverbrauch, also auch die Produktivität des Ofens in entscheidender Weise, verhütet die Störungen im elektrischen Netz und ermöglicht damit eine erhöhte Betriebssicherheit.

Die wichtigste Eigenschaft des guten Elektrodenreglers ist ein schnelles, jedoch schwingungsfreies Ansprechen. Die meist aus Geschäftsgründen verkündete Auffassung, dass es genüge die Elektroden langsam zu verstellen und den elektrischen Vorgang auf einen gewissen Leistungsmittelwert zu regeln, kann heutzutage schon als veraltet betrachtet werden. Dieses Prinzip ist offenbar unrichtig, denn es ist illusorisch einen als optimal gedachten Leistungsmittelwert zu sichern, wenn die Momentanwerte der Leistung nicht im geringsten optimal sind.

Der zu beschreibende Regler erfüllt die obigen

Bedingungen durch Verwendung der modernen regelungstechnischen Mittel im höchsten Masse. Der Regler spricht auf die Abweichung der Lichtbogenlänge vom eingestellten Sollwert an, übt eine vom Sinne und Grösse der Abweichung abhängige Steuerwirkung auf elektronischem Wege aus und veranlasst elektrohydraulisch die nötige Verstellung der Elektrode/n/.

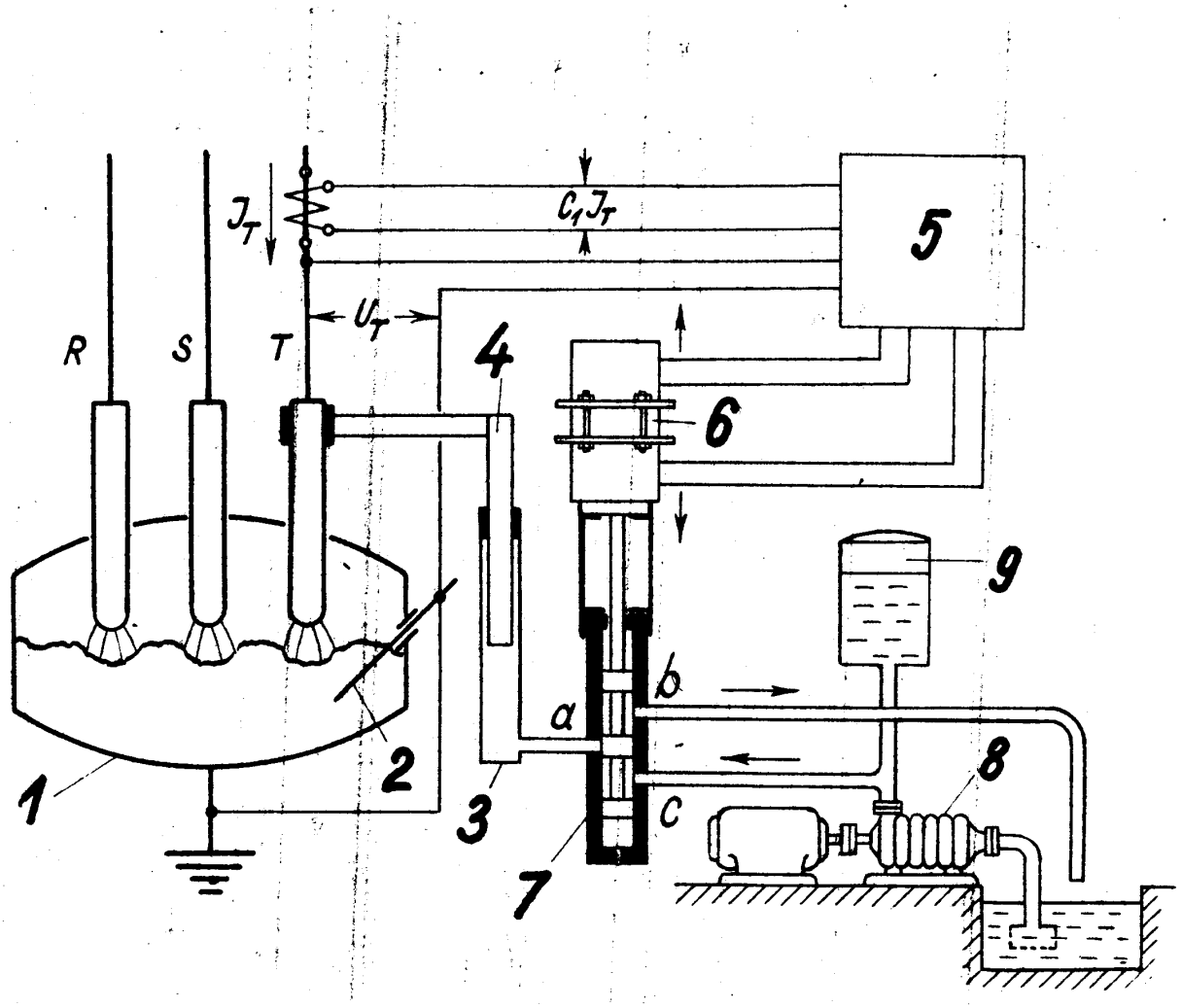
Es ist eine bekannte Tatsache, dass die Elektronik das schnellste elektrische Ansprechen und die schnellste Übertragung das hydraulische System aber die grösste Ausführungsgeschwindigkeit sichert. Der hydraulische Antrieb ist besonders vorteilhaft, wenn grosse Massen geradlinig unter häufigem Richtungswechsel an kurzen Strecken verstellt werden sollen. Die erwähnten Umstände kennzeichnen auch die Bewegung der Elektroden der Lichtbogenöfen.

Auch das Prinzip der Regelung ist das modernste nähmlich die proportionale Impedanzregelung. Das Kennzeichen der Impedanzregelung, im Gegensatz zur heutzutage schon veralteten Regelung auf konstante Stromstärke, ist ihre Eigenschaft, immer nur die Stellung jener Elektrode zu ändern, dessen Lichtbogenlänge infolge der

Betriebszustände von dem eingestellten Sollwert abweicht. Bei Regelung auf konstante Stromstärke ändert der Regler auch die Stellung der anderen zwei Elektroden und kann damit das schon erschütterte Gleichgewicht des Betriebes noch mehr stören. Der Impedanzregler taucht die Elektroden selbst bei Zündung des Lichtbogens nicht in den flüssigen Einsatz hinein, sondern lässt sie nur die Oberfläche berühren. Es ist eine besonders vorteilhafte Eigenschaft unseres Elektrodenreglers, dass er den Lichtbogen auf dem kalten Einsatz ausserordentlich leicht zündet. Diese Eigenschaft wird durch ein einfaches, nur zur Zeit der Lichtbogenzündung wirksames Element der Schaltung ohne bewegliche Teile gesichert. Dasselbe Element ermöglicht das selbsttätige Heben aller drei Elektroden bei einem Spannungsausfall oder Ausschaltung des Ofentransformators.

Den prinzipiellen Aufbau des elektronisch - hydraulischen Elektrodenreglers stellt Abbildung 1. dar. Zwischen dem Einsatz und den Elektroden der Transformatorphasen R,S,T, brennen im Ofen/1/ drei Lichtbögen. Die Strom - und Spannungsverhältnisse der Lichtbögen sind voneinander nicht unabhängig, weil das System keinen

Abb. 1.



Nulleiter hat.

Das Schema des Regelungssystemes wurde nur für eine Phase gezeichnet. Die Elemente /3/,/4/,/5/,/6/ und /7/ wiederholen sich bei jeder Phase.Die Elemente/5/ der drei Phasen und ein viertes, den anderen völlig gleiches Ersatzstück sind in einem gemeinsamen Geräteschrank untergebracht.

Die Bewegung der Elektroden und die Einstellung der Lichtbogenlänge erfolgt durch hydraulische Druckkolben /4/ die sich in den Druckzylindern /3/ bewegen.

Das aus der Pumpe /8/ und dem Windkessel /9/ bestehende hydraulische System dient zur Wasserversorgung unter annähernd konstantem Druck.

Die Bewegung der Elektroden wird durch das aus einem Betätigungsmagneten /6/ und einem Schieber /7/ bestehende elektrohydraulische Ventil gesteuert. Verstellt der Magnet den Schieber aus seiner gezeichneten Ruhelage nach oben,so verbindet er die Leitung a des Druckzylinders mit der Leitung c des Wasserversorgungssystemes. Das Wasser strömt in den Druckzylinder hinein und die Elektrode wird durch den Druckkolben gehoben solange bis das elektrohydraulische

Ventil in seine Ruhelage zurückgekehrt ist. Befindet sich der Schieber in seiner Ruhelage, so hat die Leitung a weder Zulauf noch Ablauf und die Elektrode bleibt unbeweglich. Verstellt die Zugstange des Magnets den Schieber nach unten, so verbindet er die Leitung a mit der Ablaufleitung des hydraulischen Systems. Demzufolge vermindert sich der Wasserdruck im Druckzylinder und die Elektroden fangen an sich durch ihr Eigengewicht zu senken. Das Senken der Elektroden wird durch das Zurückkehren des Ventils in seine Ruhelage beendet. Sowohl die Hebe- als auch die Senkgeschwindigkeit hängen davon ab, in welchem Masse das elektrohydraulische Ventil den Querschnitt der Leitung a öffnet, das heisst in welchem Masse der Betätigungsmagnet den Schieber aus seiner Ruhelage verstellt. In seinen verschiedenen Lagen verursacht der Schieber in der Leitung a eine verschiedene Drosselung. Wie es sich später herausstellen wird, wächst die Bewegungsgeschwindigkeit der Elektrode mit der Abweichung der Lichtbogenimpedanz vom Sollwert, die Regelung ist also proportional.

Der Betätigungsmagnet /6/ hat zwei Spulen. Unter der Wirkung der einen Spule bewegt sich die Zugstange des Magnets nach oben, unter der Wirkung der anderen nach unten. Eine starke Feder

sucht die Zugstange und den damit gekoppelten Schieber in die Ruhelage zurückzustellen. Der Magnet überwindet bei Verstellung der Zugstange und des Schiebers die Federkraft, ihre Verschiebung hängt also von der Stromstärke der entsprechenden Spule ab.

Die elektronischen Steuerorgane /5/ wirken in folgender Weise. Die Eingangsgrössen des Apparates sind: das vom Stromwandler erzeugte $C_1 I_T$ Stromsignal und die Spannung U_T zwischen der Phasenleitung und der geerdeten, in den Einsatz gesteckten Sonde. Ein elektronischer Verstärker verstärkt die Differenz $U_T - C_1 I_T$ der Eingangssignale und erregt mit der Ausgangsgrösse die eine oder andere Spule des Magnets in Abhängigkeit vom Vorzeichen dieser Differenz. Ist $U_T = C_1 I_T$, so wird die Differenz gleich Null, der Magnet wird also nicht erregt und der Schieber bleibt in seiner Ruhelage. Dabei bleibt auch die Elektrode unbeweglich. In diesem Zustand ist $U_T / I_T = C_1$, gleich derjenigen optimalen Impedanz die der Regler aufrechtzuerhalten sucht. Ist die Differenz $U_T - C_1 I_T$ positiv, ist also der Bogen zu lang, so erregt das elektronische Steuerorgan die Spule "Senken" des Magnets mit einem, der Differenz $U_T - C_1 I_T$ proportionalen Strom und die Elektrode

senkt sich, bis die optimale Lichtbogenimpedanz wiederhergestellt ist und das Ausgangssignal des elektronischen Steuerorganes wieder gleich Null wird. Ist die Differenz $U_T - C_1 I_T$ negativ, ist also der Lichtbogen zu kurz, so erregt das elektronische Steuerorgan die Spule "Heben" des Magnets und die Elektrode hebt sich bis zum Nullwerden der Differenz, also bis die Wiederherstellung der optimalen Lichtbogenimpedanz.

Die Ansprechgeschwindigkeit des Systems ist ausserordentlich gross. Obwohl der Betätigungsmagnet des elektrohydraulischen Ventils von robuster Ausführung ist, und eine grosse Kraft ausüben kann, wird das elektrohydraulische Ventil nach einer sprungweisen Abweichung der Lichtbogenimpedanz schon binnen 1,5-2 Perioden in seine, der Störungsintensität proportionale Endstellung in der nötigen Richtung verschoben und damit ist die Verstellung der Elektrode mit geeigneter Beschleunigung bereits begonnen. Mit ähnlicher Geschwindigkeit reagiert das System auch auf die Wiederherstellung der optimalen Lichtbogenimpedanz. Der Regler ist imstande Korrektionen rasch nacheinander in wechselnden Richtungen mit grosser Geschwindigkeit auszuführen, wenn z.B. wegen der Verschmutzung der Oberfläche des kalten Einsatzes die Zündung des Lichtbogens öfters nacheinander ver-

sucht werden soll. Eine ähnlich schnelle und sich schnell wiederholende Regelung kann mit motorischer Verstellung der Elektroden nicht verwirklicht werden, da die Schwungmasse des zu beschleunigenden Rotors das mehrfache der auf die Motorwelle reduzierten Schwungmasse der Elektroden ist. Diese reduzierte Masse wird im Falle des motorischen Antriebes durch ein Gegengewicht sogar noch verdoppelt.

Die Inbetriebsetzung und die Bedienung der Regeleinrichtung erfolgt in folgender Weise.

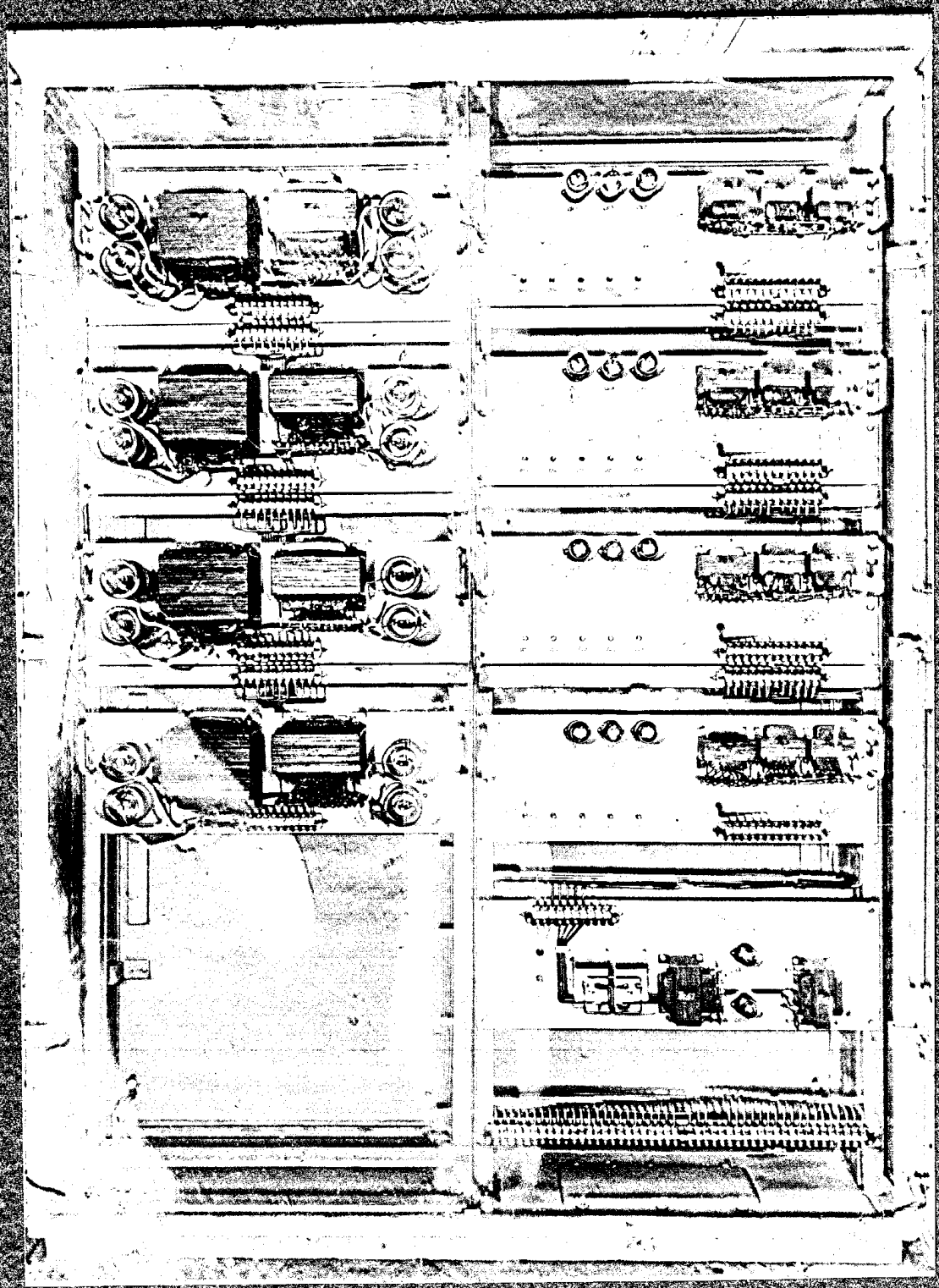
1./ Der Apparat wird durch einen Druckknopf eingeschaltet.

2./ Es wird mit einem dazu dienenden Schalter zwischen selbsttätiger Regelung oder Handsteuerung gewählt.

a./ Bei Handsteuerung können die Elektroden durch Druckknöpfe in beiden Richtungen verstellt werden.

b./ Wird der Wählschalter auf "Selbsttätige Regelung gestellt so heben sich sämtliche Elektroden in ihre höchste Lage und bleiben dort solange bis der Ofentransformator eingeschaltet wird. Wird dieser eingeschaltet, so senken sich die Elektroden, zünden

Abb. 2.



Declassified in Part - Sanitized Copy Approved for Release 2012/01/18 :
CIA-RDP80T00246A062800400001-0

die Lichtbögen und suchen ihre Länge unter der Wirkung der beschriebenen Regeleinrichtung selbsttätig auf dem eingestellten Sollwert zu halten.

Der Bedienende kann auch in den selbsttätigen Betrieb mit den Druckknöpfen der Handsteuerung eingreifen.

3./ Die Einstellung der Schmelzleistung/Der Bogenlänge/ erfolgt durch drei Stufenschalter des Apparates, die zu den Phasen R,S,T, gehören.

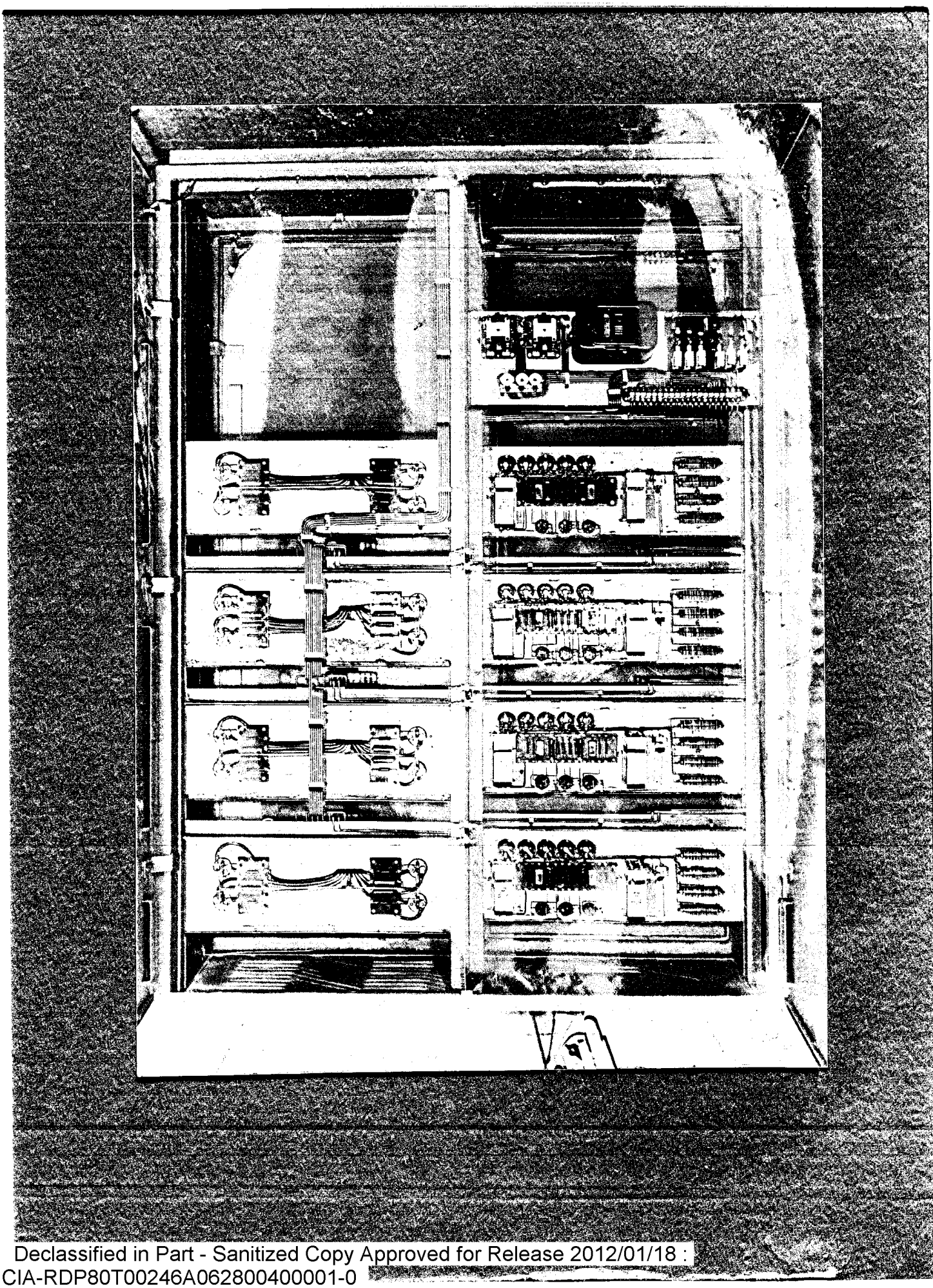
4./ Bei der Unterbrechung oder Beendigung des Schmelzbetriebes wird der im Punkt 2. erwähnte Schalter in seine dritte, "Sämtliche Elektroden Heben" Lage gestellt, worauf alle drei Elektroden gehoben werden.

Die obigen Bedienungselemente werden auf der Schalttafel des Ofens untergebracht.

Die beschriebene Regeleinrichtung besteht aus den folgenden Teilen.

1./ Elektronischer Steuerschrank /Abmessungen : 22oo x 1ᵍoo x 4oo S.Abb.2.u.3/.

Abb. 2.



Declassified in Part - Sanitized Copy Approved for Release 2012/01/18 :
CIA-RDP80T00246A062800400001-0

2./ 3 St.elektrohydraulische Ventile /Abmessungen je Ø 2oo x 6oo S.Abb.4./

3./ Bedienungselemente.

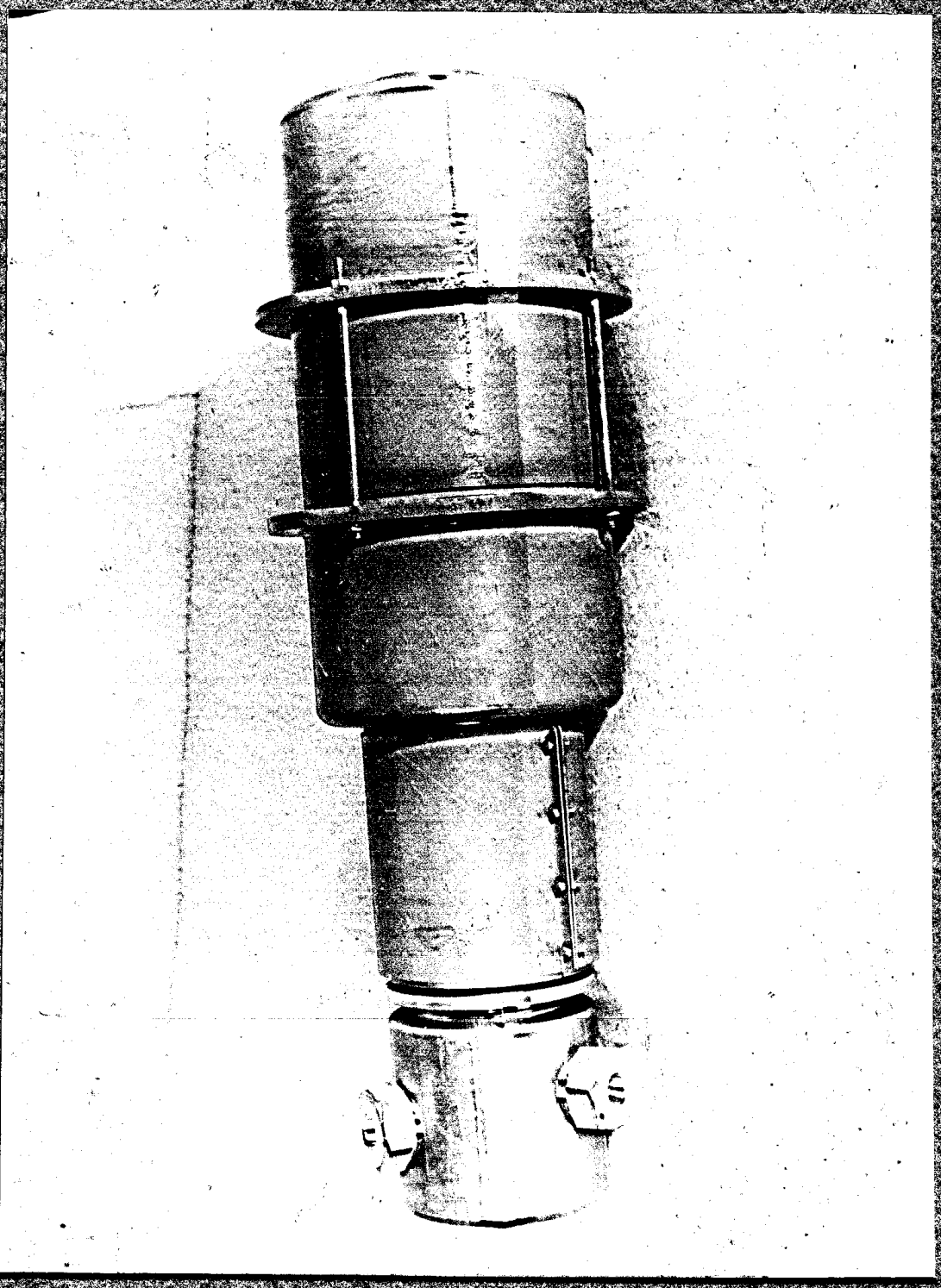
4./ Ersatzteile.

Die beschriebene Einrichtung hat abgesehen von den Ventilen und Elektronenröhren eine praktisch unbegrenzte Lebensdauer, da sie nur unbewegliche Bestandteile in einer für die Schwerindustrie geeigneten robusten Ausführung enthält.

Auf Verlangen liefern wir Ersatzventile in beliebiger Anzahl, normalerweise 3 St.Ventile und 1 St. Betätigungsmagneten.Die Erneuerung der abgenutzten Bestandteile macht keine Schwierigkeiten.

Die im dem Apparat verwendeten Elektronenröhren sind Metallstromtore /Thyratrone/ und Hochvakuumröhren.

Die Stromtore sind der Type TK001. Wir liefern mit der Regeleinrichtung auch Ersatzröhren. Die Durchschnittslebensdauer der Röhren beträgt ungefähr 5000. Stunden. Auf Verlangen des Bestellers kann der Apparat für andere Röhren ähnlicher Leistung verfertigt werden.



Declassified in Part - Sanitized Copy Approved for Release 2012/01/18 :
CIA-RDP80T00246A062800400001-0

Die Hochvakuumröhren /EL3, CY2, EZ4/ sind international verwendete Typen, ihre Lebensdauer ist wegen der geringen Beanspruchung das mehrfache der obenerwähnten Stundenzahl. Wir liefern Ersatzröhren mit der Einrichtung.

Bei einer Bestellung bitten wir die folgenden Daten mitzuteilen.

1./ Nenn-Fassungsvermögen des Ofens /in Tonnen/.

2./ Sekundäre Nennspannung/en/ des Ofentransformators.

3./ Spannung des dreiphasigen Betriebsnetzes.

4./ Wasserdruck des hydraulischen Systemes.