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REPORT

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PLACE ACQUIRED

THIS IS UNEVALUATED INFORMATION

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Section A. Organizational Structure and Status of Poland's Telecommunications Industry

1. Normally a major proposal for the production of telecommunications equipment, or the construction of a new telecommunications factory, emanates from the CZPT (Central Administration for the Telecommunications Industry). This proposal is forwarded through the MPM (Ministry of Machine Industry) to the State Commission for Economic Planning (PKPG) Here, after a study of the problem by the chiefs of the Army Team of the Commission for Economic Planning, it is submitted, in the form of a project to be voted on, at a meeting of the Council of Ministers. After ratification of the project the various interested ministers are responsible for seeing that the project is carried out. In many instances new types of production, probably under the controlling influence of the USSR, are incorporated into the original project by the Army Team of PKPG. This team is strongly dependent upon the Soviet Armed Forces. 25X1

2. Research in the PIT (Telecommunications Industrial Institute) and CBKT (Central Bureau for the Construction of Telecommunications) is jointly planned and agreed to, by the Directorate of both institutes, through the Central Administration for the Telecommunications Industry (CZPT). The plans are generally made for a period of a year which corresponds to the calendar year. In a few instances the plans cover a period of a few

USAF review completed.

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years. Some projects, representing a particular undertaking, sometimes are originated by the Military Authorities and come to the CZPT through the Ministry for the Machine Industry (MPM). Frequently some of these projects are sent to various scientific institutions and high schools (polytechnic universities and institutes).

3. Not one of Poland's scientific institutes, in the sphere of telecommunications, works exclusively for the military.

4. While there are no Polish telecommunications institutes controlled by the USSR this is not necessarily true for some of the Polish telecommunications factories. This belief is based on the fact that a Soviet professor, ALEKSANDROW, worked at the only Polish vacuum tube plant (L 1) since 1952. It was rumored that he was assigned the job of organizing and enlarging the production of vacuum tubes in Poland. radio plant T3 (Marcina Kasprzaka) in Warsaw is also working part-time for Russia. Besides producing broadcast receivers and routine amplifiers, T3 is believed to produce receivers and possibly small transmitters (50 w.) from a Russian pattern.

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5. In general, Poland's telecommunications industry is in the process of expanding. Plans were made for the building of an electronic measuring instruments factory, a television factory, an iron core coil factory and a factory for amplifiers. Generally, one can see the importance of expansion for the purpose of benefiting the telecommunications industry for military purposes. From the tempo of new planning in face of the great lack of materials and trained experts Russia is principally concerned with assuring itself of a reserve or production in case their industry is destroyed during a war. This being true, the present production is principally concerned with the training of experts and employment of people. Most production is based upon foreign development. The development engineers in Poland generally feel as if they are failures. The older constructors more often work unwillingly, or are removed from industry and replaced with young development engineers without experience or proper training. The salary they receive and the lack of a necessary atmosphere for work does not encourage them to work to the extent of their abilities. In many instances the older development engineers do not wait to be removed, but endeavor to enter scientific institutes since their chance of survival is better there. In industry they can easily be charged with sabotage by not fulfilling their norm.

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6. Equipment in both the institutes and factories is inadequate and in poor condition. Practically all of the factories in the telecommunications industry produce a variety of measuring and test instruments necessary to their own production. These instruments do not fulfill their tasks, both from the point of accuracy as well as from the point of ease of operation. This in turn reduces the quality of their end products.

7. There is a great shortage of metals necessary for the production of telecommunications equipment, i.e., nickel, molybdenum, magnesium, barium, thorium, copper, bronze, tungsten and aluminum. There is also a shortage of polyesters, insulating lacquers, nitro-lacquers and bakelite. There is no supply of copper oxides or selenium for contact rectifiers, powdered iron for cores, or magnetic materials for magnets or loudspeakers. A very small amount of these materials are obtained from Russia and its Satellites; however, very little comes directly from Russia. (The material procurement problem is taken up in more detail in other sections of this report.) At the present time

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Poland still uses many of the German supplies turned over at the end of World War II. A good example of this is the reprocessing and molding of old German iron powdered cores for coils. Various Polish educational organizations and institutes are trying to develop synthetic substitutes for many materials used in the telecommunications industry.

8. Component parts development is a very hit-and-miss type of development insofar as Poland is concerned. While there is a resistor factory in Krakow, its output is not great and the quality of the resistors is very poor. They make the resistors on the so-called "India Ink" principle where a carbon compound is brushed on a ceramic form and is then used without being baked. The coating is not of uniform thickness, quickly deteriorates, and is not accurate, especially with temperature changes. For the above reason most factories that must have accurate resistors (test equipment manufacturers) either obtain old German resistors or make their own wired resistors. Paper condensers are also made at this same factory in Krakow and are likewise of very poor quality. The insulation paper is very coarse and thick which precludes any miniaturization or high quality production. The metal containers for condensers are always improperly sealed. Once again most factories try to use captured German condensers or obtain new ones from East Germany.

9. It is normal procedure for Polish experts to travel, for a few weeks or months, to Eastern Germany, Russia, Czechoslovakia or Hungary for the purpose of acquainting themselves with methods of research and production in the various countries. [redacted] certain 25X1
electrical power and electronic engineers [redacted] made the trip a few 25X1
years ago. [redacted] Russian experts are sent to Poland 25X1
in an advisory capacity rather than for the purpose of exchanging technical information. This type of operation allows the Russians to learn of many developments carried on by the Polish engineers without divulging any Russian information. For this reason, as well as for economy reasons, efforts are made to keep critical new developments from the Russians, as well as from the experts of other Satellites. This is not an official policy, but it is universal. In addition to the exchange of information by means of visiting experts, there is an exchange of information via published literature. There is a tremendous flow of Russian technical periodicals and literature throughout the Satellites. This is brought about by the fact that a Russian published book costs approximately one-fifth as much as a corresponding Polish book. The majority of Russian books are based mainly upon American and German literature. In many instances an exact translation of a Western book is made and a fictitious Russian author's name is substituted. In the event that small insignificant changes are introduced into the translated foreign material, existing Russian institutes and authors are credited with having written the book.

10. There are also a few small cooperatives engaged in electronics manufacture. One of them [redacted] was Elektromatyka in Warsaw 25X1
at 18 Piwna Street. Elektromatyka is authorized to buy and sell equipment, order prototypes from institutes, and develop new equipment. They make the equipment by employing technical workers, during the factory worker's free time, and by using the equipment of nationalized factories during the hours that they are not used for State production. This procedure is officially sanctioned, and it is known of and actually indirectly supported by the State since it is the largest customer of Elektromatyka. [redacted] this type of 25X1
operation is allowed to exist since it benefits Poland as well as the individual workers that get paid for what they produce. The equipment made by the cooperative is, in general, of a higher quality than the equipment that is made by the nationalized industries since there is no norm for the worker to be concerned about. Material from which

[redacted] 25X1

Elektromatyka makes its products can either be officially bought and furnished through the main office, can be obtained and used by one of the small firms which help make up Elektromatyka, or it may be obtained from the supplies of one of the nationalized factories with which Elektromatyka has an agreement. In any event the material is paid for by Elektromatyka in the same manner as are the wages of the workers. This system allows a worker to earn extra money and to receive pay in direct proportion to the amount and type of work that he does. All products made by Elektromatyka have their name stamped on the equipment in the shape of a diamond. Source knew of the following items that have been made by Elektromatyka workers:

a. Signal Generator

Frequency - 100 kc. to 30 megacycles (continuous tuning).
Power Output - one microvolt to .1 v.
Frequency Accuracy - ± one per cent.
Power Requirements - either battery of 110 to 220 v. AC.

A total of 50 units were made and were delivered to factory T3 and the Polish Army. This generator utilized American type tubes with a 6L6 as oscillator, 6F6 amplifier, 6C5 voltmeter rectifier and 6X5 as a power rectifier.

b. Vacuum Tube Voltmeter

Range - .1 to 1 v. (AC and DC)
0 to 3 v. " " "
0 to 10 v. " " "
0 to 100 v. " " "
0 to 300 v. " " "

Tube Types - 6H6, 2 ea 6C5, and 1 ea 6X5.

Fifty of these were made, some for the Polish Army.

c. Bridges

Approximately 30 of these inaccurate resistance and capacitive bridges were made. (Universal bridge with a magic eye was called Philiscope.)

d. Decade Resistors

Range .1 Ω to 10 KΩ. Approximately 150 were built for use by Polish industry and the Army.

e. Tape Recorder

Two of these with 100 w. outputs were built.

f. Television Receiver

Elektromatyka has made a prototype TV receiver which utilizes a DG 16 picture tube [redacted] They hope to build and sell this receiver until such a time as the State can construct a factory and start manufacturing them. [redacted] it will be 1956 - 1959 before the State can manufacture any TV receivers. 25X1 25X1

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Section B. Vacuum Tube Development and Production in Poland

1. At the present time, and for the next ten years, Poland's vacuum tube development and production are limited to work carried on at the Electric Lamp Factory, L-1, name of Roza Luksemburg (Zaklady Wytworcze Lamp Elektrycznych, Imienia Rozy Luksemburg), ul Karolkowa 32/34 corner ul Siedmogrodzka, Warsaw, Poland. 25X1

2. Site Layout: 25X1

/For site layout, see Encl. 1 and 2, Section B./

3. Administrative Data:

This factory operates under the Ministry of Machine Industry, (Ministerstwo Przemyslu Maszynowego - MPM). It is directly under the Central Administration for the Teletechnical Industry (Centralny Zarzad Przemyslu Teletechnicznego - CZPT). The administrative section is housed in a separate office building. While electronics information is exchanged between various Satellite countries it is kept at a minimum in the vacuum tube industry. L-1 engineers visited East German tube plants, but no East German engineers ever visited L-1. There was no exchange of tube information between Poland and Czechoslovakia or between Poland and the West.

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NAME: ALEKSANDROV; TITLE: Soviet expert adviser and an expert in the field of production and supply of electronic tubes 25X1

NAME: RURAWSKI; TITLE: Promoted from foreman to director. Recently demoted to an inferior position;

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NAME: BARWICZ; TITLE: recently head engineer

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NAME: CICHOWICZ; POSITION: Head engineer in L-1.

NAME: BANKOWSKI; POSITION: In charge of the electronic tube laboratory at L-1

4. Location:

This factory is located at ul Karolkowa 32/34, which is in the northwest section of Warsaw. The factory area occupies the southeast corner of Karolkowa and Siedmiogrodzka Streets. This is not a congested area but does contain some scattered apartment houses. The T-3, The Warsaw Radio Equipment Factory, name of Kasprzak (Warszawskie Zaklady Wytworcze Urzadzen Radiowych) is located just a few hundred meters to the southwest. Prior to World War II this site was occupied by the Philips Radio Factory. If damaged, this plant would be difficult to put back in action, since it requires some fairly technical machinery, which at the present time is unavailable

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5. Operational Data:

a. Products

(1) The following European-type radio tubes: AZ-1, AZ-4, AZ-11, AZ-12, EBL-21, ECH-21, EF-22, EF-22P, and EL-3. The above are the regular, receiving and rectifying tubes used in the commercial type radios, such as Pionier, AGA, and Mazur.

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(2) The following American-type, Soviet-copied tubes are being manufactured for the Army: 6H6, this tube is in full production; 6P3, an amplifier (wzmacczniacz) which corresponds to the US model 6L6; 5Z4, a rectifier, and an exact copy of the US model.

(3) The types of tubes being readied for production in 1954 are: the 6 AC 7, 6 AG 7, and the 6 SN 7 (?) a duotriode. The above three models are also to be used in Army equipment.

(4) Tubes being planned for production in 1954 - 1955 are: LB8, a cathode ray tube (oscylograficzne); 2X5 (?), a rectifier to the LB8.

(5) In production at present is an unknown small sending tube, (lampa nadawcza).

(6) Being tested at the present time are: thyratrons (tyratrony); ultra short-wave sending tubes, type 830 (?). These contain two systems in one tube (two 6L6 push-pull).

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(7) The present production also includes:

(a) Electric Wolfram filament bulbs (Zarowki) 110 v. and 220 v. from 15 w. to one kilowatt. This is the common type commercial light bulb.

(b) Fluorescent lamps (Swietlowki), three shades, namely, white, daylight-blue, and pink.

(c) The 25 w. are 90 cm. long and may not be in production at the present time.

(d) The 40 w. are 110 cm. long. The fluorescent type lamp was very popular, especially in the government institutions, but because of shortages of materials and imperfections, this type of lighting is being reconverted to the standard light bulb type.

NOTE: Up to now the starters for the fluorescent light fixtures are being imported [redacted] 25X1
[redacted] A few series were manufactured in Poland in the L-1 factory, but since the results were unsatisfactory, production was not continued. The starters are imported by the Elektrim Firm and distributed by the CHPE (Centrala Handlowa Przemyslu Electrotechnicznego). 25X1

(e) The main difficulty in starter production stems from the shortage of neon gas and inferior bimetal. The fittings for the neon tubes are being produced by the former "Marciniak" plant, Okecie, Warsaw. This plant also probably makes small automobile reflectors.

(8) The present production figures for individual types of tubes are unknown [redacted] 25X1
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[redacted]

(9) There is no production, or plans for immediate production (1953 - 1954), of the following types of tubes:

(a) Subminiatures (probably no production prior to 1963; all hearing aid tubes are imported from East Germany).

(b) Reliable tubes (2,000 hours is greatest length of time being designed into tubes).

(c) Miniatures (probably start production in 1958).

(d) Magnetrons, klystrons, metal ceramic, traveling wave, broad band amplifiers and L cathode tubes. (At the present time there is neither any development or production of these type tubes. [redacted] it will be approximately 10 years before any of the above tube types can be produced in Poland.) 25X1

b. Input Materials

At the present time Poland is experiencing great difficulties with material procurement for its vacuum tube industry. They are incapable of producing any domestically and, therefore, must rely solely upon imports. These imports, for the most part, are obtained from Eastern Satellite countries, if possible, and from Western European countries. Practically none of the required materials come directly from Russia. The following is a listing of materials, their status and possible places of procurement:

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(1) Tungsten and molybdenum

(2) Steel comes from Poland in bands 01, 02, and 03 mm. thick or as wire.

(3) Nickel is received from the West in the form of wire nickel tubes and nickel sheets. From the nickel tubing, seamless cathodes are made. In many instances it is impossible to obtain nickel sheets of the desired thickness. In addition to problems of obtaining correct sizes of nickel sheeting, periodically the wrong type nickel and other materials are delivered and this causes great loss of tubes due to poisoning. an instance of poisoning caused by the use of poor nickel, which caused two months' production to be rejected. The anodes are stamped out of the nickel sheets and are carbonized by L-1. in mid-1952 this plant had some two tons of nickel but it was of the wrong thickness, and they forwarded it to the State Commission for Economic Planning (Panstwowa Komisja Planowania Gospodarczego - PKPG) for rerolling, and they have not seen it since. This just illustrates some of the many production problems involved.

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(4) Mica (the "ruby" type - rubinowa It comes in shapes (odcinki). PKPG is responsible for obtaining materials.

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(5) Tin (cyna) is used in soldering.

(6) The following chemicals also come from abroad: salts such as barium (bar), thorium (tor), and strontium (stront).

(7) Magnesium (magnez) is the metal used for the Getter.

(8) Technical glass is supplied by a Polish factory located near Breslau. The glass is of adequate quality, and no great amount of trouble is experienced in making glass to metal seals.

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(9) The wolfram, molybdenum, and steel wires are received in a ready state. The wires to be melted into glass come from abroad.

(10) Black and color bakelite is produced in Poland. A year ago black bakelite was unavailable because of some accident that occurred in the producing plant; this held up production for a very long time.

6. Utilities

(1) Factory style central heating with the fin type radiators is used here. the heating plant is in the basement of the factory building.

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(2) City gas is used in various types of equipment, such as the round, automatic rotating tables (2.5 m. x 1.5 m.) used in assembly of tubes. underground pipes are used in this case.

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(3) Electricity comes from the Warsaw Power Station as 5,000 v. and is then split into 220/380 v.

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(4) Water comes from the city and is used in some of the cooling processes in the Automats.

(5) it is safe to assume that most of the utilities are carried underground. 25X1

6. Shipping and Storage Facilities:

trucks are being used to transport the finished products out of the plant. 25X1

7. Plant Capacity and Output:

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the aim for 1954 is a total of 2,000,000 tubes (all types). Plans are being made to construct a 1/3 addition at the south end of the factory building. 25X1

in August 1953 the main production building of L-1 had its first two floors employed in the production of fluorescent lamps. 25X1
The remaining floors were used to produce regular light bulbs and vacuum tubes.

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vacuum tubes were produced there. they were also produced on the seventh floor, but had never visited there. aging racks for vacuum tubes are installed there. The following is a listing of equipment noted on the fifth and sixth floors of the L-1 production building:

(a) Two old type, post war type, 60-head assembly and exhaust machines The machines have a diameter of approximately two meters. 25X1

(b) Six semi-automatic grid winding machines. These machines notch supporting wires and wind grid wire on two main supporting wires which are approximately 1½ m. in length. The grids are then manually cut to their desired lengths. 25X1

(c) Fifty small spot welding machines of manufacture unknown. Sixty small spot welding machines produced and supplied by PPAE in the summer of 1953.

(d) Some aging racks. Each rack is capable of handling about 300 tubes.

(e) Test tables - 25X1
Many difficulties are being experienced with these tables. These tables are very simple in operation and are used for superficial testing for shorts, etc., rather than detailed testing.

The output of this factory is channeled to the Central Trade Office for the Electrotechnical Industry (Centrala Handlowa Przemyslu Elektrotechnicznego, PPW - CHPE), ul Lwowska, Warsaw, for light bulbs and fluorescent tubes and to T-3 for the electronic tubes.

8. Labor Conditions:

(a) the labor force approximately 3,500 people. This figure is based on observation and also on the minimum space requirements per employee. The norm is seven square meters per workman. Since the building is 125 x 25 m., this gives a figure of 3,750 sq. m. per floor. This multiplied by the seven floors that are used for production will give a total of 26,250 sq. m.; this divided by seven equals 3,500. 25X1 25X1

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(b) [redacted] work is divided into two shifts. 25X1
NOTE: This factory is not going full force; this is partially because of shortages of material and partially, as Source suspects, because the Soviets are readying this plant for eventual production for the Soviet Army in case some of their own plants are knocked out and inoperative.

(c) Most work in the plant is automatic or semi-automatic; that is why such a large number of young women is used, their ages varying from 16 to 25. The number of men is very limited; they are assigned mainly to the laboratories and heavier work.

9. Plant Security:

(a) Physical Security

A 2½ m. brick wall runs along Karolkowa and Siedmogrodzka streets. Truck traffic enters through a large gate from Karolkowa Street. Pedestrian traffic is channeled through a small gate also on Karolkowa. The small gate is a wooden, metal covered door with a porthole, which is fitted with a moonshaped plateglass window, which, incidentally, came from a submarine. There are no guards on the outside of the plant. A guard is stationed at the end of the receiving room and checks the passes before one is permitted to enter the office building. Another guard is placed at the low wire fence which separates the office building from the main production building. Once you pass this guard, you have free access to any building of the factory.

There are two types of passes: one, the permanent type with photograph; two, the permanent-temporary type for people outside of the factory. The latter (Stala-Tymczasowa) is valid for three months. This is a piece of heavy white paper six by eight centimeters, with writing only on one side. The wording is as follows: "Temporary Pass." "Citizen _____ is permitted to enter the factory grounds." "Date, valid to _____." Signed by the director of the factory and the personnel office. The date of validity of these passes could be extended. [redacted] such a pass could be duplicated very easily; furthermore, the guards do not pay too much attention to the writing on these passes. All one has to do is to be bold and he could walk in even with an invalid pass. 25X1

For people without passes the procedure is as follows: Person states his business at the receiving office, and the clerk there telephones the administrative office and gets a verbal clearance to issue a pass. With this pass one has to go past the guard at the end of the receiving room and go to the administrative office, and there have his pass confirmed. Once this is done, you could go past the second guard at the low wire fence and then be free to cover the whole factory area.

(b) [redacted] the fire fighting equipment is similar in most factories and is limited to the regular fire hydrant outlet on the street and on the terrain of the factory (specific locations unknown) and to some hand extinguishers of the foam type and the standard European hand water pumps. Frequent fire drills and fire prevention courses are connected with antiaircraft instructions. 25X1

(c) [redacted] most of the wiring and the pipes are exposed and run along the walls and under the ceiling in bunches. 25X1

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SECTION C. Electronics Measuring Instrument Development and Production

1. All of Poland's electronics measuring instrument development is presently being carried on at the PPAE (Pracownia Prototypow Aparatow Elektrycznych Zakladu Elektroenergetyki Politechniki Wroclawskiej) which is under the jurisdiction of the Electrical Power Workshop of the Wroclaw Institute of Technology (ZEPW). The PPAE's (Laboratory for Prototypes of Electrical Measuring Devices) assignment to ZEPW came about as a result of a personal friendship between the private owner of an electronics instrument factory (now PPAE) and the Chief of ZEPW. 25X1

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The PPAE was under Director Jan KOZUCHOWSKI. The PPAE has three workshops in Warsaw:

a. The Central or the main laboratory of the PPAE is located at Brudnowska 8. /See Encl. 1, Section C./ The number of employees is approximately 70. It occupies a separate two-story building with a usable space of approximately 350 sq. m. This building is a former synagogue. The central heating boiler is located in the basement (a). The rear of the building, (b), both on the ground and the first floors is occupied by private living quarters. The mechanical workshop with 25 employees is located on the ground floor. Half of the first floor is occupied by the laboratory, a quarter by the assembly plant and the other quarter by the offices. The production includes: electronic measuring instruments and equipment to control the production of radio and tele-technical instruments and tubes. The basic character of this workshop is research, the development of new prototypes and a small unit production. The consumers for these products are: the tele-technical industry, technical institutes, schools of higher learning and the Ministry of Power. /Refer to Par. 2, for details on instruments produced./

b. The branch at Kepna II. /See Encl. 2, Section C./ This is a mechanical workshop which employs approximately 12 people. Fnu ORLINSKI is in charge. The area occupied by this workshop is approximately 120 sq. m. on the second floor of the building. /See Encl. 1, Section C./ The first floor of this building houses a workshop for the Postal Office. One section of this building also houses a workshop, which, under government supervision, manufactures equipment for ladies' hairdressers, such as driers, etc. The work done here augments that of the Central, namely heavier, coarser, rough work on heavy current machinery, such as the variacs (auto transformer), the rotating generators, etc.

c. Telecommunication Equipment Factory. The Weak Current Devices Plant (Wytwornia Urzadzen Slaboprado-wych - WUS), located at Zabkowska 40. /See Encl. 3, Section C./ This plant is under the direction of

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the PPAE. Its director is LAWRYNOWICZ, Mieczyslaw. The number of employees is approximately 40. The area occupied is approximately 200 sq. m., on the ground floor and the basement. The work done here is typically tele-technical: relays, small switchboards and equipment for testing of the production of electronic tubes, and testing tables for strong current protection relays.

2. The following list of instruments were developed and produced in the main laboratory:

a. Decade Resistor Boxes

Four different types were made during the period of 1949 - 1953. Approximately 150 of these instruments were made and delivered to the Polish industry and the military. The decade boxes were capable of being continuously varied from .1Ω to 10Ω (accuracy ± two per cent) and for use with frequencies up to 50 kc.

b. Decade Voltage Divider, Type PPI

This divider is capable of sub-dividing voltages up to 300 v. and for use with frequencies up to 10 kc. The accuracy of the voltage steps is 0.2%.

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c. High-Voltage Test Instrument

Three of the instruments were made and delivered to a factory in Warsaw. One was capable of testing condenser voltages up to 3,000 v. and two were made for testing condenser voltages up to 800 v. These instruments are of very small importance.

d. Standard Signal Generators

Approximately 100 of these generators were made and delivered to various Polish factories and institutes. The technical specifications of this generator are forwarded as Encl. 4, Section C.

e. R.C. Generator

Approximately 75 of these generators were produced between 1949 and 1953. Most of this number were delivered to Factory T3. Different types of tubes were used in the construction of these generators. The best combination was the one using an EF 12 as the oscillator, EL5 as an oscillator and EZ4 as the power rectifier. It was practically impossible for Poland to manufacture EL5's, so the above combination equipment was difficult to produce, hence the other tube combinations were used. Technical specifications for this equipment are listed on Encl. 5, Section C.

f. Standard R.C. Audio Frequency Generators

A total of 40 units were manufactured prior to 1953. Ten of these units used switches and 30 of these units utilized push buttons. The resistors used in this equipment were made in the PPAE laboratories since it was impossible to purchase resistors of the required tolerance. Condensers used were of the styroflex type and were obtained from old German World War II equipment. Technical specifications of this equipment are contained in Encl. 6, Section C.

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g. Audio Frequency Generator Type PO 7

Fifty of these generators were made and shipped to Polish factories T3, T7 and L1 as well as various Polish institutes. The equipment is continuously tunable with the frequency coverage being divided into three ranges: 20 to 200 cycles, 200 to 2,000 cycles, and 2 kc. to 20 kc. Styroflex condensers, from old German equipment, and "Kanthal" resistors were used in this equipment. /Technical specifications are contained in Encl. 7, Section C/. 25X1

h. Beat Frequency Oscillator

Only four of these oscillators were made. Three were delivered to PIT while the fourth was delivered to an unknown Polish technical high school. These oscillators were continually tunable from 0 to 40 kc. which was covered by two bands. This development was unimportant. /The technical specifications are forwarded as Encl. 8, Section C/.

i. Audio Frequency Vibrator Generator

Two of these vibrator-type generators were manufactured and delivered to Polish Factory T3. These generators were to be used for testing loudspeakers for the broadcast receivers being manufactured by T3. Many of the components for these other generators and other electrical instruments were made in the laboratory since accurate ones were not available on the open market and in general it was very difficult to obtain instrument parts. /See Encl. 9, Section C for technical specifications of this generator./

j. Distortion and Noise Meter

Seventy of these meters were manufactured between 1949 and 1953. These meters were delivered to Polish industry such as Factories T3 and L1. While these meters are extremely difficult to make, this meter was considered to be a very good development and was one of the best instruments developed by Source's laboratory. /See Encl. 10, Section C for technical specifications of this meter./

k. Vacuum Tube Voltmeter

This was a simple AC/DC meter employing three tubes. Sixty of the instruments were manufactured between 1950 - 1953 and were sold to various Polish factories as well as the Polish military. /See Encl. 11, Section C for technical specifications of the equipment./

l. Millivoltmeters or Level Meters

Approximately 45 of these combination instruments were manufactured during 1950 and 1951. They were built for T3, L1 and PIT. /See Encl. 12, Section C for the technical specifications of these instruments./

m. Impedance Bridge

Forty-five of these units were manufactured between 1950 - 1953 and were delivered to T3, L1 or PIT. No new principles are incorporated in this instrument; however, it was well known for its great accuracy. This accuracy was obtained in spite of the poor quality components used in its construction. /Encl. 13, Section C contains all of the technical specifications of this bridge./

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n. Power Output Meter

Twenty of these were produced in 1952 for various Polish factories and institutes. The input impedance was variable in one ohm steps ranging from 2.5 to 10KΩ. /Technical specifications of this equipment are listed in Encl. 14./

o. Alternating Current Transformer Compensator

This instrument was designed to measure the accuracy of electrical current transformers. Four of these devices were made and delivered to the Polish Factory A1 and to the Wroclaw ZEPW. /See Encl. 15, Section C for technical data./

p. Wheatstone Bridges

q. Megohm Meters

Five were made, each of which utilized two EF6 tubes and a 6X5 power rectifier.

r. Remotely Tuned Oscillators

s. An FM Audio Frequency Generator

To be used for telemetering.

3. The Weak Current Devices Plant (Wytwornia Urzadzen Slabopradowych - WUS) located at Zabkowska 40, is one of the two branch plants under PPAE. Approximately 40 people are employed in this small plant which has an area of approximately 200 sq. m. Small relays, switchboards and test equipment for vacuum tubes are produced here.

a. A total of 16 test benches for testing triode-heptode and pentode tubes were fabricated. All of these benches were produced for use by L1. Each of these benches was capable of testing only one tube at a time and required approximately three seconds for the testing of each tube. Thirty more of these benches, which were copies of the pre-war Philips tester, were ordered, but [redacted] L1 will have to build their own since the WUS is not capable of building these while they maintain their other production. 25X1

b. In addition to the above test benches, WUS also manufactured approximately six aging racks. Each rack has a capacity of 300 tubes and is patterned after the pre-war Philips equipment.

c. Two test benches to test power protection relays were made by WUS for a power laboratory in Katowice and Zerw.

SECTION D. Radar Research in Poland

1. [redacted] no radar development or production going on in Poland, except that accomplished at T3. At T3 all radar activity is accomplished on the seventh floor in an area 50 x 50 m. This work is overseen by a Soviet ex-colonel who is presently a Polish citizen. This ex-colonel, named SZULKIN, at present teaches basic radar 25X1

25X1

25X1

as a professor at the Technical High School at Warsaw and is a convinced Communist.

2. In September 1952 instrument laboratory PPAE /Section C of this report/, delivered to SZULKIN's laboratory a 3,000 RPM constant speed generator capable of generating a single phase, 6 kw. 500 cycle voltage and a three phase, 1.5 kw., 50 cycle voltage. This generator, with RPM's constant to five per cent, was delivered at a cost of 60,000 zlotys and was to be driven by either a gasoline driven or an electric driven motor. The original specifications, obtained from the radar laboratory through Master Engineer PINSKI, required that the generator have a shaft extending from one end that was capable of having a spark gap disk, 25 cm. in diameter, attached to it. Source never saw this disk; however, PINSKI placed great emphasis on the need for close tolerance in physical dimensioning of the shaft.

3. PPAE completed the generator described above as well as parts for a second generator identical to the one above. These parts were delivered to the radar laboratory in 1952. A third generator was also to be made 25X1

laboratory PPAE did not wish to build any of the three generators but was forced to by CZPT after SZULKIN had pressed his desire. Finally PPAE agreed to design and construct one generator and furnish the plans to the radar laboratory so they could have some other plant manufacture generators number two and three. SZULKIN will make certain that generators two and three will be delivered during 1953. 25X1

4. Master Engineer PINSKI. PINSKI is employed full time at the laboratory, was at PIT before going to the radar laboratory in January 1952, and has a very high paying position. 25X1

SECTION E. Development and Production of Radio Receivers and Small Transmitters

1. PPAE laboratory supplied electronic instruments to T-3 25X1

[redacted] 25X1

2. Identification Data:

/Refer to Encl. 1, Section E, Site Layout./ Poland's major producer of broadcast receivers, military receivers, possibly military transmitters and telephone filter pads, is a factory known as the Warsaw Radio Equipment Factory T-3, named Marcin Kasprzak, (Zaklady Radiowe, or Warszawskie Zaklady Wytworcze Urzadzen Radiowych), ul Kasprzaka, Warsaw, Poland.

3. Location:

This factory was located at the corner of Karolkowa and Kasprzaka Streets. The main entrance was from Kasprzaka Street. This factory was located in the northwest section of Warsaw. This was not a congested area, but did contain some scattered apartment buildings. The Electric Lamp Factory, L-1 was located just a few hundred meters to the northeast. Not too far away in a northwesterly direction was the Main Warsaw Streetcar Barn (Glowne Remizy Tramwajowe na Mlynarskiej) and also the Office of Urban Transportation (Zaklady Komunikacji Miejskiej - ZKM) ul Mlynarska.

4. Administrative Data:

This factory operated under the Ministry of Machine Industry (Ministerstwo Przemyslu Maszynowego - MPM). It is directly under the Central Administration for the Teletechnical Industry (Centralny Zarzad Przemyslu Teletechnicznego - CZPT). [redacted] 25X1
[redacted] as in all Polish or all Soviet controlled factories, the directors were being changed at least every half year. This was done for many reasons. One reason [redacted] 25X1
[redacted] was that in order to be able to get the maximum production at a plant, directors were constantly being replaced and trying to improve their production record in comparison with the old or discarded (for inefficiency and industrial sabotage) former director. No man was sure of his position, especially if the norms were not met, and they could not be met under the circumstances because of shortages of materials and lack of skilled technicians and administrators.

5. Operational Data:

a. Products produced by this plant included:

(1) Broadcast Band, Home Type, Receiver (AGA-BALTIC)

This AM superheterodyne receiver covered three bands, 150 - 400 kc., 600 - 1,600 kc., and 6 - 18 megacycles. It is a five-tube, six-stage receiver utilizing an ECH-21 triode heptode as a mixer-oscillator, and ECH-21 as an IF and AF amplifier, and EBL21 duo diode beam power tetrode as the second detector, audio amplifier, AVC tube, an EFM 21 as a magic eye tube, and an AZ11 as a power rectifier. This receiver was [redacted] produced at T3 only for 25X1
Polish consumption and sells for 1,800 zloty (approximately $450). Many difficulties are being experienced with the obtaining of vacuum tubes and component parts for this receiver. In 1952 - 1953 production of this receiver had temporarily dropped 50% due to the above difficulties. They are now producing these receivers even though there aren't tubes for them.

(2) Broadcast Band, Home Type, Receiver (Great AGA)

This AM superheterodyne receiver is the same as the AGA-BALTIC except for the output stage. This receiver has two EBL 21 tubes in push-pull, rather than the single-ended Baltic receiver. The cost of this receiver is unknown;

25X1

however, it is bought only by state institutes and city governments.

(3) Military Receivers

T3 manufactures receivers based on a Soviet license. it was very queer, and a source of amusement, that the receiver chassis and mechanical parts were of the English type dimensions rather than the metric type. 25X1 a high priority had been assigned for the production of these receivers.

(4) Military Transmitters

These transmitters are believed to have a frequency coverage of approximately three megacycles to 15 megacycles. They have a low-powered output, probably less than 100 w., and use only tubes produced at L1. 25X1

(5) Audio Amplifiers

These poor quality amplifiers are of native design and are to be used for public address systems. They use a KT66 tube, which is similar to the 6L6 and has a maximum output of 25 w. They can easily be cascaded. The equipment uses very poor quality speakers produced at Wrzesnia. The production of these amplifiers is to be moved from T3 whenever a factory is found which will accept the job.

(6) Audio Filters

T3 is presently producing some powdered iron type filters for installation in military telephone pads. The amount of production is very small since these powdered iron cores are principally taken from old German equipment. There is no production of ferrox cube, such as there is at Philips, or powdered iron torbids, such as there is in West Germany, made in Poland. At the present time, the Warsaw Technical High School is the only laboratory doing research work on powdered iron cores, and they are doing a very small amount. 25X1

(7) Selenium Rectifiers

A small number of selenium rectifiers are being manufactured by T3. The selenium plates are being obtained from East Germany since Poland is incapable of manufacturing its own. The same is also true for copper oxide plates for rectifiers. It may be possible that the manufacture of these rectifiers had been transferred to Fabryka Wzmacniaczy in Bielawa. the quality was very poor. 25X1

b. Input Material:

(1) Native raw materials: (a) Aluminum, iron, brass, copper, zinc (plates and wires); (b) Bakelite and other insulation materials; (c) Lacquer for insulation, and nitro and oil paints.

25X1

(2) Native semi-finished products and components: Electronic tubes from L-1; resistors and condensers (mica and paper) from T-4 in Krakow; potentiometers (carbon and wire) from T-4; tube sockets from Dzierzonow; and finally screws. Note: Screws are in extremely short supply in Poland. [redacted] in approximately June 1953, the Polish Government had to pass a Special Act to procure a sufficient amount of Mr (four millimeters) screws for Nowa Huta. 25X1

(3) Imported materials: electrolytic capacitors [redacted] from Czechoslovakia; polystyrene condensers from DDR; iron dust cores, some electronic tubes, copper oxide rectifiers and selenium rectifiers, all from DDR. 25X1

(4) [redacted] there is in Poland a tremendous lack of materials and component parts, such as: main mass resistors (glowne oporniki masowe); small component parts such as small screws, unions (laczowki), (galki), tube bases (podstawki lampowe), etc. At T3 there was a great shortage of materials and basic components necessary in the production of receivers and transmitters and T3 is required to sell its broadcast receivers without tubes due to the great shortage of vacuum tubes. This shortage carries over into all types of items, with small metal screws being practically impossible to obtain. In addition to the shortage of materials, there is also a shortage of test and calibration instruments. 25X1

(5) It was impossible for PPAE to make all of the test equipment required by T3. Because of shortages in equipment and electronic measuring instruments necessary for the control of the production, many of these had to be made at the factory (T-3) itself. Engineer ZARNECKI is in charge of this department and had approximately 20 engineers and technicians designing and producing test equipment to be used at T3. They made poor quality volt-amp meters and other very simple instruments. The instruments were of poor quality, due both to bad materials and poor engineers.

(6) [redacted] 25X1

[redacted] 25X1

on the fourth floor of the office building there are laboratories under the supervision of an engineer in which equipment is produced for their own use, such as: rectifiers, high frequency oscillators for high tension isolation tests, control instruments for oscillator coils, and other minor instruments. The following is a listing of test equipment delivered to T3 by PPAE:

(a) Twenty signal generators, type PG2. These generators covered a frequency range of five kilocycles to five megacycles, had a variable output from .5 microvolts to 100 millivolts, a fixed one-volt output and an 800 cycle modulation voltage capable of X being varied from 0 to 80%. The generator uses a 6L6 as an oscillator, an EL2 as a broad band amplifier, a 6C5 as a 400-cycle modulator and an AZ11 as a power rectifier.

(b) Eight signal generators, with push-button tuning, were delivered in 1953. There were two different models delivered. One type had 14 push button frequencies, not crystal controlled. The second type had eight crystal controlled frequencies. The crystal frequencies were 15.2 mega., 6 mega., 1.6 mega., 1 mega., 600 kc., 465 kc., 175 kc., and an unknown frequency.

25X1

(c) A bridge type voltmeter which utilizes one triode. A very small number of these instruments were delivered.

c. Utilities:

Electricity is received from an outside source exclusively, namely from the Warsaw City Power Plant. There is a transformer station in the building and steps down 5,000 v. into 220/380 v.

25X1

d. Shipping and Storage:

No railway siding present. All shipment done by trucks.

6. Plant Capacity and Output:

Unknown.

7. Labor Conditions:

25X1

the labor force to be approximately 6,000 total, and that three shifts per day, six days a week were possibly worked. The laboratory worked only one shift.

8. Plant Security:

There are no fences or walls around the front of the building. The factory building itself is heavily guarded with women and men guards, armed with rifles, at all entrances. The guards belong to the Industrial Guard Service, which is a distinct and separate organization having no administrative connection with the plant it guards. All visitors have to phone the individual they want to see from the waiting room. The given person has to obtain a written pass from the director (only three officials were authorized to sign these passes) and then bring this pass down to the waiting room and present it to the reception desk (portiernia). After checking the visitor's Service Identity Card (Legitimacja Sluzbowa), the receptionist would then issue a pass on a sheet of paper torn from a block. This pass would permit the visitor to move freely in the office building but did not give him access to the main factory building itself. The main factory building is considered extremely sensitive.

25X1

9. Description of Factory Building:

The T-3 Factory is a large building consisting of two adjoining sections, namely an eight-story office building and a five-story factory building. The factory building is approximately 200 x 50 m. It is newly built as of 1948 - 1951. It is concrete reinforced, covered with cream colored plaster. It is a modernistic box type construction.

a. Conference Hall: an oval shaped, auditorium type hall with a large conference table and approximately 50 seats. It is built basically on a Soviet concept of security. The hall is on the first floor, separated from the office building by an enclosed corridor and built on columns, covering the main entrance. Consensus of opinion is that hall was built in this manner so as to prevent any unauthorized persons observing or overhearing the proceedings of the conference.

b. Eight-Story Office Building:

25X1
25X1

[redacted] 25X1

(1) Second Floor: contains the offices of the Technical Director and/or the Head Engineer.

(2) Third Floor: contains the Paymaster's office (referat place). [redacted] 25X1
25X1
[redacted]

(3) Fourth Floor: contains the laboratories for the electronic instruments. Here they produce a number of instruments for their own use, such as: rectifiers, high frequency oscillators for high tension isolation tests, control instruments for oscillator coils, and other minor instruments.

(4) Seventh Floor: has been rumored to be super secret and to contain experimental laboratories, which are under the direction of Professor SZULKIN who is conducting experiments and work on radar and radar interference equipment.

SECTION F: Development and Production of Electronic Component Parts in Poland

1. In general, Poland's component development and manufacturing capability is very poor. The Polish factories are incapable of producing enough quality components to satisfy Poland's requirements. Therefore, many components must either be made by the various laboratories that require the components or they must be imported. Most of the imported components come from East Germany [redacted] 25X1
25X1
[redacted]

2. Condensers:

(a) Mica and paper condensers are made at Polish Factory T-7, located in Krakow. The mica condensers are of good quality, have silver contacts, and can be bought in Polish radio shops. The source of mica is unknown [redacted] Paper condensers made at 25X1
T-7 are of very poor quality, improperly sealed, and very large.

(b) Large paper condensers, oil condensers, and condensers for fluorescent bulbs are made at a T-plant in Lodz. [redacted] 25X1
[redacted] all condensers made here are of very poor 25X1
quality.

(c) There are no styroflex condensers or miniature condensers produced in Poland at the present time. In about 10 years, such production should take place at T-7. There are no paper condensers made by the process of spraying metal on paper.

(d) Most of the paper used in producing paper condensers is obtained from East Germany. [redacted] 25X1
25X1
[redacted]

25X1

3. Resistors:

(a) All mass production of Polish-made resistors is carried on at T-7 in Krakow. These resistors are principally of the sprayed carbon type and are not baked. They are extremely unstable with variations of temperature and are continually changing value with age. vaporized carbon resistors may be produced by 1954. Some wire resistors are made at T-7. These usually are in the five to 30 w. range and are rather large. 25X1

(b) No temperature compensating or high-temperature resistors are made in Poland.

(c) 25X1

the resistors were of poor quality.

4. Potentiometers:

(a) All Polish potentiometer mass production is carried on by plant T-7. Both carbon and wire types are made. The carbon type is of very poor quality since the carbon granules used are very coarse. 25X1

(b) Most of the potentiometers are of such poor quality electronics instruments laboratory was forced to make its own.

SECTION G. Construction of a New Electronics Instrument Factory in Poland

1. In August 1951 old 25X1
factory that could be converted into an electronics instrument plant. This old factory was to have a floor space of approximately 3,000 sq. m. Upon finding this building recommendations which would 25X1
allow production to begin by January 1952. 25X1

since CZPT, at this time, recommended that a new instruments factory be constructed.

2. The new plan was requested by Ing. TURKIEL, technical director of the CZPT. The first phase of planning was to be accomplished and called for the designing of 25X1
a new factory capable of employing 600 to 800 people and annually producing eight million pre-war zloty worth of instruments. This would amount to approximately 24 million present-day zloty and would amount to the production of 2,500 units. instrument laboratory 25X1
was to be incorporated into the new factory.
the planned factory must employ 2,000 workers and produce approximately 20 million zloty worth and wanted it added to the current six-year plan which ends in 1955.
the building would be 25X1
incorporated into the five-year plan of 1955 to 1960.

3. The second step, that of estimating the requirement for so many instruments, was to be accomplished by the following group of people:

[redacted] 25X1

[redacted] 25X1

Ing. TERLECKI (from PPAE)
Ing. WROBLEWSKI (from PPAE)
Ing. WASILEWSKI (from PPAE)
Ing. KUHNEL (from PPAE)
Ing. MROKOWSKI (from Prozamet)
Ing. KOMENDA (from CZPT)
Ing. FALZMANN (from CZPT)

This second phase was not to be completed until December 1953. The preliminary recommendations were for the construction of a new factory at the corner of Washington and Saska Streets in Warsaw. There is an unused area of 100 x 300 m. at this location. The Ministry for Machinery stated that Poland could not wait this long for a new instrument factory and that the board would have to find an existing building to serve as an interim measure. The board then decided that a dress factory in Warsaw Prague could be used to turn out 5,000 instruments annually and that production could start here by 1955. Later production could be transferred to the new building. 25X1

4. [redacted]

The third phase called for the actual construction and equipping of the new plant. [redacted] it 25X1 will be impossible for any instruments, other than those produced at PPAE, to be produced in Poland prior to the 25X1 summer of 1955. This is true even of production that is to be carried on at the silk plant. In any event [redacted] [redacted] all instruments made between now and 1960 will 25X1 be of very poor quality. By 1958, Poland should be able to produce enough instruments to supply their own requirements and by 1965 they should be of good quality. [redacted] 25X1 [redacted] 52 different types be produced 25X1 by 1958 but this suggested number was increased by PKPG.

5. One of the greatest problems that will have to be solved before Poland can have a good instruments factory is that of personnel. That is the main reason they wanted PPAE as a nucleus to build around. In 1954 a section of the Technical High School, Warsaw, is to be concerned with the training of 10 engineers for the development of test instruments. This training is to be the start of a permanent plan.

6. None of the equipment for the new plant has been ordered to date. All of it will have to be imported, probably from East Germany [redacted] About two years is 25X1 required to obtain such equipment once it is ordered.

SECTION H. History of the State Telecommunications Institute (Panstwowy Institut Telekomunikacyjny - PIT) and of the State Tele and Radiotechnical Works (Panstwowe Zaklady Tele i Radio Techniczne - PZT)

1. The PIT existed from before World War II until 1951. It was located in a large, special two-story building in Warsaw on Ratuszowa Street, No. 11. During this period the director was Professor GROSZKOWSKI. The Army Research Institute for Engineer Matters was also part of the Institute until 1939. The mission of this Institute was to find new developments in the teletechnical and radio technical fields and to control the

25X1

working frequencies used by the Polish radio. After the war (after 1945) the PIT and the PZT were both located in the building at 11 Ratuszowa Street and Professor GROSZKOWSKI served as advisor to both.

2. History of PZT:

The PZT was originally located on Grochowska Street in its own building which was destroyed during the war. During the war, PZT was called Fernmeldetechnische Staats-Werke. About 1948, the PZT ceased to exist and its personnel and equipment were moved to a factory building on 26 Stepinska Street where they were combined with the personnel and equipment of the Standard Electric Company. The combination was designated as the T-1 Factory, High Tension Equipment Factory. The head director was Engineer KIELAN and the head engineer RASZBA.

3. Production of T-1:

T-1 produced audio frequency amplifiers for radio distribution points and power supplies for telephone switchboards and for accumulator charging. Some work was also being conducted on carrier telephony but lack of materials precluded satisfactory results.

4. T-13 Factory:

Receiver Factory T-13, a branch of T-1, was started at 13 Stepinska Street about 1948. This was the location of the firm "Magnet" whose proprietor, POLAWSKI, has since died. The production of this factory was confined to the popular AGA radio receiver which was based on Swedish license. The technical director was Engineer HUTNIK, a PZPR member.

5. T-3 Factory:

After construction of the T-3 building on Kasprzaka Street in 1950, both T-1 and T-13 moved into it. The buildings vacated by T-1 and T-13 on Stepinska Street were occupied by a party directors' school and boarding school and also by a middle teletechnical school. After PZT was moved out of the building in which it had been located with PIT, i.e., about 1948, the PIT was partially expanded and a new institution, the Central Construction Bureau for Telecommunications (Centralne Biuro Konstrukcyjne Telekomunikacji - CBKT) was formed. The mission of the CBKT was to develop prototypes of teletechnical and radio technical apparatuses which were then produced by the factories. Engineer RAJSKI was head director for a long time. [redacted] 25X1
[redacted] the activities and results of the CBKT were nonexistent. 25X1
In 1949 - 1950 the PIT ceased to exist. It was replaced by two new institutes which occupied the same building: the Industrial Telecommunications Institute (Przemyslowy Instytut Telekomunikacji - PIT) and the Telecommunications Institute (Institut Lacznosci - IL). The Industrial Telecommunications Institute is under the Ministry of the Machine Industry while the Telecommunications Institute is under the Ministry of Post and Telegraph. /Reference to Encl. 1, Section H, Location of PIT, IL and CBKT Building and Encl. 2, Section H, Area in Immediate Building Vicinity./

Enclosures:

Section A

1. Structure of Telecommunications Industry in Poland

[redacted] 25X1

Enclosures (Cont'd):

Section B

1. [redacted] Sketch of Electric Lamp Factory, L-1 25X1
2. [redacted] Sketch of the Fourth or Fifth Floor of the Electric Lamp Factory, L-1

Section C

1. [redacted] Sketch of PPAE Main Laboratory 25X1
2. [redacted] Sketch of PPAE Mechanical Workshop
3. [redacted] Sketch of Weak Current Devices Plant
4. Standard Signal Generators
5. R.C. Generators (Small Types)
6. Standard R.C. Audio Frequency Generators
7. Audio R.C. Generator (Large Type) Type P07
8. Beat Frequency Oscillators
9. Audio Frequency Vibrator Generator
10. Distortion and Noise Meter
11. [redacted] Sketch of Vacuum Tube Voltmeter 25X1
12. Millivoltmeters and Levelmeters
13. Impedance (RLC) Bridge
14. Power Output Meters
15. Alternating Current Compensator for Measurement of Current Transformer's Accuracy

Section E

1. [redacted] Sketch of Top View of T-3 Radio Factory 25X1

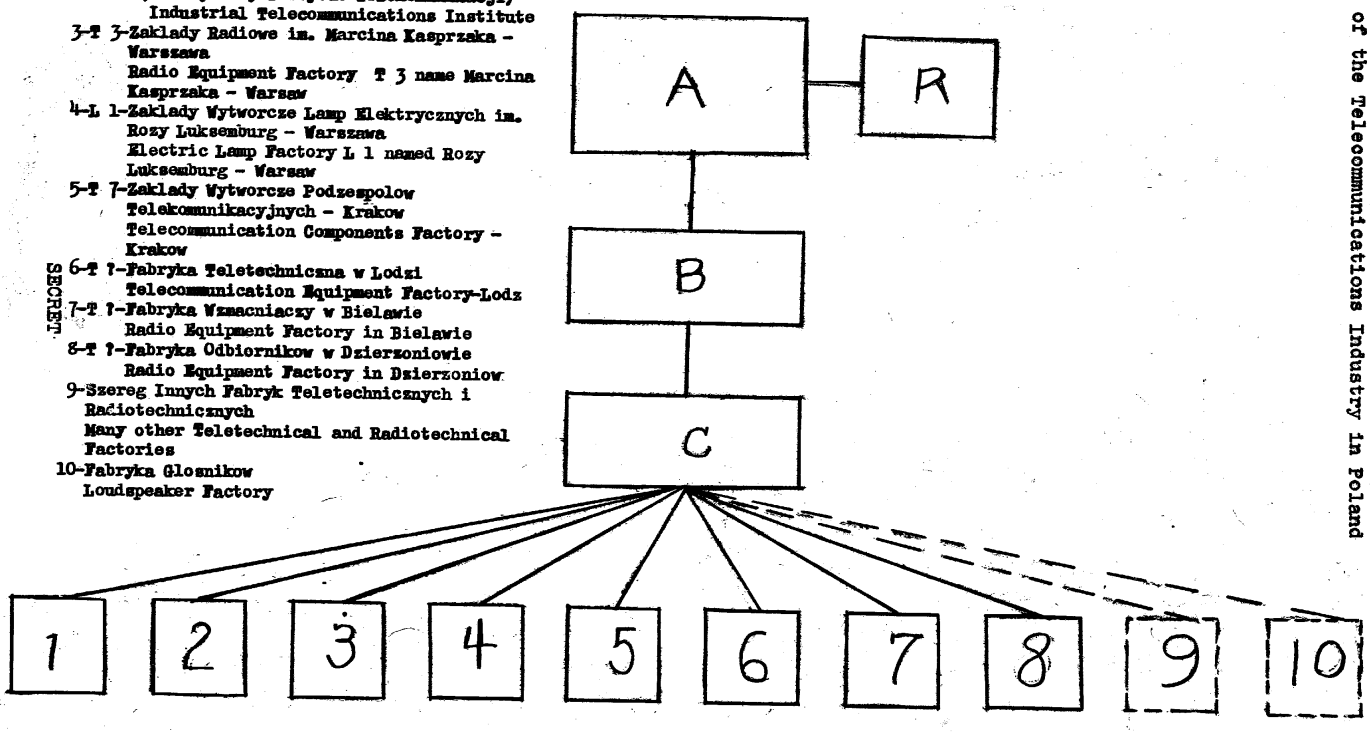
Section H

1. [redacted] Sketch of Location of PIT, IL, and CBKT Building 25X1
2. [redacted] Sketch of Area in Immediate Building Vicinity

ENCLOSURE 1, SECTION A:

Structure of the Telecommunications Industry in Poland

A-PKPG (Panstwowa Komisja Planowan
State Commission for Economic Planning
R-Panstwowa Rada Telekomunikacyjna
State Telecommunication Council
B-MPM (Ministerstwo Przemyslu Maszynowego)
Ministry of Machine Industry
C-CZPT (Centralny Zarzad Przemyslu Telekomunikacyjnego)
Central Administration for the Telecommunications Industry
1-CBKT (Centralne Biuro Konstrukcyjne Telekomunikacji)
Central Bureau for Telecommunications Construction
2-PIT (Przemyslowy Instytut Telekomunikacji)
Industrial Telecommunications Institute
3-T 3-Zaklady Radiowe im. Marcina Kasprzaka - Warszawa
Radio Equipment Factory T 3 name Marcina Kasprzaka - Warsaw
4-L 1-Zaklady Wytworcze Lamp Elektrycznych im. Rozy Luksemburg - Warszawa
Electric Lamp Factory L 1 named Rozy Luksemburg - Warsaw
5-T 7-Zaklady Wytworcze Podzespolow Telekomunikacyjnych - Krakow
Telecommunication Components Factory - Krakow
6-T 1-Fabryka Teletechnicsna w Lodzi
Telecommunication Equipment Factory-Lodz
7-T 1-Fabryka Wzmacniaczy w Bielawie
Radio Equipment Factory in Bielawie
8-T 1-Fabryka Odbiornikow w Dzierzoniowie
Radio Equipment Factory in Dzierzoniow
9-Szereg Innych Fabryk Teletechnicznych i Radiotechnicznych
Many other Teletechnical and Radiotechnical Factories
10-Fabryka Glosnikow
Loudspeaker Factory



SECRET

SECRET
-25-

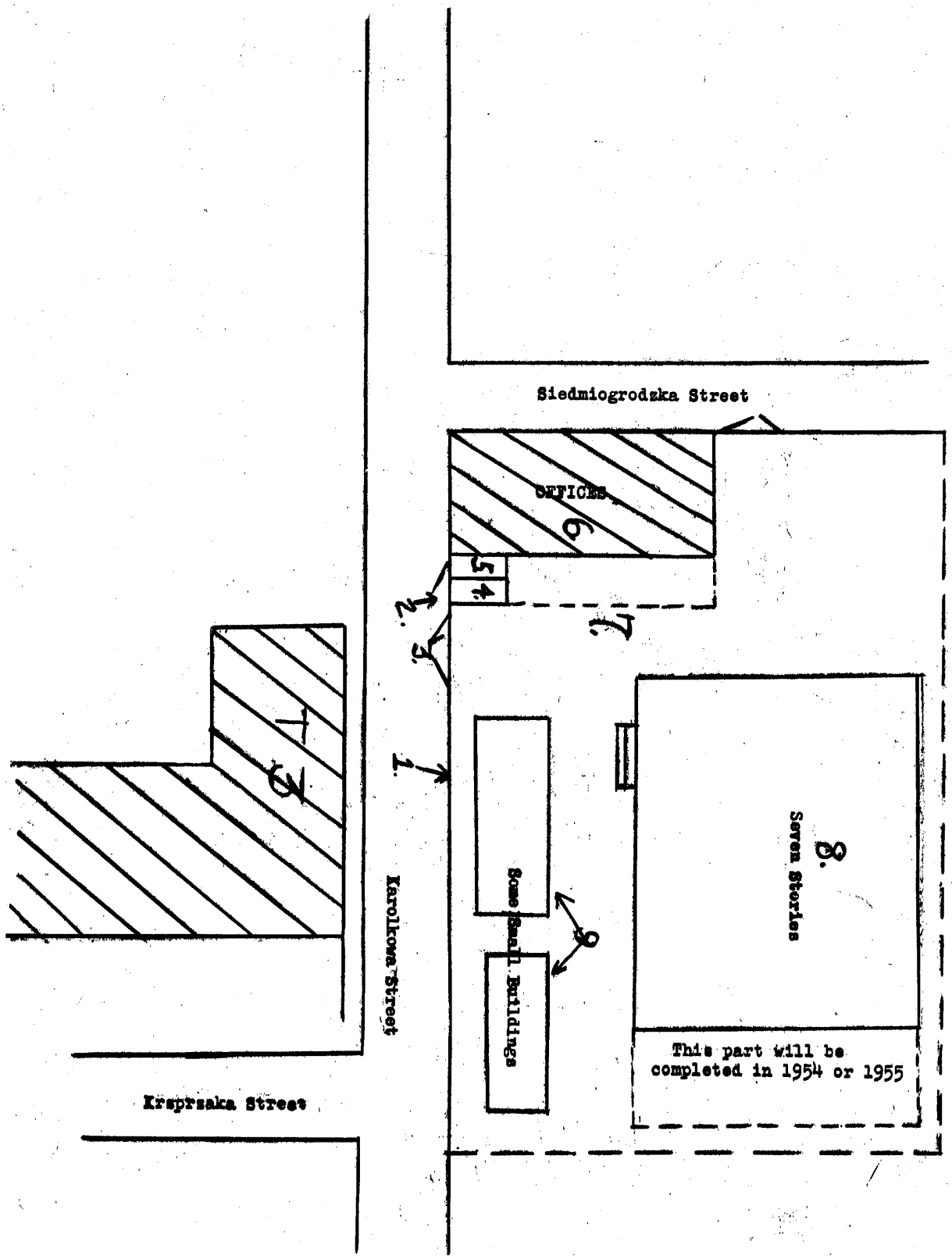
25X1

25X1

ENCLOSURE 1, SECTION B:

[redacted] Sketch of Electric Lamp Factory, L-1

25X1



SECRET

25X1

ENCLOSURE 1, SECTION B (CONT'D):

LEGEND

Pt. # 1. Wall: brick or reinforced concrete; white-washed, 2½ m. high, solid, running along at least two sides of the factory compound.

2. Pedestrian Gate: standard size door, probably wooden, covered with some sort of a tin or metal plate, with a porthole. In this porthole is an almost moon-shaped thick armor glass, 25 x 15 cm., which came from a submarine porthole. Source thinks that the use of a thick glass plate is incidental.

3. Truck Gate: this gate 25X1 is used for motor traffic, both car and truck.

4. Porter's Office: information and issuing of passes. Usually one person (limited intelligence) present.

5. Waiting and Receiving Room: the first guard stands at the end of this room.

6. Administrative Building: the office of the head director and personnel section are located here.

7. Low Wire Fence: with a gate and second guard.

8. Main Factory Building: seven or eight stories high. This 25X1 is a modern (built in 1949 - 1951) concrete reinforced structure, brick with a covering of plaster (tynk).

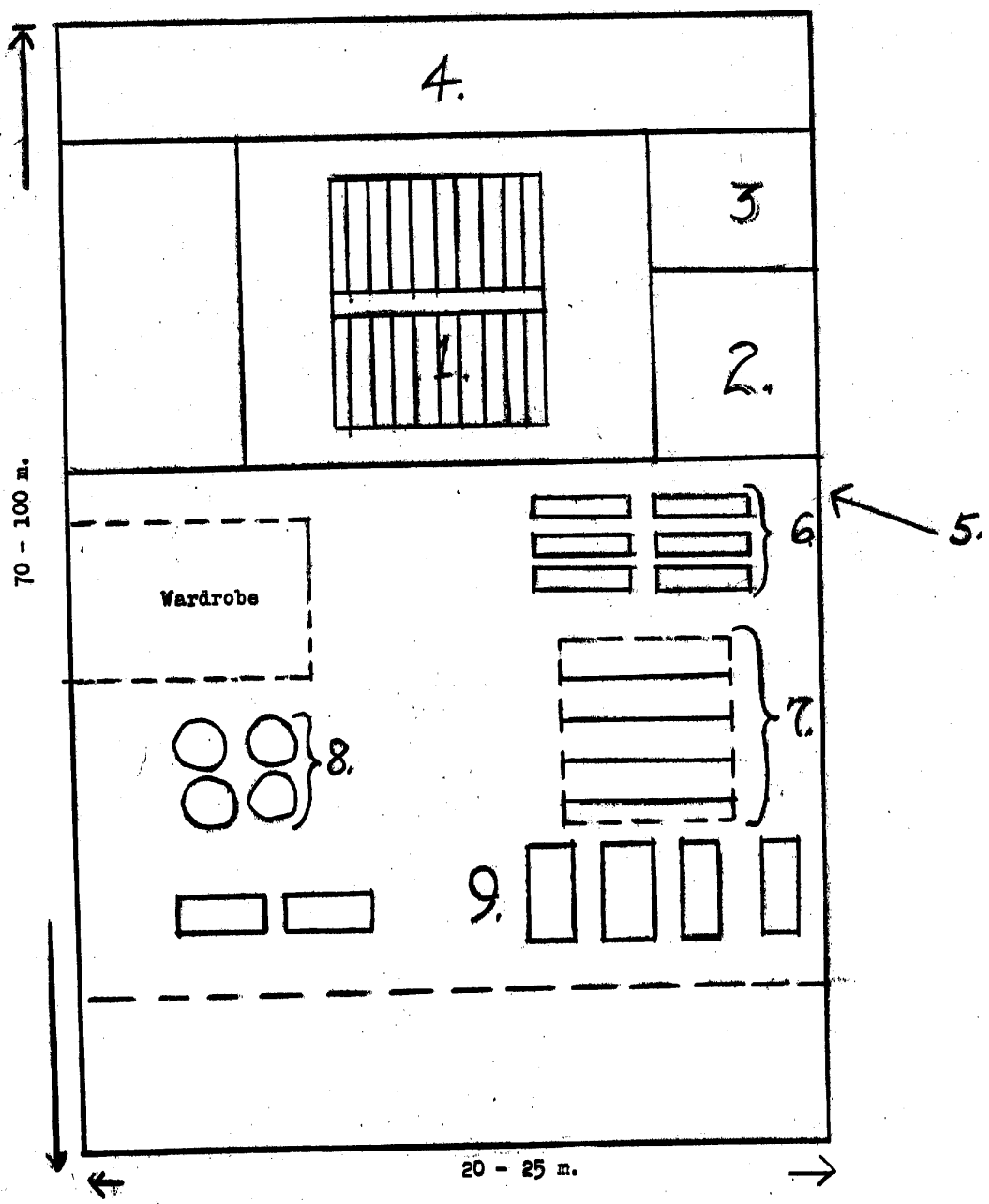
/See Legend to Encl. 2, Section B./ this building, is approximately rectangular 125 x 25 m. The sketch indicates also the proposed 1/3 addition at the south end.

9. Sheds 25X1

25X1

ENCLOSURE 2, SECTION B:

[redacted] Sketch of Fourth or Fifth Floor of the Electric Lamp Factory, L-1 25X1



25X1

ENCLOSURE 2, Section B (CONT'D):

LEGEND

Plan of the Fourth or Fifth Floor

Pt. # 1. Double Stairway: crisscrosses itself.

2. Lavatories.

3. Office Space: occupied by the head construction engineer and the chief of the laboratory (two people).

4. Laboratory: responsible for the control and testing of experimental and sample production tubes. Produces some locally needed testing instruments, such as, oscillographs, wave meters, oscillators, etc.

5. Production Space.

6. English Maghinery: used to wind the grids on several types of electronic-receiving tubes.

7. Spot Soldering Equipment: used on the main inside part of the tubes.

8. Automats (Holland Type) (automaty) (Karuzelowe): used in pumping the tubes. Recently arrangements were being made to buy out the plans and blueprints for this type of equipment from Hungary.

25X1

9. Testing Tables:

a. Testing of Triode-heptode
b. Testing of Pentode
c. Preheating apparatus, this to assist in the testing
d. Maximum output or limits of endurance (ramy trwalosci lamp prostujacych)
e. Others, such as for (cokolowanie) and then also for the testing of the puncture of breakdown point (badanie na przebicie).

NOTE: This particular phase or link is considered to be the main bottleneck of the whole factory

25X1

This factory had ordered 19 new testing tables because the old ones were in very bad shape. These new tables are to be produced in the WUS shop. mechanically speaking, these new tables will be up to par the ampere and volt-meters that will be used. will be produced in A-3, Wlochy near Warsaw.

10.

25X1

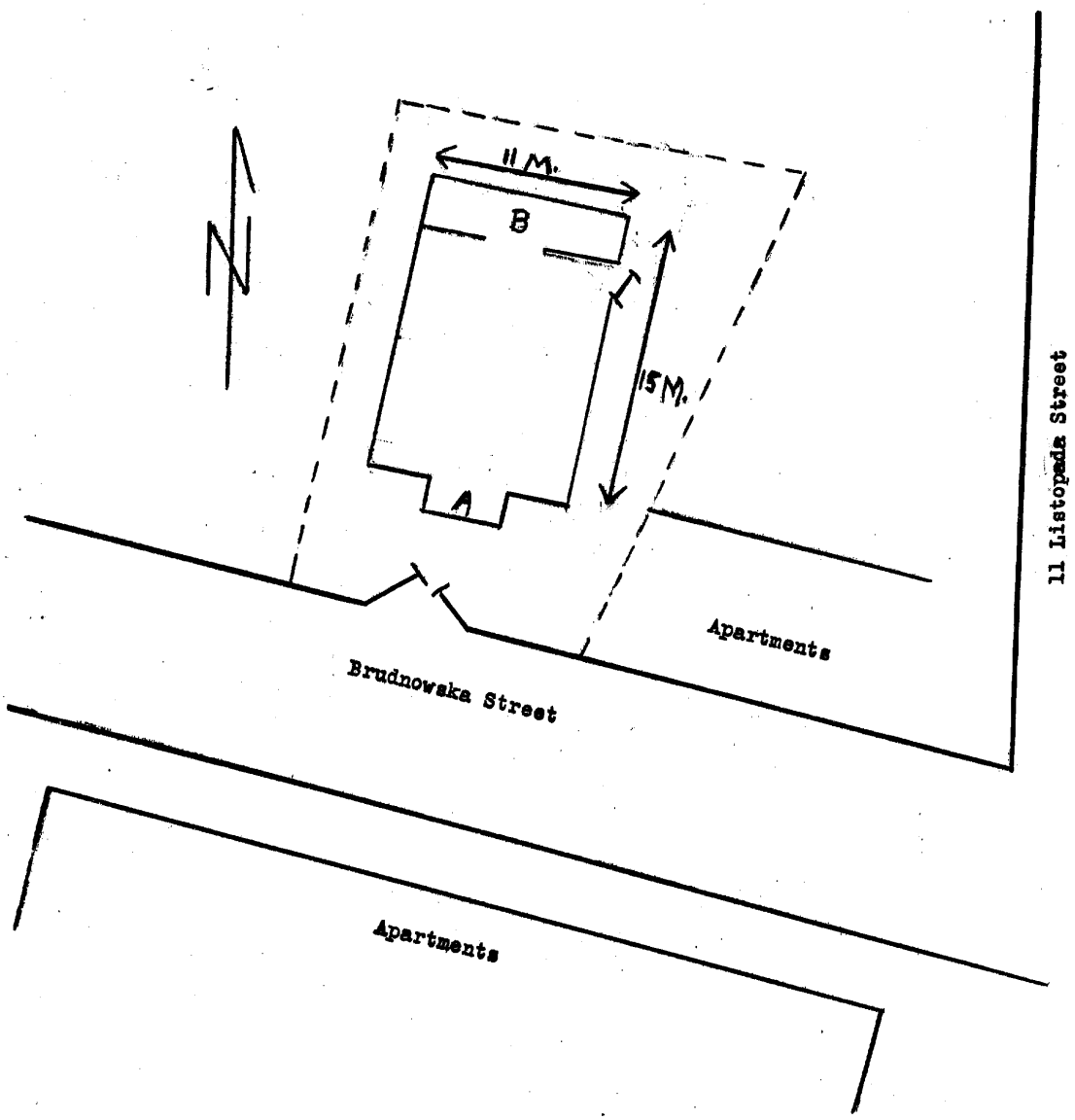
[redacted] 25X1

ENCLOSURE 1, SECTION C:

[redacted] Sketch of PPAE Main Laboratory 25X1

(Not to Scale)

PPAE on Brudnowska 8, Warsaw, Poland



25X1

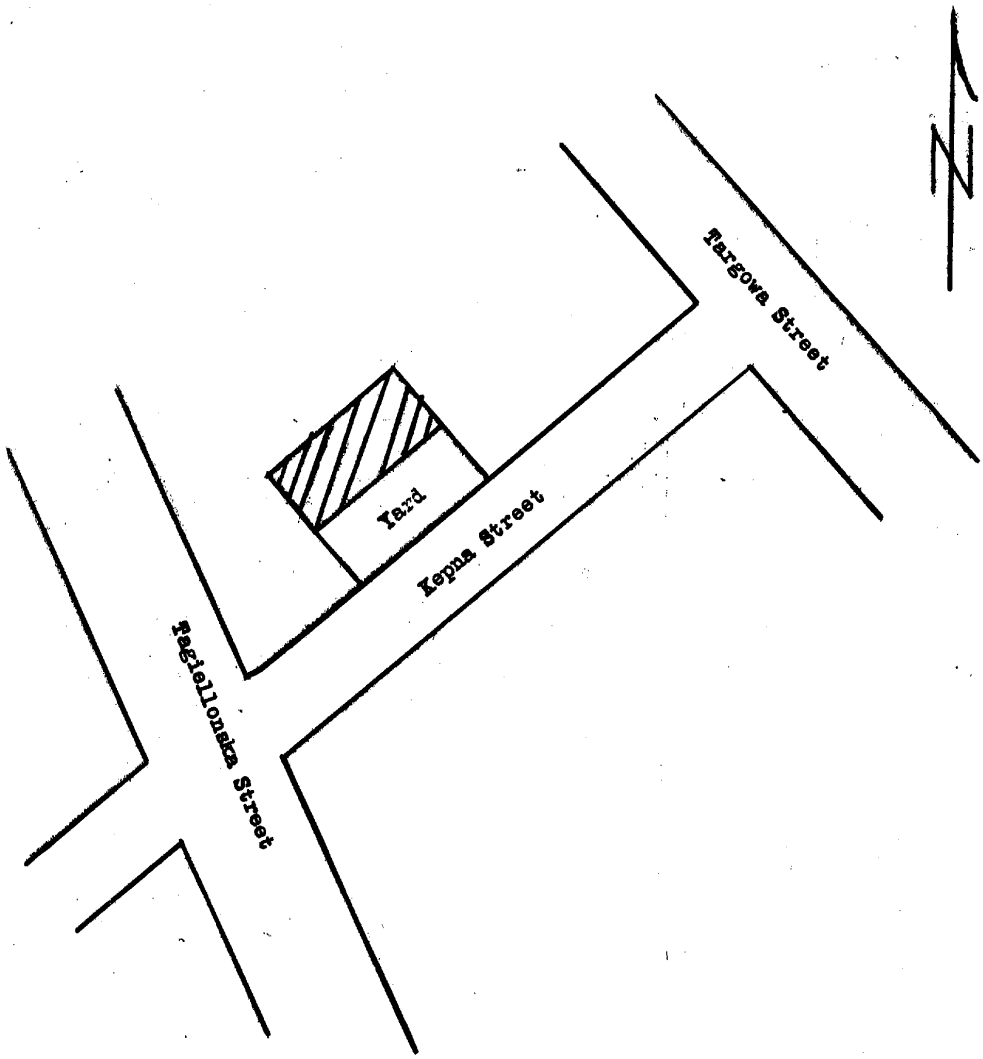
ENCLOSURE 2, SECTION C:

[redacted] Sketch of PPAE Mechanical Workshop

25X1

(Not to Scale)

PPAE on Kepna 11, Warsaw, Poland



25X1

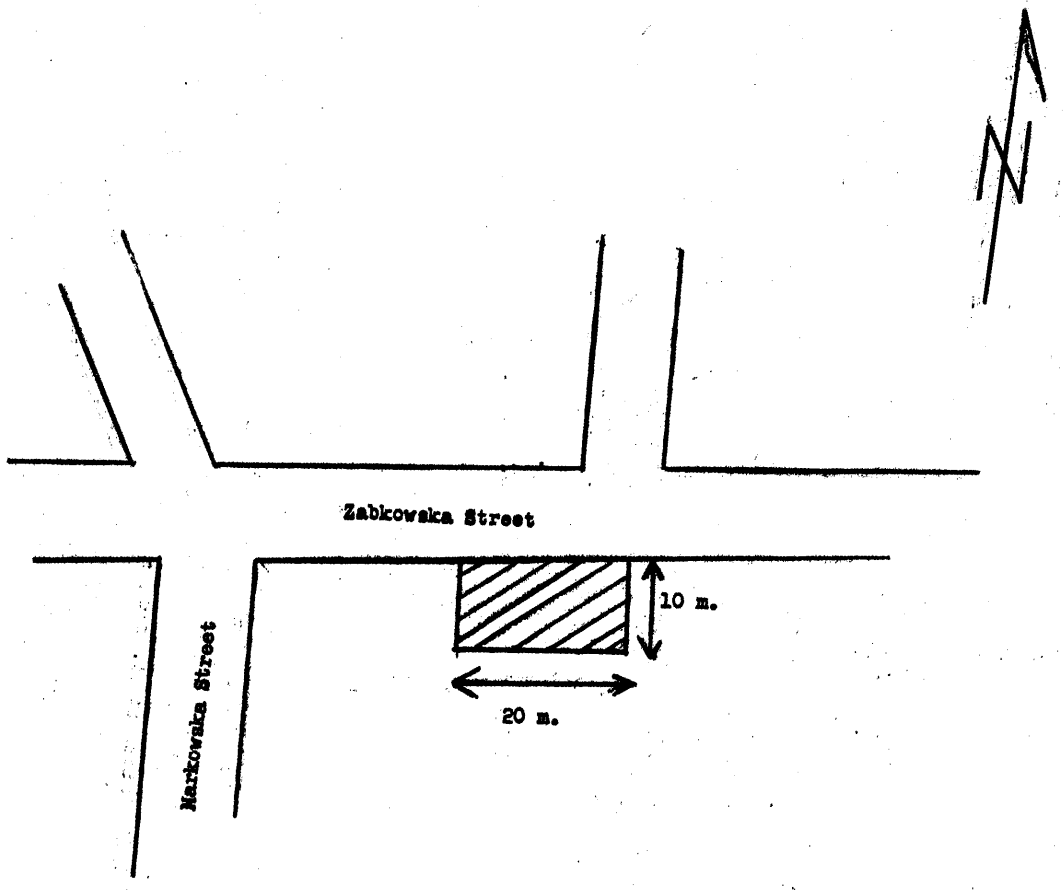
ENCLOSURE 3, SECTION C:

[redacted] Sketch of Weak Current Devices Plant

25X1

(Not to Scale)

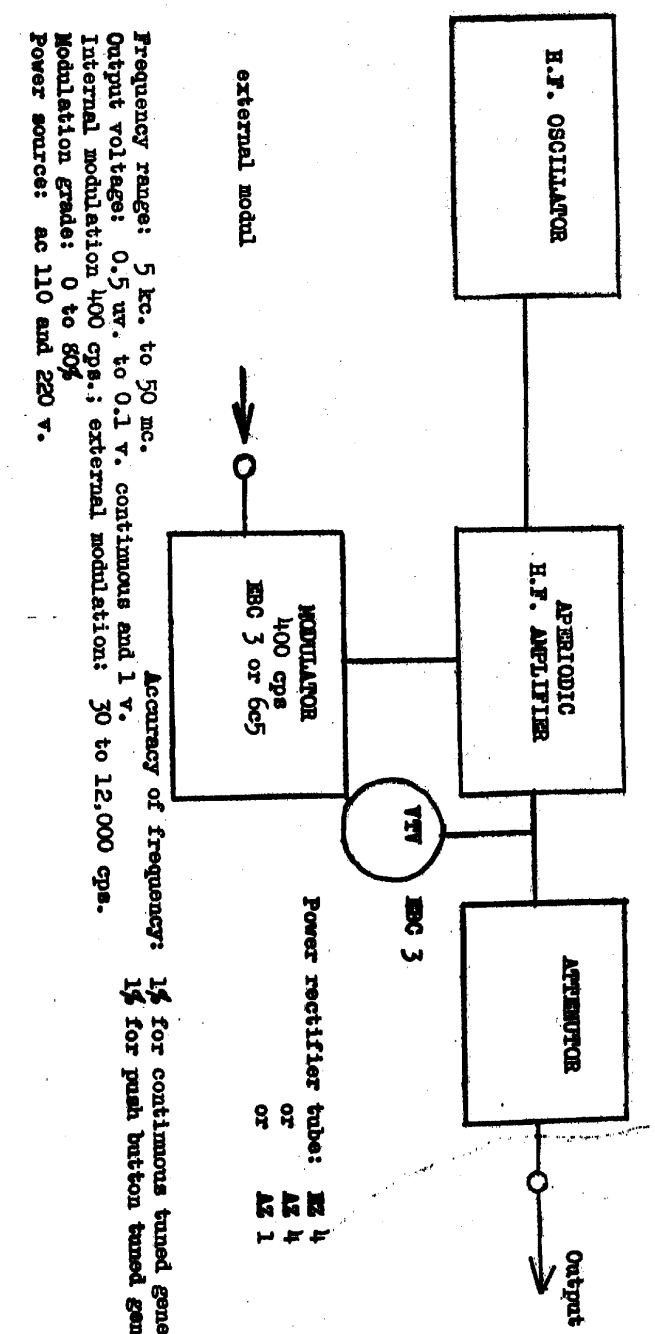
WUS on Zabkowska 40, Warsaw, Poland



25X1

ENCLOSURE 4, SECTION C:

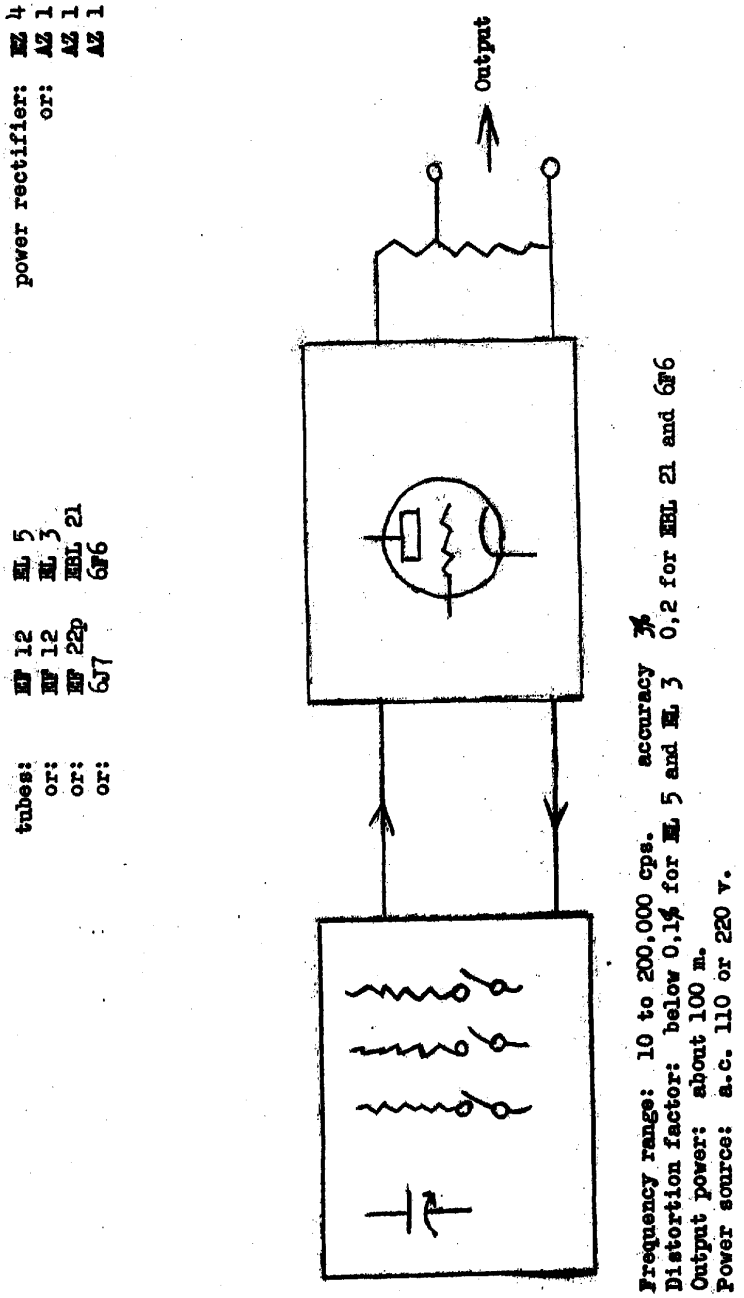
Standard Signal Generators



25X1

ENCLOSURE 5, SECTION C:

R.C. Generators (Small Types)



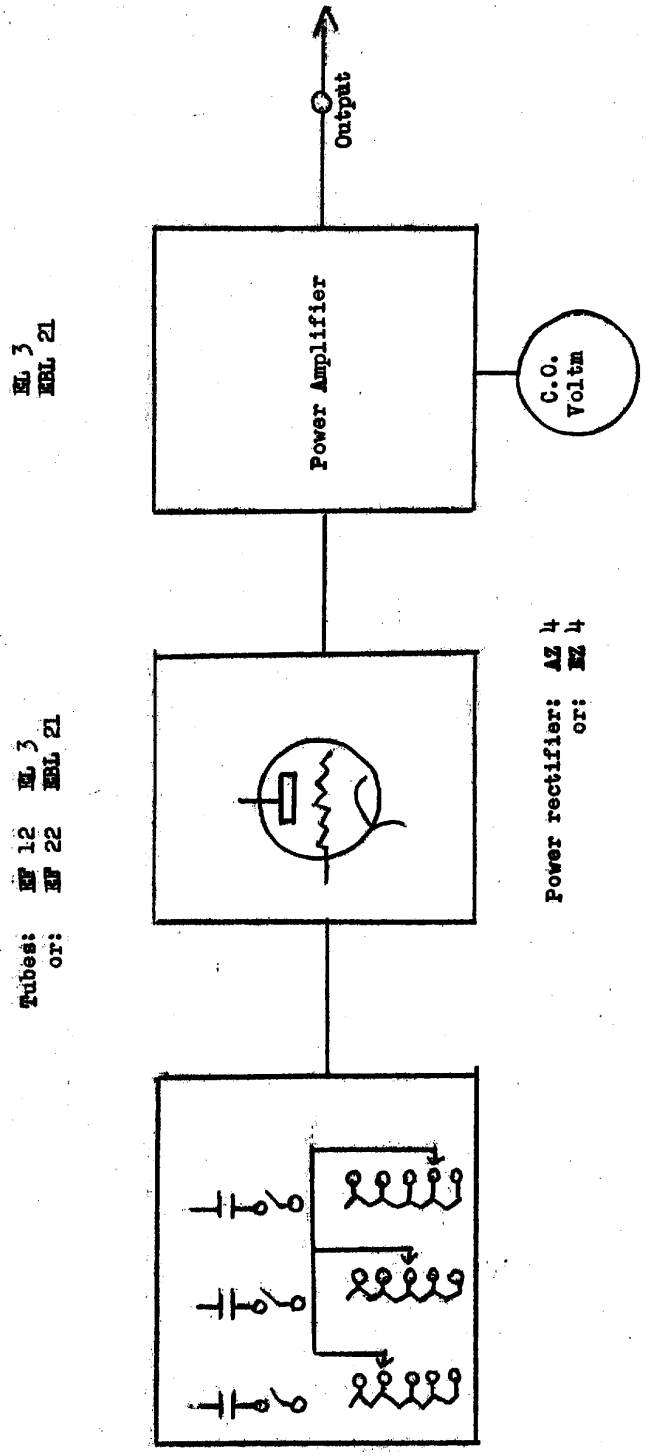
Frequency range: 10 to 200,000 cps. accuracy 3%
Distortion factor: below 0,1% for EL 5 and EL 3 0,2 for EBL 21 and 6F6
Output power: about 100 m.
Power source: a.c. 110 or 220 v.

SECRET

25X1

ENCLOSURE 6, SECTION C:

Standard R.C. Audio Frequency Generators

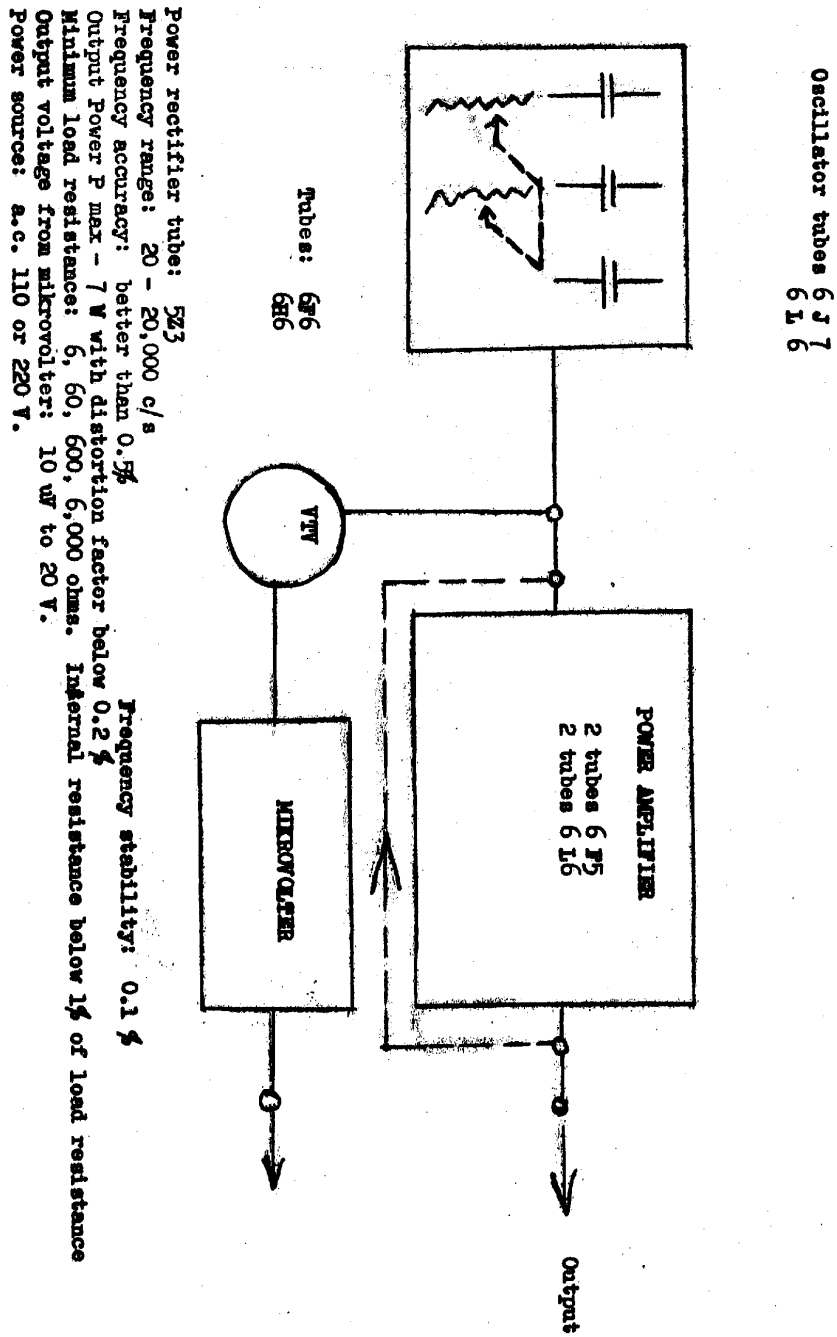


R and C decadecal switched
Ranges: 1 to 1,000 cps. in increments of 1 cps.
10 to 10,000 cps. in increments of 10 cps. and added 10 kc. to 20 kc. in increments of 10 cps.
Accuracy of frequency: better than 0.2%
Stability of frequency: better than 0.05%
Output level: 0, 1 W across 600 ohms load and 10 to 100 v. across 5,000 ohms load.
Distortion factor: below 2%
Power source: a.c. 110 or 220 v.

25X1

ENCLOSURE 7, SECTION C:

Audio R.C. Generator (Large Type) Type P07



Power rectifier tube: 5Z3
Frequency range: 20 - 20,000 c/s
Frequency accuracy: better than 0.5%
Output Power P max - 7 W with distortion factor below 0.2 %
Frequency stability: 0.1 %
Minimum load resistance: 6, 60, 600, 6,000 ohms. Internal resistance below 1% of load resistance
Output voltage from mikrovolter: 10 uV to 20 V.
Power source: a.c. 110 or 220 V.

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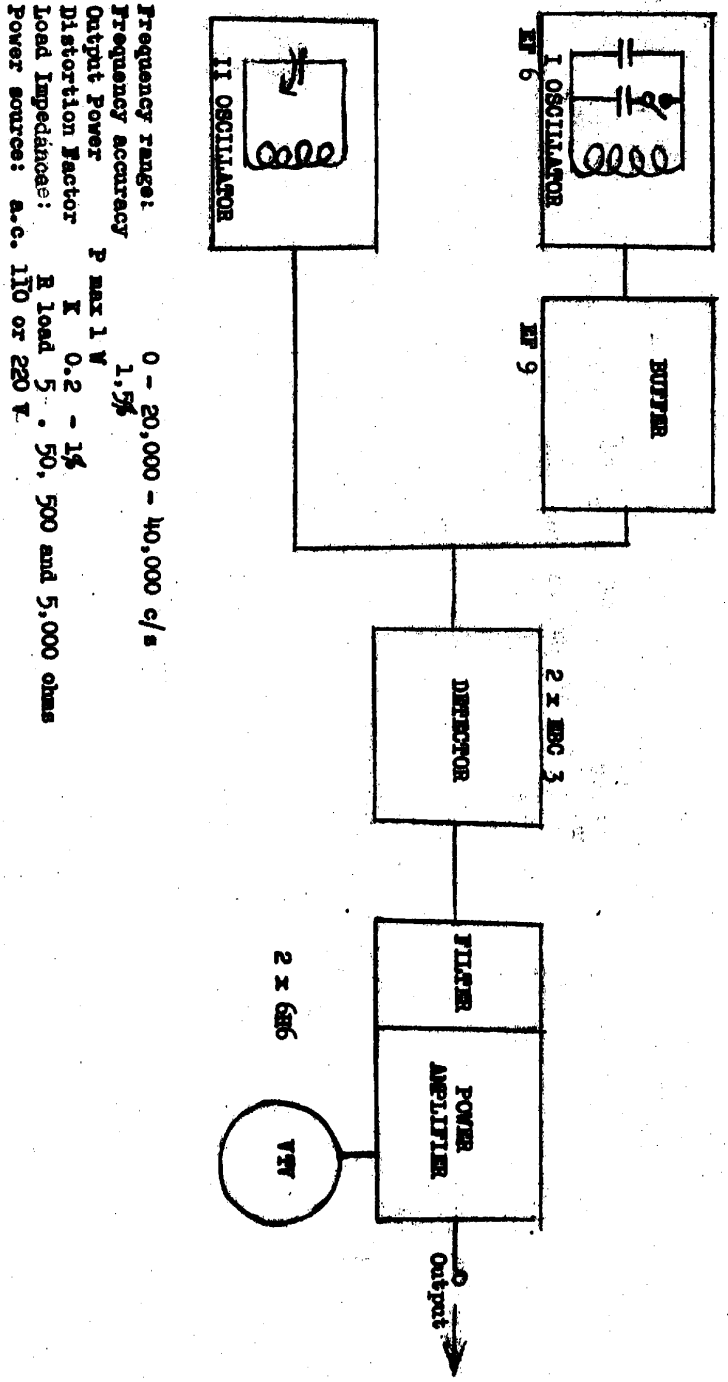
ENCLOSURE 8, SECTION C:

Beat Frequency Oscillators

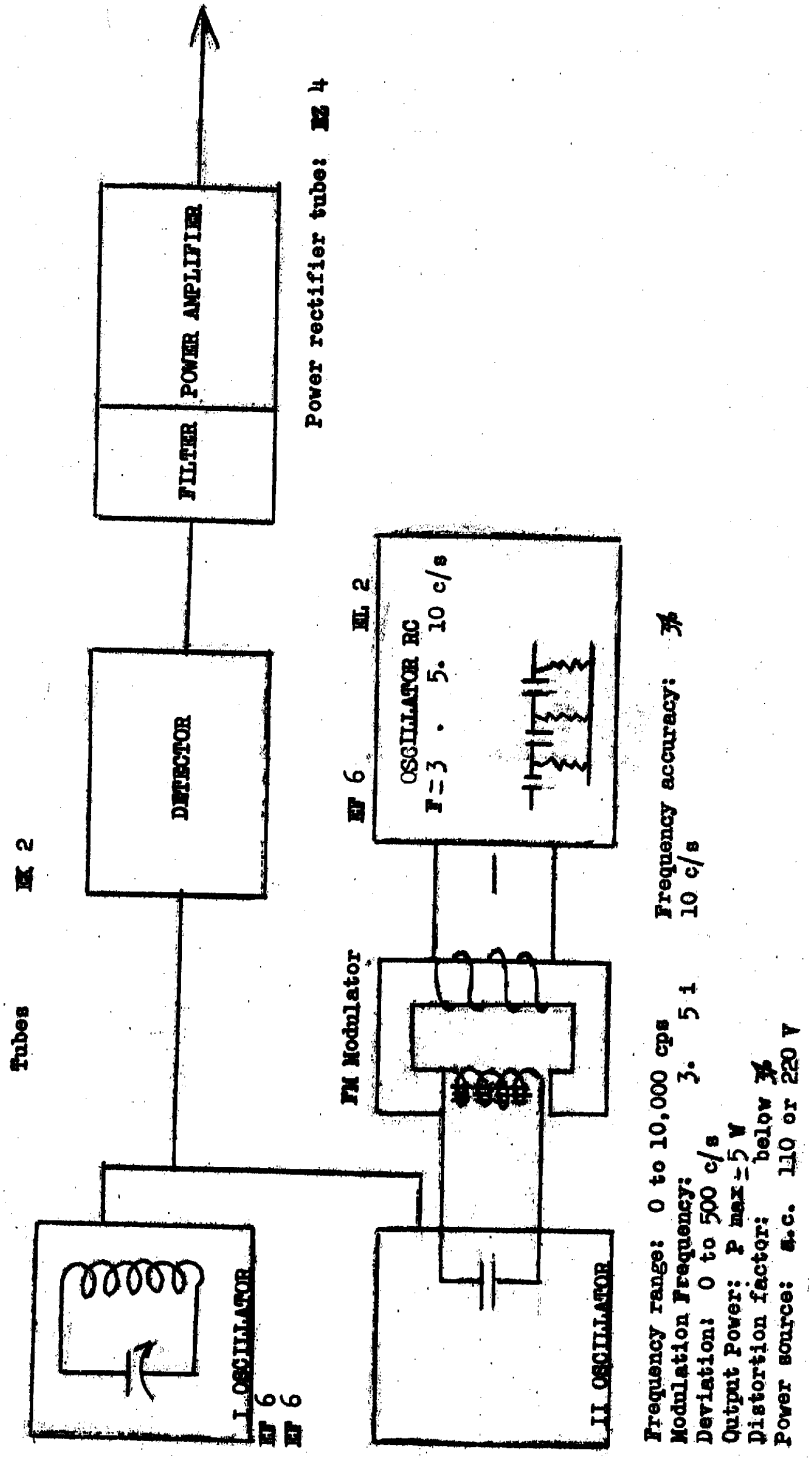


SECRET

25X1

ENCLOSURE 9, SECTION C:

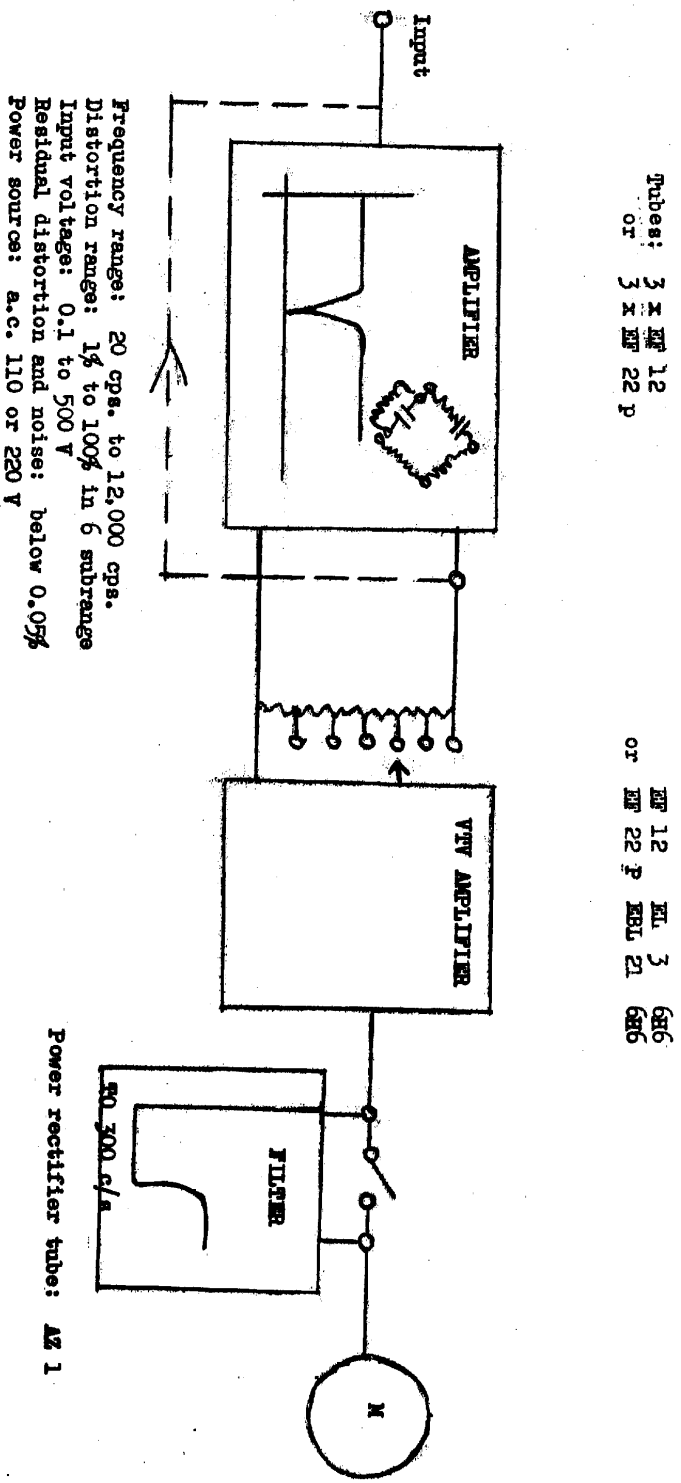
Audio Frequency Vibrator Generator



25X1

ENCLOSURE 10, SECTION C:

Distortion and Noise Meter



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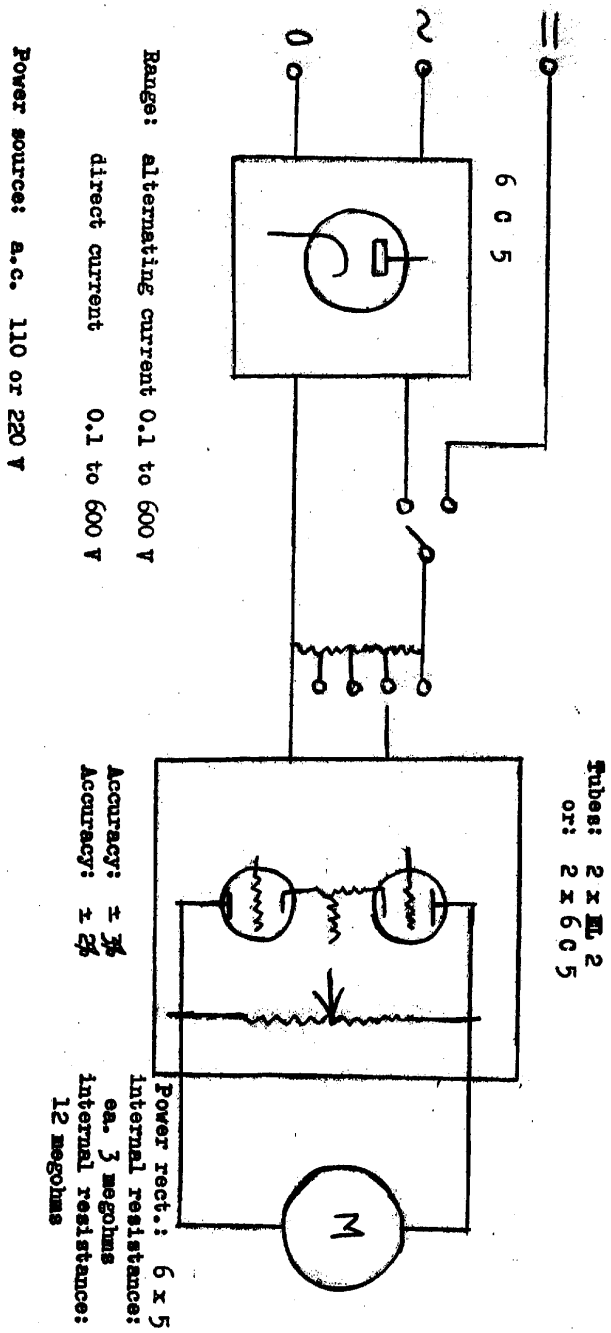
25X1

ENCLOSURE 11, Section C:

[redacted] Sketch of Vacuum Tube Voltmeter

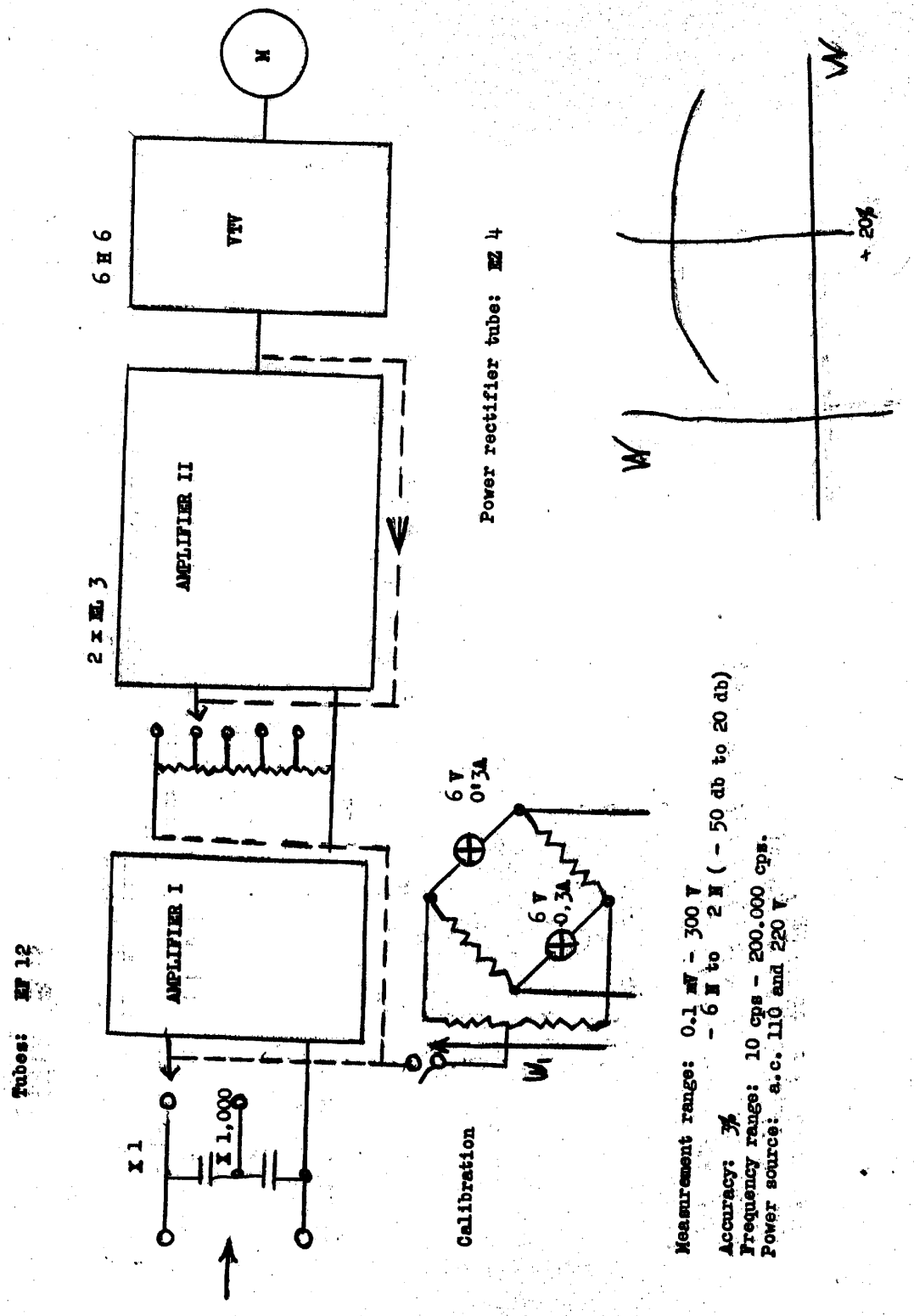
25X1



25X1

ENCLOSURE 12, SECTION C:

Millivoltmeters and Levelmeters

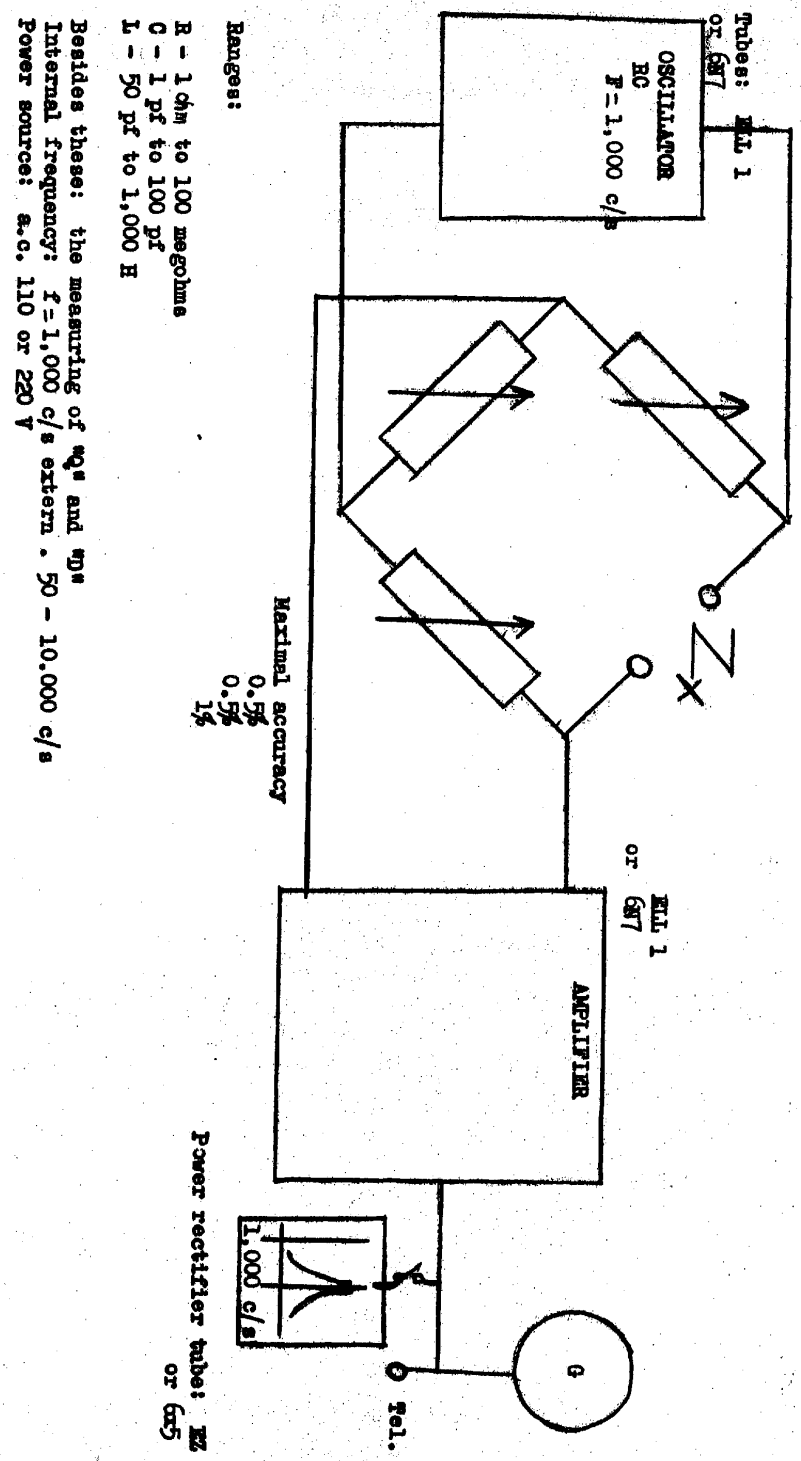


SECRET

25X1

ENCLOSURE 13, SECTION C:

Impedance (RLC) Bridge

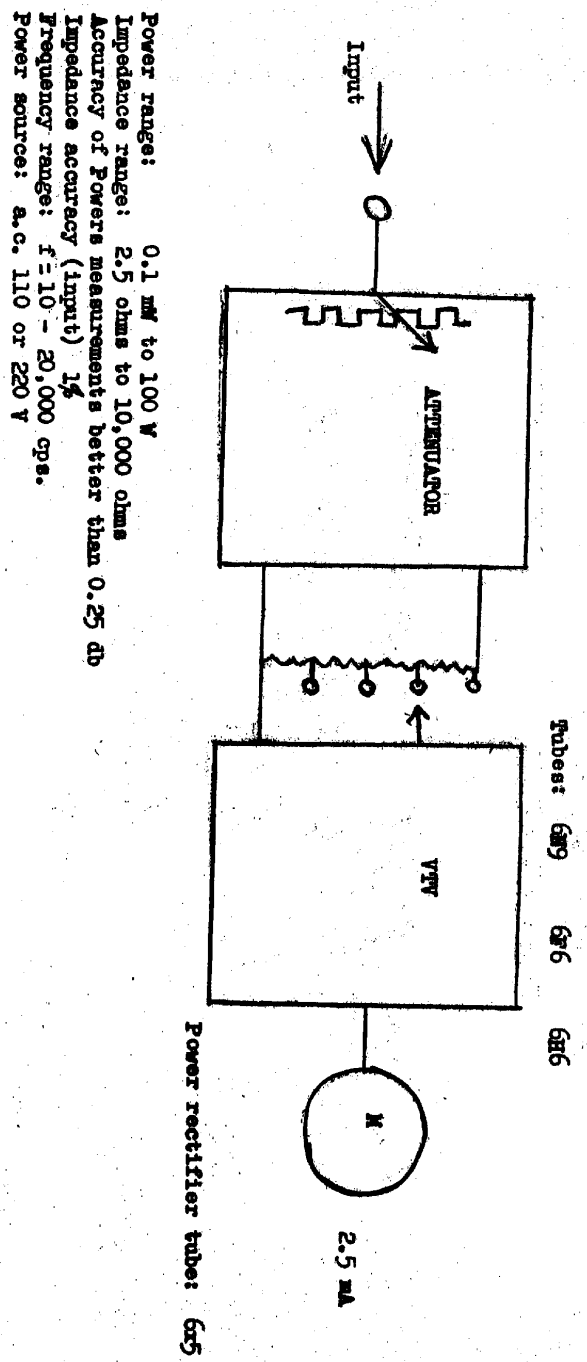


SECRET

25X1

ENCLOSURE 14, SECTION C:

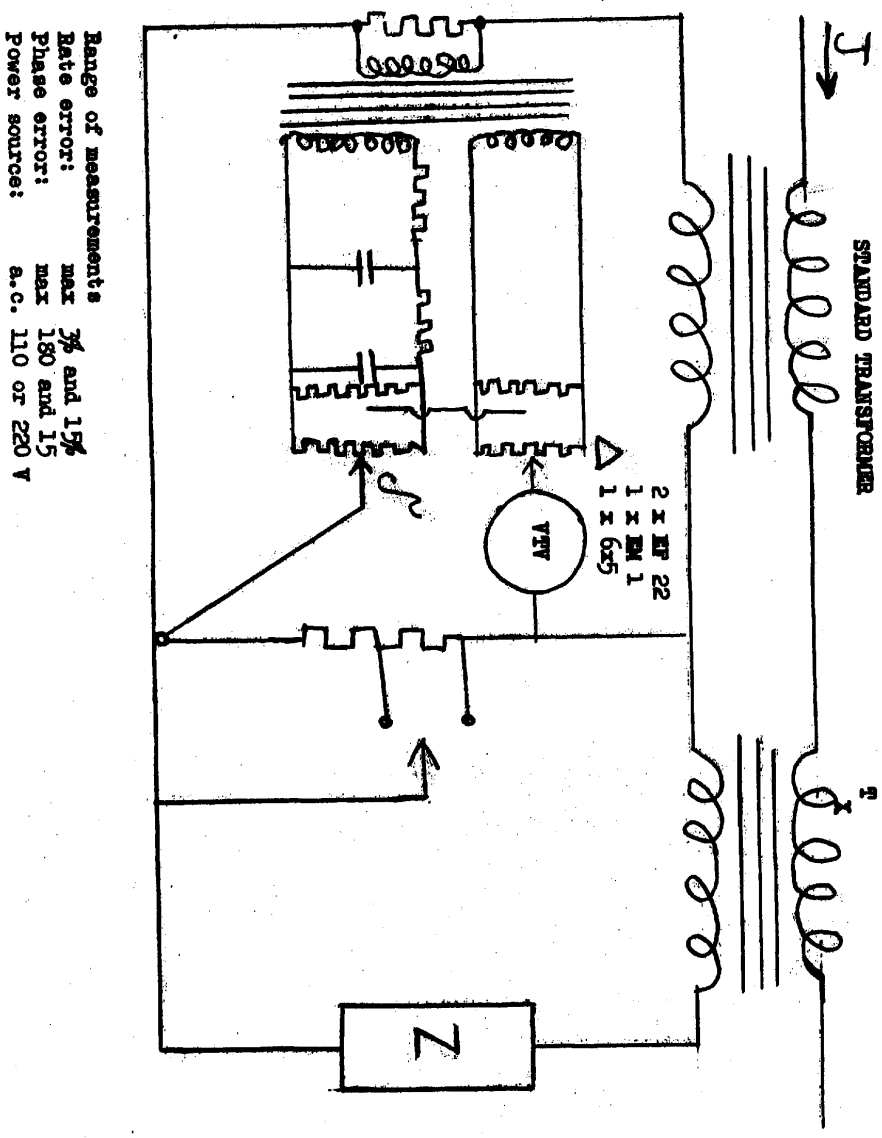
Power Output Meters



25X1

ENCLOSURE 15, SECTION C:

Alternating Current Compensator for Measurement of Current Transformer's Accuracy

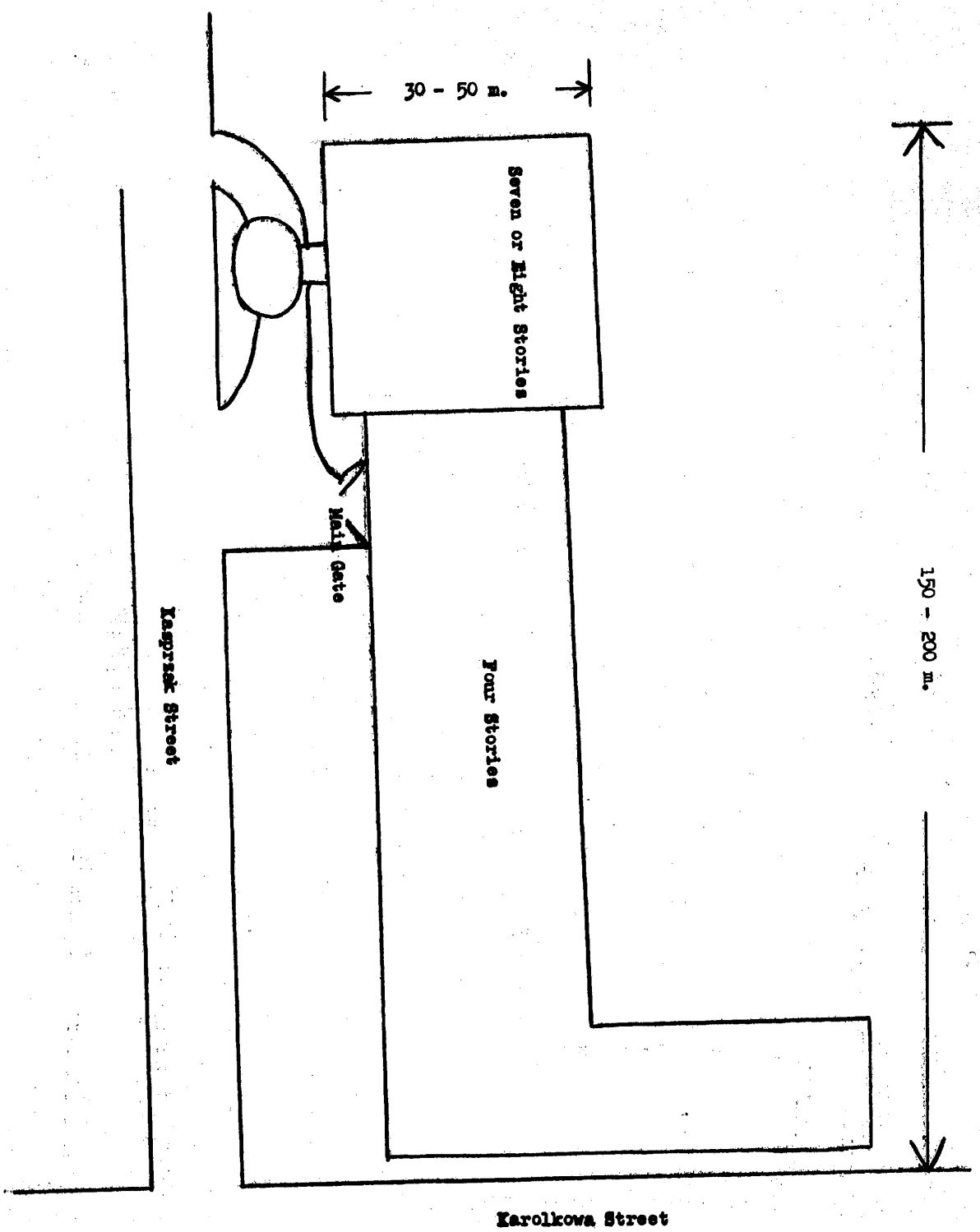


25X1

ENCLOSURE 1, SECTION E:

[redacted] Sketch of Top View of T-3 Radio Factory

25X1



25X1

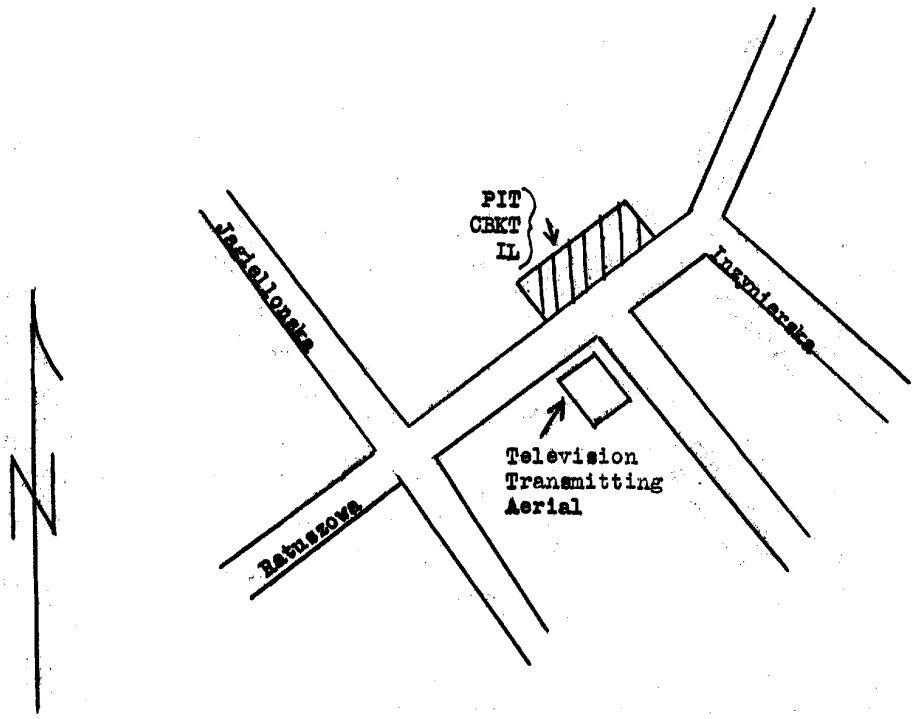
ENCLOSURE 1, SECTION H:

[redacted] Sketch of Location of PIT, IL, and CBKT Building

25X1

Building - Ratuszowa 11
Warsaw, Poland

(Not to scale)

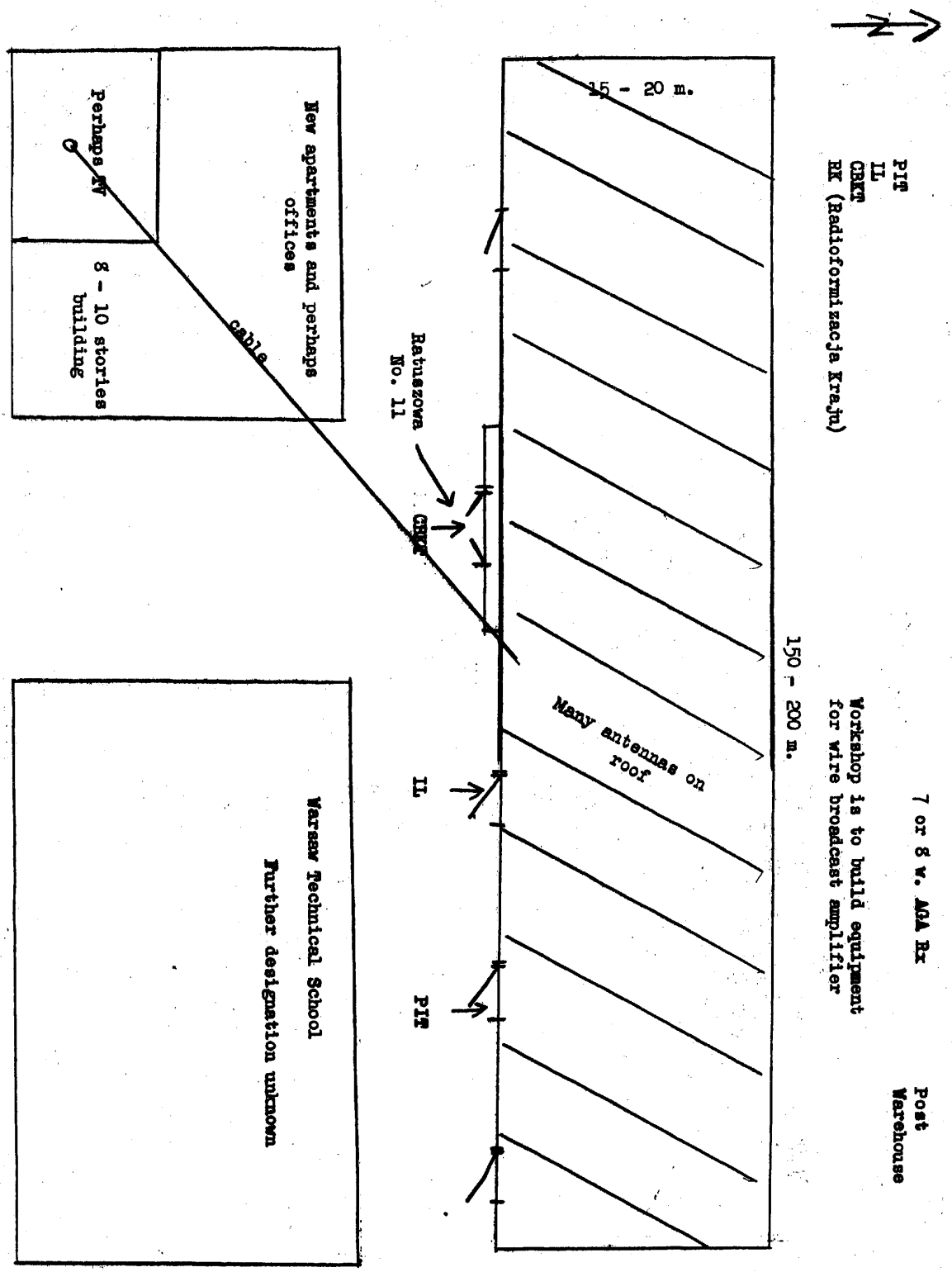


25X1

ENCLOSURE 2, SECTION H:

[redacted] Sketch of Area in Immediate Building Vicinity

25X1



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