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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

diagram showing the principal cable

routes in Hungary.

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THE GENERAL DIRECTORATE OF THE HUNGARIAN PTT (C)

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THE GENERAL DIRECTORATE OF THE HUNGARIAN PTTIntroduction

This report contains information on the organization and activities of the General Directorate of the Hungarian PTT. To a considerable degree it delineates the extent of expansion planned for the four or five years subsequent to 1957 and the types of communications equipment planned for use in this expansion. Also included are information on the overseas receiving and transmitting stations and a description of the prevailing apathy toward this service. Several special networks which use the cable circuits of the PTT are discussed; the resistance of the Hungarian PTT to the use of high capacity microwave links equipment is described in detail. Organization charts of the PTT, a cable chart, and a sketch depicting the floor plans of a repeater station in Tarnok, located south of BUDAPEST, are included, as well as a translation of an article which appeared in a Hungarian language newspaper in February 1958. The article describes in detail the construction of the new headquarters of the Hungarian Radio, which was a part of the PTT.

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The cities mentioned in this report are listed below with their geographical and UTM co-ordinates:

<u>Name of City</u>	<u>Geographical</u>	<u>UTM</u>
BAJA	N46-10, E18-56	CS-4215
BUDAPEST	N47-30, E19-05	GT-5565
CEGLED	N46-56, E22-33	DT-0825
CSAKVAR	N47-23, E18-27	GT-0852
CSORNA	N47-37, E17-15	XN-6976
DEBRECEN	N47-31, E21-39	ET-4864
DOMBOVAR	N46-23, E18-08	BS-7939
GYOR	N47-47, E17-38	XN-0785
HATVAN	N47-40, E19-41	DT-0080
KAPOSVAR	N46-21, E17-47	YM-1438
KECSKEMET	N46-54, E19-41	DS-0096
KISKOROS	N46-37, E19-17	CS-6865
MARGALI	N46-35, E17-25	XM-8561

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<u>Name of City</u>	<u>Geographical</u>	<u>UTM</u>
MISKOLC	N48-06, E20-47	DU-8428
MOR	N47-22, E18-12	BT-8950
NAGYATAD	N46-13, E17-21	XM-8221
NAGYKANIZSA	N46-27, E16-59	XM-5346
NYIRAD	N47-00, E17-27	XN-8608
NYIREGHAZA	N47-58, E21-43	EU-5411
PAPA	N47-20, E17-28	XN-8645
PECS	N46-05, E18-13	BS-8605
REPCSELAK	N47-25, E17-01	XN-5254
SAVAR	N47-15, E16-56	XN-4635
SOPRON	N47-41, E16-36	XN-1984
SZEBOED	N46-15, E20-09	DS-3324
SZEKESFEHERVAR	N47-12, E18-25	CT-0430
SZOLNOK	N47-10, E20-11	DT-3525
SZOMBATHELY	N47-14, E16-37	XN-2334
SZTALINVARDS, (DUNAPENTELE)	N46-58, E18-55	CT-4205
TAMASI	N46-38, E18-16	BS-9168
TARNOK	N47-22, E18-51	CT-3749
ZALAEGERSZEO	N46-50, E16-51	XM-4089

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1. Organization of the General Directorate (See Annex A)

a. Effects of the Hungarian Revolution on the Organization

After the revolution in Hungary, there was great emphasis on the political reorganization of the country at all levels. There were a number of changes in the political hierarchy of the country, and politicians maneuvered for positions of increased importance in order to strengthen their personal positions in the Party. There were no significant changes in telecommunications ministries, directorates, factories, and laboratories

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There was some shifting of personnel in some of the smaller factories such changes would have been made regardless of the revolution.

The most significant change made was the removal of Laszlo HERMANN chief engineer of BHG in Budapest, who was replaced by Oszkar KAS; however, HERMANN's removal might well have occurred because of contracts he had signed with the USSR and Red China which were hardly capable of fulfillment.

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b. Background Information

The General Directorate of the PTT was a part of the Ministry of Communications and Postal Matters and was directly subordinate to one of the Deputy Ministers. The Ministry was one of the most far-reaching in Hungary; it was impossible to go anywhere in the country without coming in contact with some branch of the Ministry or with some activity responsible to it. Because of the great sphere of activity, it would be difficult to present the organization of the Ministry of Communications and Postal Matters in precise terms, and because telecommunications facilities in Hungary were in a continual state of flux, exact information varied from one week to the next. Plans were continually being made to increase communications facilities; new equipment was being installed in many places; television activities were being increased; the FM high-fidelity network was in the process of organization; and a great deal of cable was being laid in southwest Hungary. All of this activity was difficult to follow and quite possibly resulted in some shifting of responsibility or possibly in the creation of new departments or sections; however, the PTT organization chart in 1956, assumed the form shown in Annex A. the organization chart was available to persons participating in discussions concerning the equipment which would be required for the planned television and frequency modulated network for the country.

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c. The General Director of the PTT

(1) The General Director

In March 1957 Imre DEDIOS, a former technician in the PTT, was General Director of the PTT. DEDIOS occasionally used the title of doctor, but it was doubtful that the title was authentic. His office was at BUDAPEST 12, Krisztina Körút 6, telephone number 350350. The Director was frequently referred to as the Postmaster General.

(2) The Deputy General Director

The Deputy General Director was KOVESI (fnu), who had no technical background, but was considered a good Party member. KOVESI was referred to as the Deputy Postmaster General. His office was located at the same address as that of the General Director. KOVESI was directly responsible to DEDIOS for his actions and decisions, and, in the absence of DEDIOS, acted as General Director.

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d. Sections of the Organization

The General Directorate of the Hungarian PTT was organized into sections, shops, and the PTT Research Station. Annex A shows that there were 14 separate activities. The Education and Training, Personnel, Mail, Signal Repair, Vehicle, Financial, Planning, and Work Affairs Sections are self-explanatory. The sections of more than routine interest were:

(1) The International Section

The International Section was administrative in nature and was responsible for gathering information on other satellite and Western communications organizations. This information was disseminated to sections which required it, such as the Engineer Development Section, the Planning Section, and the Research Station. The section was also responsible for maintaining files concerning international law; it received all publications of a technical nature from the Mail Section and kept them on file. Personnel of this section also translated technical documents and material.

(2) The Engineering Development Section

[redacted] this section of the PTT, was headed by Istvan NOVAK. The personnel of this section were responsible for insuring that the facilities of the PTT were the most up-to-date possible. NOVAK made suggestions to the director and deputy director concerning the development or purchase of technical equipment. The section also performed studies of PTT facilities and systems and made suggestions for their technical improvement when necessary. NOVAK, a strong advocate of carrier-type communications on cable and open-wire circuits, violently opposed those in the PTT who were interested in the installation of high-capacity microwave links equipment. In 1950 and 1951 NOVAK worked on line routes for cable and open-wire circuits for the Hungarian air defense system.

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(3) The PTT Research Station

The PTT Research Station, established shortly after World War II, was one of the oldest organizations of its type in Hungary. The original purpose of the station was to perform tests on materials and equipment to be used or in use by the PTT. Later, the development of telecommunications equipment was added to its duties; this responsibility still existed in March 1957. At that time, the station or institute, as it was also known, consisted of about 10 departments: Transmission, Television, Instrument, Chemical, Radio, Material Testing, Model Workshop, Library, Work Affairs, and Logistics. The last three comprised the administrative section. In 1957 the Station was headed by Dezzo NAGY, a Doctor of Physics, and an expert on carrier transmission.

(4) The Radio Section (See Annex B)

The Radio Section was the second largest section of the General Directorate. It was exceeded in size only by the Telegraph and Telephone Section. The head of the Radio Section was Tibor RONTÓ, a technician who was formerly employed in the Telephone and Telegraph Section. He had no special qualifications for the job, but he was a good Party member and in high favor with the General Director. The Radio Section consisted of two major divisions: the Radio Engineering Directorate and the Television Engineering Directorate. The Radio Engineering Directorate was located at BUDAPEST 8, Trefort ut, exact number unknown, and was headed by Laszlo SUSANSZKY. The Television Engineering Directorate was located at BUDAPEST 5, Vaci utca 33,

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and was headed by Irme HODOS. The chief engineer was Zoltan MAROTH, and the chief accountant was Karoly BACSINSZKY. The Radio Engineering Directorate consisted of four departments, a receiving station near TARNOK, and a section which technically controlled the PTT radio transmitters, of which there were 12 or 13. The four departments were the Financial, Technical, Work Affairs, and the Microwave Links. The Television Engineering Directorate consisted of three sections: the Television Studio, the Television Transmitter, and the Television Links. [redacted] the Television Engineering Directorate would grow in the four or five years subsequent to 1957 because of the anticipated growth of the Hungarian Television and FM network. 25X1

(5) The Telephone and Telegraph Section (See Annex C)

The largest activity of the PTT General Directorate, the Telephone and Telegraph Section, encompassed all of the individual directorates in Hungary. In addition to the Budapest Directorate, which controlled only the activities in BUDAPEST proper, there was a directorate for the BUDAPEST suburbs,² and one each at MISKOLC, DEBRECEN, SZEGED, FACS, and SOPRON. Each of the directorates was organized in the same manner as the Budapest Directorate (shown on Annex C). A directorate consisted of a director, chief engineer, chief accountant, and technical, planning, work affairs, personnel, and financial departments. The Telephone and Telegraph Section controlled all telephone and telegraph facilities in Hungary as well as the operations of the international radio receiving and transmitting stations.

The organization of an individual exchange activity in Hungary assumed essentially the same organizational aspects as one of the directorates. In Hungary, vertical organization was always the same from the top to the bottom of an activity and within each separate branch. In each exchange there would be technical, planning, work affairs, personnel, and financial offices, in addition to a chief engineer. The head of the exchange would correspond to the director at directorate level. 25X1

(6) Operational Responsibility

Each section head was responsible to the General Director 25X1 through the Deputy General Director. Normally, only matters of policy ever reached the level of the General Director; the section heads made their own decisions or received the approval of the Deputy General Director. The Regional Directorates had essentially the same authority as the section chiefs. [redacted] the head of the Telephone and Telegraph Section maintained close liaison with the heads of the Regional Directorates, especially in matters of over-all policy. Operationally, the Directorate heads were relatively free of 25X1 interference from either the section or the General Directorate. They were allowed to make their own decisions concerning working hours of employees, training of new employees, and maintenance procedures. Actually, such matters were outlined by the General Directorate, and each Regional Director had a copy of the orders. The chief engineer had the over-all responsibility for operational matters in a Regional Directorate; consequently, he was chosen for the position with more than ordinary care.

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(7) PTT Repair Facilities

[redacted] Each exchange had a maintenance group which was responsible for all minor repairs in the exchange. It covered maintenance of switches, switchboards, power equipment, and distribution frames.

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A major repair section was located in each of the main cities of a regional district to handle more serious repairs. If equipment had to be overhauled completely, it was dismantled and shipped to the BHG factory, to the factory of manufacture if located in Hungary, or otherwise to the main PTT repair shop in BUDAPEST. The PTT quite frequently sent their repairmen to the BHG plant for refresher training in maintenance and repair of BHG-produced equipment.

Maintenance crews were also used for outside plant facilities. Such crews maintained and repaired open-wire circuits, performed cable maintenance, splicing, and repairs, and installed new sections of switching and/or connecting cable when required. PTT crews were often observed working in cable-heads, manholes, and on open-wire facilities. A crew consisted of about three or four men, and a PTT truck was usually available to them. All PTT radio stations maintained their equipment in the same manner as wire facilities were maintained. Local personnel performed minor repairs, but if major repair or maintenance was required, the item was sent to the place of manufacture. All PTT installations maintained small stocks of maintenance items such as relays, wire of all types, capacitors, vacuum tubes, switches of all types, resistors, and numerous other small items for communications equipment.

2. Wire Communications Facilities

a. Cable Circuits

(1) The majority of the wire communications in Hungary were carried over a large cable network which extended star-like from BUDAPEST. The center of all long lines activity in Hungary was in the Jozsef exchange in BUDAPEST, where all cable and open-wire long lines circuits terminated. Parallel terminations were made in the Ministry of Interior and in Party headquarters. Numerous small cities and towns in Hungary did not have cable connections with BUDAPEST. Lateral cable communications lines in Hungary did not exist, and it was always necessary to place a call through BUDAPEST. Towns without communication circuits, such as TAMASI, PAPA, MOR, KISKOROS, and others, were connected by open-wire lines to the nearest city which had cable circuits. This was true of the many thousands of small towns and villages in Hungary. The most important cable circuit in Hungary was the one from VIENNA to GYOR, BUDAPEST, CEGLED, and on to SZEGED; from SZEGED it went on to BELGRADE, where it terminated. The next most important cable circuit was from BUDAPEST to HATVAN and on to MISKOLC.

(2) All cable was of the voice frequency type; there was no coaxial cable in Hungary up to March 1957. The number of pairs in a cable varied from 24 to 144. Most cable was manufactured in BUDAPEST at the Kábel Gyár (Cable Factory). According to specifications of the PTT, all cable in Hungary was laid on the right side of highways from BUDAPEST, 50 cm from the road shoulder and buried 50 cm deep. The laying of cable was the responsibility of the Telephone and Telegraph Section of the General Directorate of the PTT. 25X1 25X1

b. Open-Wire Circuits

(1) Although the majority of wire communications in Hungary were carried over cable circuits, there was a considerable amount of open wire in the rural areas and also some in the immediate suburbs of BUDAPEST, GYOR, MISKOLC, and SZEKESFEHÉRVAR. open wire was also used in many other heavily-populated areas. There was an open-wire carrier system

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between BUDAPEST and SZEKESFEHERVAR in addition to the cable circuits; however, open wire was not used for critical circuits because of its susceptibility to storms and other types of damage. It was used primarily for connecting smaller cities and towns with those cities and towns where cable heads were available.

(2) Lines were placed on wooden poles along highways or roads, and the number of pairs varied from 2 to as many as 24 in some localities. Not all open wire had carrier on it, but that which did could be easily identified because pairs were transposed every third pole in a clockwise direction. Bronze wire was used throughout Hungary for construction of open-wire lines. Considerable research was being conducted at the PTT Research Station on the use of aluminum wire for communications purposes. Copper was on the critical list, and steel and iron wire was undesirable for such purposes. It was believed that as more cable was made available to the PTT, open wire would gradually disappear in Hungary, except perhaps in the more remote regions of the country.

c. Repeater Stations

(1) [redacted]

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Those repeater stations which were not located in exchange buildings were easily identified because all of them had the same appearance. They were designed by the Central Design Office of the Logistics Section of the General Directorate.

(2) The repeater station [redacted] located about 12 km south of BUDAPEST in the village of TARNOK on the main road to SZEKESFEHERVAR.

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it was on Highway 8; the station entrance was directly from the highway into a driveway. There were no guards, nor was there a gate at the entrance; but it was necessary to ring a bell to get into the building. The repeater station at TARNOK had considerable importance because it was the first in the BUDAPEST West-Hungarian cable network. The building was one story high, about 40 m long and about 18 m wide. It was painted light gray and had a dark red roof. (See Annex E). [redacted] there were two technicians on duty, one of whom lived at the station with his family.

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The interior of the station was neat and clean, and the equipment appeared to be in excellent condition. Technical equipment consisted of Philips 48-channel carrier, a power panel, batteries, and a diesel semi-automatic emergency power unit.

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[redacted] the inscriptions on the panels were in Hungarian. [redacted] the equipment operated quite well.

d. Switchboards Used by the PTT

(1) Switchboard equipment used in Hungary was manufactured almost exclusively by the BHG plant. Much of it was copied from well-known foreign equipment, especially the larger automatic dial equipment such as the 7A2 and 7DU, which were copies of British Standard equipment. The 7A2 switchboard was made in 10,000-line size and the 7DU was normally produced in increments up to a maximum of 10,000 lines. Any city which required from 5,000 to 10,000 lines was always equipped with a 7A2 board; the 7DU was installed in those cities which required less than 5,000 lines. Both boards were of the rotary type. In smaller cities or towns, several types of manual switchboards were used, either the local or common battery type. These manual boards were developed and manufactured by BHG, and some were of the cord type, others cordless, and

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many differed in voltage requirements from 3 to as high as 48 volts. The boards varied in size from 20 to 200 lines, and some could be paralleled to increase the capacity of an installation. It can be anticipated, however, that the cordless type board will gradually replace those with cords.

(2) In large switchboards, the trend in Hungary in 1957 was toward the development of the Crossbar exchange. [redacted] Crossbar [redacted] 25X1 equipment would eventually replace the rotary systems, but, because of the economics of production, it would take 8 to 10 years to make the change. It was not believed that the rotary system would be able to fill the requirements of a high capacity system. As another consideration, since the West would in all probability attempt to sell Crossbar equipment to Hungary, it was important that BHG waste little time getting it into production.

(3) Several types of switchboards for special purposes were also used by the PTT. These were the so-called "Midget" exchange, the CB-55, and a number of PEX boards.³ The "Midget" switchboard was one of the most interesting of wire switching devices. It was being tested [redacted] in [redacted] 25X1 March 1957. It had been developed by the BHG plant and the PTT Research Station in a number of sizes for the purpose of alleviating the circuit shortages in local cables. Technically, it was a small automatic board with 5 trunk lines and up to 20 party lines. It was to be installed in apartment houses and in private homes and could be termed "neighborhood PEX equipment." The boards were identified in a number of ways: "Bérhazközpont" (Apartment House Exchange), "Gal-Központ" (Gal Switchboard, after the name of the BHG engineer who developed it), "Torpeközpont" (Midget Switchboard), and "Melléközpont" (Satellite Switchboard). [redacted] the "Midget" boards were to be in production by late 1957 and installation would start by early 1958. They were much discussed in telecommunications circles, and it was expected that large numbers of local circuits would be freed through their use. 25X1

e. Toll-Dialing Equipment in Hungary 25X1

The subject of automatic toll dialing was discussed a great deal in Hungarian telecommunications circles during the four or five years previous to 1957; however, in March 1957, none was being used [redacted] Operator toll dialing had been in use, but it was discontinued in 1956 and changed to manual service.

(1) The PTT resisted all efforts to do anything to increase the number of lines available for long-distance telephone calls because it would affect the bonuses which PTT officials received. In addition to their salaries, PTT officials received a bonus which was based on the total revenue of the PTT. The majority of long-distance telephone calls made in Hungary were of an official nature, military, political, or between factory heads. The person making the call would ask for the top urgent classification for his call in order not to wait. This classification was the most expensive, which resulted in more money for the PTT and larger bonuses for the officials. [redacted] 25X1

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(2) Another factor involved in the reluctance of the PTT to increase its long lines capacity was that the majority of its top personnel were of the "old school" and believed that cable and carrier communications as established would best serve the interests of the country. The officials resisted anything which would improve the intercity service in Hungary and especially the installation of high capacity microwave links equipment. Istvan NOVAK, head of the Engineering Development Section of the General Directorate, was largely responsible for the resistance to long lines expansion, and especially to microwave equipment.

f. Use of Telex Equipment in Hungary

Very little Telex equipment was used in Hungary.

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It was used to a limited degree by some of the Hungarian Trade Missions and their counterparts in the West. Telex equipment was of Siemens-Halske manufacture and was maintained by technicians of the PTT. there was little interest in its use for Hungarian factories, and no one encouraged its development.

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g. Carrier Equipment Used by the PTT

The Hungarian PTT used several types of carrier equipment; some of it was manufactured in Hungary.

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a considerable amount of Philips 48-channel carrier was used. The Philips equipment was not compatible with other types of carrier equipment because it used a six-kilocycle speech band, which limited its use to certain definite cable circuits. Philips carrier was on the BUDAPEST-SZEKESFEHERVAR-KAPOSVAR-PECS cable.

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The BUDAPEST-MISKOLC cable was installed at the same time. In 1951 or 1952, however, the Siemens-Halske carrier was removed, and BHG-manufactured 12-channel carrier replaced it. This equipment was the BSOJ.

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the carrier equipment on the VIENNA-GYOR-BUDAPEST-CEGLED-SZERED-BELGRADE cable route was also the BSOJ. equipment on this cable would have to be compatible with that used in Austria and Yugoslavia.

the majority of the open-wire carrier used in Hungary was the BBO-3 equipment manufactured by the BHG. in the six or eight years subsequent to 1957 practically all carrier equipment in Hungary would be replaced by the BHG-developed "BKM" series. one of the basic reasons for its development was the standardization of such equipment in the country. Carrier telegraph equipment would in all probability be the BHG-produced VT-24.

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h. Cities with Dial and Local Battery Switchboards

when a decision was being made to install automatic dial equipment in a particular city in Hungary, such factors were considered as the population of the city, its importance industrially, and its location. The number of lines considered necessary for a particular city was also carefully estimated. It was very probable that in two cities of equal size, one of which was industrial, automatic equipment would go to the industrial city. The automatic equipment referred to would be of the large capacity systems manufactured by BHG, such as the 7A2 and 7DU automatic dial switchboards. BHG was developing a series of smaller dial equipment in 1957, and it was very

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probable that this new equipment would be installed in many cities and towns which previously had only manual equipment. BUDAPEST was probably the only city in Hungary which had a six-digit system; all others had four-digit systems. [redacted] MISKOLC, SZEGED, SZOMBATHELY, PECS, DEBRECEN, GYOR, BAJA, and KECSKEMET had automatic dial switchboards. [redacted] there were probably others, such as SZEKESFEHÉRVAR and SZTALINVAROS (DUNAPENTELE), which had automatic dial equipment.

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It could only be assumed that all other cities or villages used manual switchboards of either the local or common battery type. It would be difficult, if not impossible, to describe the type of board located in each city, town, and village in the country.

3. Interdependence of Military and Civilian Communications Systems

a. Planning

At several meetings [redacted] concerning the installation or expansion of telecommunications facilities in Hungary, military use was discussed [redacted]

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[redacted] At every meeting a representative of the military was present who quite frequently objected to some phase of the planning. [redacted] the development of civilian communications networks in Hungary was very closely related to the military requirements, undoubtedly based on Soviet concepts and control. In 1950 the military and the PTT met several times to discuss the adequacy of the PTT facilities for use by the military in the event of an emergency. Military requirements were thoroughly established, and it was definitely determined that PTT circuits, as they existed at that time, were insufficient for military purposes. Many new cable routes were required to meet military needs primarily, and civilian needs were considered as a secondary objective.

b. Wire Facilities

[redacted] as a result of the military and PTT discussions in 1950, a great deal of cable was being laid in the western part of Hungary and this activity was still in progress in March 1957. [redacted]

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[redacted] the project was progressing at full speed and carried a SECRET classification. The cables being laid were of standard paper-insulated, lead-covered types for carrier service up to 60 channels, even though only 48-channel carrier equipment would be used until about 1960, when 60-channel equipment was expected in Hungary. [redacted]

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[redacted] cable was being laid along most of the major highways in the western part of the country. ZALAEGERSZEG, NYIRAD, SAVAR, PAPA, MARCALI, NAGYKANIZSA, KAPOSVAR, NAGYATAD, DOMBOVAR, CSORNA, GYOR, CSAKVAR, and REPCEELAK were specifically mentioned as bases of operation for the cable laying activity. The military always had observers on the scene to note where the cable was being laid as well as the locations of cross-over points and repeater stations. The military reserved for themselves a certain number of circuits in each cable.

c. Military Interconnections

Military circuits were always clearly marked in all cable huts, repeater stations, and exchanges as identification to repairmen and military signal personnel desiring to use them. [redacted] the method used to identify military circuits [redacted] consisted of either painting

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the terminal connections or of hanging tags on the reserved circuits. These special military circuits terminated in the military headquarters building in BUDAPEST. A military unit on maneuvers carried field wire or field cable in order to make connections with the military cable circuits. One type of wire was a lightweight single conductor consisting of several strands of steel and copper with either cloth or synthetic insulation. It was carried on drums of about 1,000 m per drum; two wires were required for a circuit. Another was a cable consisting of two pairs of conductors, each conductor of stranded copper, individually insulated, and encased in a synthetic rubber covering. Heavy duty connectors were placed on the ends of each length of cable, which was then wound on a drum, of about 200 m capacity, and carried on a specially-equipped cable truck, which was either a Csepel 300 or GAZ-151. The cable, when being laid, was placed on available trees, telephone poles, or on the ground.

d. Civilian and Military Microwave

(1) The interdependence of civilian and military microwave circuits was difficult to describe accurately. In March 1957 the PTT was operating only one microwave link circuit, between BUDAPEST and MISKOLC. The military had only a limited number of MH-10 and MH-6 microwave sets, and this equipment was not compatible with the Brown-Boveri equipment being used by the PTT.

(2) While the PTT opposed the installation of microwave equipment for telephone circuits with the argument that present cable circuits were sufficient for the needs of the civilian population, the military was enthusiastic over the use of microwave, but only from one field headquarters to another.

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the idea was always to use microwave from a division to a corps, and then PTT cable to BUDAPEST. This concept might change with the assignment of newer and better microwave equipment to the military when it became available. Since the Hungarian Army always planned its maneuvers on offense, such as armored troops driving a wedge and immediately exploiting it, the concept was for large capacity communications systems from the armored force to a field headquarters. It was not believed that a large capacity system would be necessary from the field headquarters to BUDAPEST, therefore the use of PTT cable circuits.

(3) When the PM-28 and PM-8 microwave equipment becomes available in Hungary, sometime in 1959, the situation might change with respect to coordination between military and civilian microwave circuits. The PM-28 and the PM-8 were to be completely compatible, this fact would perhaps change the degree of dependence of the military on the civilian systems; however, in the event of a national emergency, the military would take over all or the majority of the PTT communications facilities.

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(4) During 1955 and 1956, the military in Hungary, had tried to get the PTT to install more microwave equipment, but the PTT's resistance to it was so strong. On the other hand, the PTT wanted the military to install microwave equipment on a permanent basis in the belief that it would release large numbers of long distance circuits. Therefore, it was difficult to predict whether the military or the PTT would install high capacity microwave links equipment in the future.

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4. Special Networks in Hungary

a. The "K" Network

The "K" network was one of several operated in Hungary for special communications purposes. Essentially, all of the networks operated in the same

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manner: special cable pairs, secret numbers, secret telephones, and secret operational procedures. The "K" network was installed either in 1950 or 1951 and was for the specific use of top Party officials, top industrial managers, and military personnel of high rank. In addition to the security it provided, it obviated the need of waiting for a connection. It was designed by the Telephone Department of the BHO plant from specifications submitted by the Ministry of Interior. The only special thing about the "K" network was that it used a 7DU type switchboard, which was placed in a special room of the Jozsef exchange building in BUDAPEST.

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a portion of the "K" network was controlled from the "Rock Center" (OLLEP - National Air Defense Command).

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(1) Technical Information

The "K" network system had a capacity of 4,000 lines, numbered from 1000 to 4999. It was provided with fully automatic equipment, not only in the BUDAPEST area but in all cities and districts of Hungary where it was used. Each line of the 4000 was assigned to a person and not to an office or position. Telephone instruments used in the "K" network were modified in such a way that they could not be operated without the use of a specially designed plug or key. This special plug or key constituted the "lock" for the telephone and was controlled by an unidentified office of the Ministry of the Interior. The amount of numbers required for a certain area was first determined; then circuits in existing PIT cables were earmarked and set aside. PIT repairmen who might come in contact with the earmarked circuits were given strict orders to ignore them.

(2) Security Aspects of the "K" Network

The entire "K" network system came under the security procedures of the AVH, which inspected the instruments, switchboards, and cable circuits and also examined and approved repair personnel as well as the physical security of switchboards and telephone sets. Telephone sets had to be kept in locked cabinets or drawers of desks. A technical inspector, a technician from the BHO plant, was assigned to perform operational checks on the network. He was issued a special pass, with his photograph on it, which had to be renewed each month and was required for entering the switchboard-room, cable heads, and main distribution frames. The technician was specially selected after a security check by the AVH. He had strict instructions not to discuss the network with anyone; the slightest infraction would result in his dismissal. The 7DU switchboard in the Jozsef exchange was in a special room in the cellar of the building.

(3) Assignment of "K" Telephones

All ministers, deputy ministers, heads of directorates, Party secretaries at ministry level, CP Headquarters, the directors of important plants, and Party organizers of the plants had "K" telephones. The director of the Telecommunications Research Institute had a "K" telephone, as did the Deputy Minister of Defense and the Party secretaries in the Defense Ministry. In short, a "K" telephone could usually be found at any level where there was a high Party official.

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Application for a "K" telephone was made to the Ministry of Interior, which issued a permit for the installation if the application was approved.

(4) "K" Telephone Directory

The cover of the secret telephone directory for the "K" network was light green with a dark red border; it was about 15 x 10 cm. It contained about 40 pages with about 15 names and phone numbers on each page. The titles of subscribers were not used except for military persons. The names

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were listed from the front to the back of the book in order of importance. For some unexplained reason, it did not contain the names of all subscribers, but one could call the information operator, 05, and get the number.

b. The "M" Network

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It was established for the purpose of effecting rapid mobilization in Hungary in the event of an emergency. Lines were available to the top CP officials and all top military leaders. The system had a maximum of 1000 lines, and, like the "K" network, fully automatic equipment.

the switchboard in BUDAPEST, was probably in one of the military caserns in the city. The "M" network also used the cable facilities of the PTT.

had five telephones: a regular city telephone, a phone in the PBX system of the building, an "M" phone, a "K" phone, and a Hungarian Army field telephone. The phones were easy to identify, in the case of the "M" and "K" phones, by letters placed on them.

c. The PTT Service Network

Every exchange in Hungary was connected to the switchboard of the PTT central office in BUDAPEST through normal PTT cable circuits. These circuits were nothing more than a service network for the use of PTT officials in all cities and directorates. It probably consisted of about 1000 lines and had automatic equipment.

d. The Special Network of the Communist Party in Hungary

Like all other special telephone networks in Hungary, the Communist Party special net, which served only to provide instant communications between members of the CP in certain areas, had fully automatic equipment. Such officials as the First Party Secretary, ministers, and Party secretaries in the various plants and districts were connected with the system. the network was organized on a district basis because it had a two-digit system which allowed a maximum of 99 numbers to be used, an amount hardly sufficient for the entire country, and, as an example, the Party secretary of the BHG plant would not ordinarily have any business with the Party secretary of a plant in another city. The network operated with a special calling signal which was generated by a voltage lower than 48 VDC, which was used throughout the country on automatic systems.

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e. The Special AVH Network

the AVH did have numerous secret telephone numbers, but for security purposes only. In 1952 or 1953 the development laboratory of the Telephone Factory received an order from the AVH for the development of special 50-line teletype switchboards. Laszlo NADAS, the engineer in charge of the project, and his staff finished the project, and it was sent to the Radio Equipment Factory in BUDAPEST for production. Several production people were transferred from the Telephone Factory to the Radio Equipment Factory to assist in the production of the exchanges. production was

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completed in 1955, [redacted]

[redacted] The AVH used Siemens-Halske teletype machines, type unidentified, [redacted] the machines and the exchanges were used in a special communications network for the AVH. [redacted]

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5. The Overseas Receiving and Transmitting Service

a. General Information

The overseas receiving and transmitting service of the Hungarian PTT was one of the most neglected branches of the communications services.

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[redacted] At the beginning of Communist domination of Hungary in 1948, little, if any, attention was paid to the receiving or transmitting station [redacted]

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[redacted] There were complaints that the service should be improved, but the official viewpoint was that the Communist Party was not interested in improving communications with the West and that existing cable circuits sufficed for communications with the East. It would have cost considerable money to buy the new equipment which was needed, especially since such equipment would have had to be bought from the West. It was well known that the Mechanical Laboratory in BUDAPEST during 1955 and 1956 had been producing excellent quality communications receivers, in four types differing only in frequency range. They were for export to Red China, where they were to be used for monitoring purposes. This fact alone proved that high quality equipment was available to the PTT, but the PTT showed complete indifference toward buying any of it.

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b. The Receiving Station in TARNOK

[redacted] Technically, the station was under the Radio Engineering Directorate of the PTT, located at BUDAPEST 8, Trefort ut., and headed by Laszlo SUSANSZKY. Operationally, it was controlled by the Post Office Department, located at BUDAPEST 4, Varoshaza ut, which was also identified as the Central Telegraph Office. The receiving station was located in TARNOK, about 15 or 20 km south of BUDAPEST on Highway 8. It was in a two-story building about 65 m long and about 25 m wide. The receiving equipment was installed on the second floor of the building. Offices and emergency power equipment were located on the first floor. In 1955 or 1956 there were about 25 receivers in racks situated around the room. [redacted]

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[redacted] A technician, FUZESERI (fnu), and several other personnel composed the working staff. [redacted]

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[redacted] all control, receiving and transmitting, was exercised through PTT cable circuits. [redacted]

c. The Transmitting Station near SZEKESFEHVAR

[redacted] the transmitting station near SZEKESFEHVAR

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[redacted] was about two kilometers northeast of SZEKESFEHVAR on Highway 7. The steel antenna towers appeared to be about

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50 or 60 m tall. The transmitting station was under the technical supervision of the Radio Engineering Directorate. Lajos KISS was in charge of the station until sometime in 1956, when he was transferred to the Directorate and placed in over-all charge of the receiving and transmitting stations. KISS was one of the few radio amateurs in Hungary and had always been interested in all kinds of radio activity.

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operators were keying the transmitters by hand keys. there were about six operators on duty, but none of them appeared to be busy.

6. Hungarian Radio

a. General and Organization Information

The Hungarian Radio consisted of studio facilities and a number of radio transmitters located in various cities in Hungary. Like other similar organizations in Hungary, it was split: technically, it was a part of the Radio Section of the General Directorate of the PTT, while operationally, it came under the Hungarian Council of Ministers, where a special office handled all of the programming.

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The only function of the Hungarian Radio was to extol the virtues of the Communist Party at every opportunity.

(1) The studios of Hungarian Radio, in an unidentified building in downtown BUDAPEST, were known as the Central Office.⁴ Formerly the Central Office controlled only the studios and the programs, but, by March 1957, it had taken over both operationally and technically and the responsibility of the General Directorate of the PTT was only from the cable heads to the transmitters.

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those who had been working for the PTT General Directorate in the Radio Section were transferred. this occurred in BUDAPEST and effective throughout the country.

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(2) The Communist Party headquarters always dictated the programs to be transmitted as well as scheduling the times for transmission. Valeria BENKE was the program head of all Hungarian Radio. She was constantly in touch with the First Secretary of the Party by special telephone lines.

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When Laszlo HERMANN was released from his position as chief engineer of the BHO plant in January 1957, he was made technical head of Hungarian Radio

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b. Number of Transmitters

There were about 12 radio transmitters in Hungary used for broadcasting. they were in BUDAPEST, SZOMBATHELY, SZEGED,

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NYIREGHAZA, DOMBOVAR, GYOR, MISKOLC, DEBRECEN, PECS, and NAGYKANIZSA.

BUDAPEST had more than one transmitter and perhaps one or two other cities may have had more than one.

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the BUDAPEST transmitters were probably the largest. Programs of Radio BUDAPEST were relayed to all transmitters most of the time; however, at certain times of the day, each transmitter was allowed to broadcast programs designed to furnish local

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information. In addition to program relay by radio, the wire broadcast service used the programs of Radio BUDAPEST for retransmission to wire broadcast subscribers. A new transmitter to operate in the medium-wave band was to be installed near SZOLNOK sometime during 1958 or 1959. This transmitter was to have a power output of 140 kw and was to be constructed by the BHQ plant.

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7. PTT Expansion Plans

a. General Information

[redacted] rumors and a number of possibilities discussed in semi-official circles about the plans for expansion of the Hungarian PTT facilities. [redacted] as long as the present management existed, it would probably resist any effort to improve the service of the PTT to the point where telephones were available to anyone who asked for one. [redacted] the top management did not consist of technically qualified personnel and they relied on the judgement of lower-level personnel. Anything which would reduce the amount of revenue received by the PTT would be resisted because of its affect on the salaries and bonuses of PTT management. (See para 11). The revenue would drop if cable circuits were sufficient to handle all calls placed without waiting and without asking for high priority. This situation was true especially with respect to long lines traffic; [redacted] it was in this area that the greatest advance would be made."

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b. Expansion of Wire Communication Facilities

(1) From about 1955 until about March 1957, the BHQ plant was engaged in the development and production of several new types of telephone switchboards. These switchboards were to be installed as they became available to the PTT. [redacted] the new equipment would be produced from small cities and towns in the rural areas of Hungary and not so much for the larger cities, except the so-called "Midget" switchboard, which had no place in a small city system. The installation of the new equipment would result in an improvement of service to subscribers even though it might not result in an increase in the number of subscribers.

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(2) The telecommunications part of the current five-year plan called for the development and partial installation of toll-dialing equipment by the end of 1960 and for its use throughout Hungary by the end of 1965. At a conference [redacted] before the revolution, concerning the five-year plan, the question of toll dialing was discussed. At that time it was considered that it would take from 8 to 10 years for it to be operational. Cable versus microwave links was also discussed at the conference, and it was decided that the two would be considered equally and would perhaps be used concurrently. It was also stated that at least 90 percent of Hungary would be covered by the television network by 1965.

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c. Carrier Equipment

The installation of new types of carrier equipment would provide the greatest increase in wire communications circuits in Hungary for the next few years. [redacted] the carrier equipment would increase the number of circuits without necessarily increasing the amount of cable, and it would certainly meet with the approval of the PTT management. The BHQ Transmission Development Department had developed new types of carrier equipment which were about ready to be placed in production in March 1957.

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This new equipment, the "BKM" series, was to be developed in several models. In addition, the VT-24 carrier telegraph equipment was in production and was expected to be installed in Hungary. The Telephone Factory was scheduled to start production of a 48-channel carrier equipment.

d. Summary of Possible Expansion

Generally speaking, no extensive expansion of circuits could be expected before 1958 or 1959, when the above-mentioned carrier equipment would be available. It was possible that operator toll dialing would be reinstated in 1958, but only on a limited basis. With respect to additional cable circuits, [redacted] cable laying in the southwest part of Hungary would no doubt constitute all of the cable activity in Hungary for some time. [redacted]

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[redacted] the civilian cable network would probably benefit by it. In 1956 discussions were held concerning the use of aluminum-clad cable in Hungary because of the shortage of lead for this purpose. The PTT was in favor of aluminum-clad cables, but admitted that PTT specifications would have to be changed with respect to cable huts and distribution frames, which were designed for the curvature of lead-covered cable.

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Comments

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4. There follows a translation of a newspaper article about the new studio building of Hungarian Radio. The date of the article was early February 1958.

Description of the New Building

After nearly eight years of confusion and delays, the construction of Hungarian Radio's new studio building is finally under way at 27 Szentkiralyi utca. The managers of Hungarian Radio said that the studio building had not been completed before because the development and growth of Hungarian Radio had received little attention until the first part of 1957, when adequate credit was extended to begin construction work.

The managers went on to say that the most modern and up-to-date plans were being used in the construction of the new building, and, to the best of their knowledge, it would be ready for operation by the end of 1958.

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Laszlo HERMANN, the chief engineer of Hungarian Radio, said that the new studios would be the best and most modern possible. He added that, because it was being constructed between two houses, the size of the building would be restricted, but every square inch of available space would be used.

On the second floor of the building will be located a large drama studio surrounded by several soundproof rooms equipped with an assortment of sound effects, as well as an echo room. The various sound requirements are being built into the studios. A cellar will be built complete with the sounds of rushing water, steel and wood doors, stone and wood floors, and stone and wood walls. In the center of each little studio will be a raised chair from which the director can observe and direct the actors and engineers.

The third and fourth floors will be occupied by a completely new concert orchestra studio, as well as a listening room to accommodate about ten people. HERMANN said that the German Democratic Radio's large public orchestra studio had 12,000 cubic meters of space, and, although Hungary did not need one as large, a studio at least 2,600 cubic meters larger than planned would be a great improvement. HERMANN added that this was especially true from the standpoint of acoustics and larger audience capacity. The engineers were taking every step possible to obtain the best acoustical conditions.

In closing, Comrade HERMANN stressed that the new studio building did not solve the problems of Hungarian Radio, but that at present the nation could not afford the great expense required; in about ten years, however, Hungary would have a new and modern radio-television center.

5. There follows a translation of an article which appeared in a Hungarian language newspaper early in January 1958.

Last year 10,000 new subscribers in BUDAPEST, and 3,200 new subscribers in rural areas entered the telephone network. However great this growth, the demand was not satisfied. Because of a lack of telephone sets, not even requests for extension phones could be fulfilled. This year 5,000 telephones in BUDAPEST and 2,000 or 3,000 telephones in rural areas will be connected. A new telephone exchange to handle 8,000 subscribers will probably be constructed in FERENCVAROS and will be operational in 1960 or 1961.

Beginning with the 62nd Post Office located next to the BUDAPEST Western Railroad Station, many post offices will be modernized. Rural post offices will be modernized in turn. The post offices in the BALATON area and at convalescent centers are now being modernized.

Comment: [redacted] concerning the above article [redacted] the figures quoted were considerably exaggerated in the interest of making "good reading" for the people. [redacted]

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[redacted] the figures are at least 50 percent greater than actual installations.

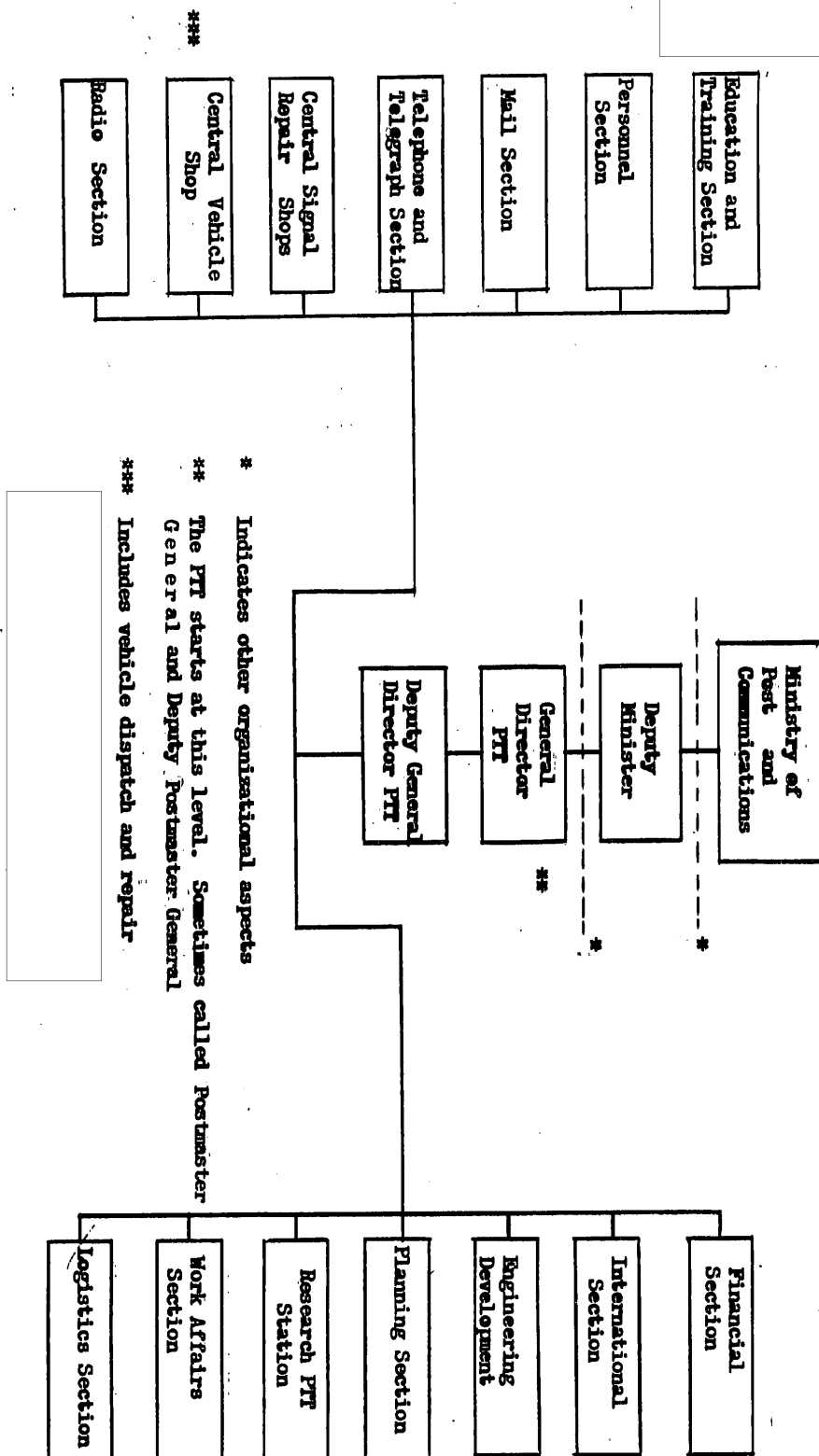
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Annex A
SKETCH OF THE ORGANIZATION OF THE HUNGARIAN MINISTRY OF COMMUNICATIONS AND POSTAL MATTERS

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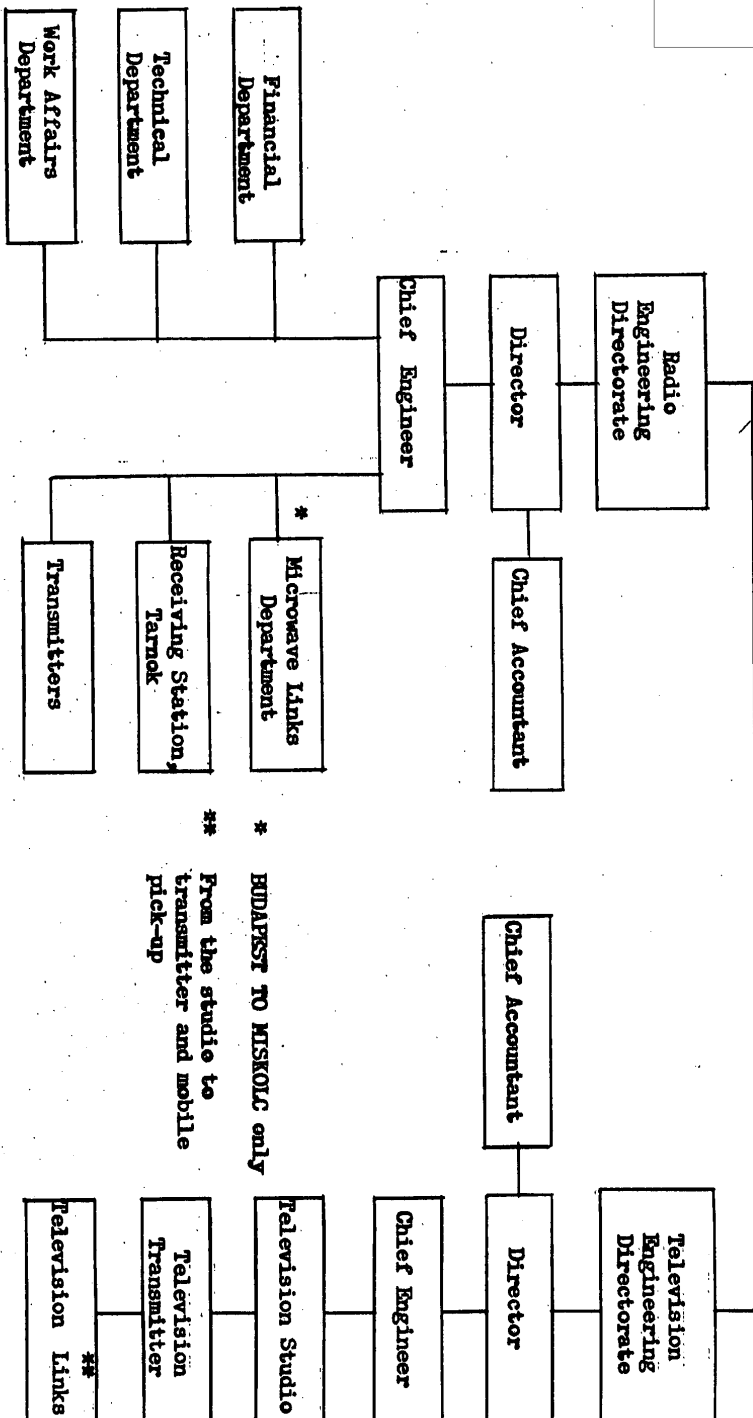
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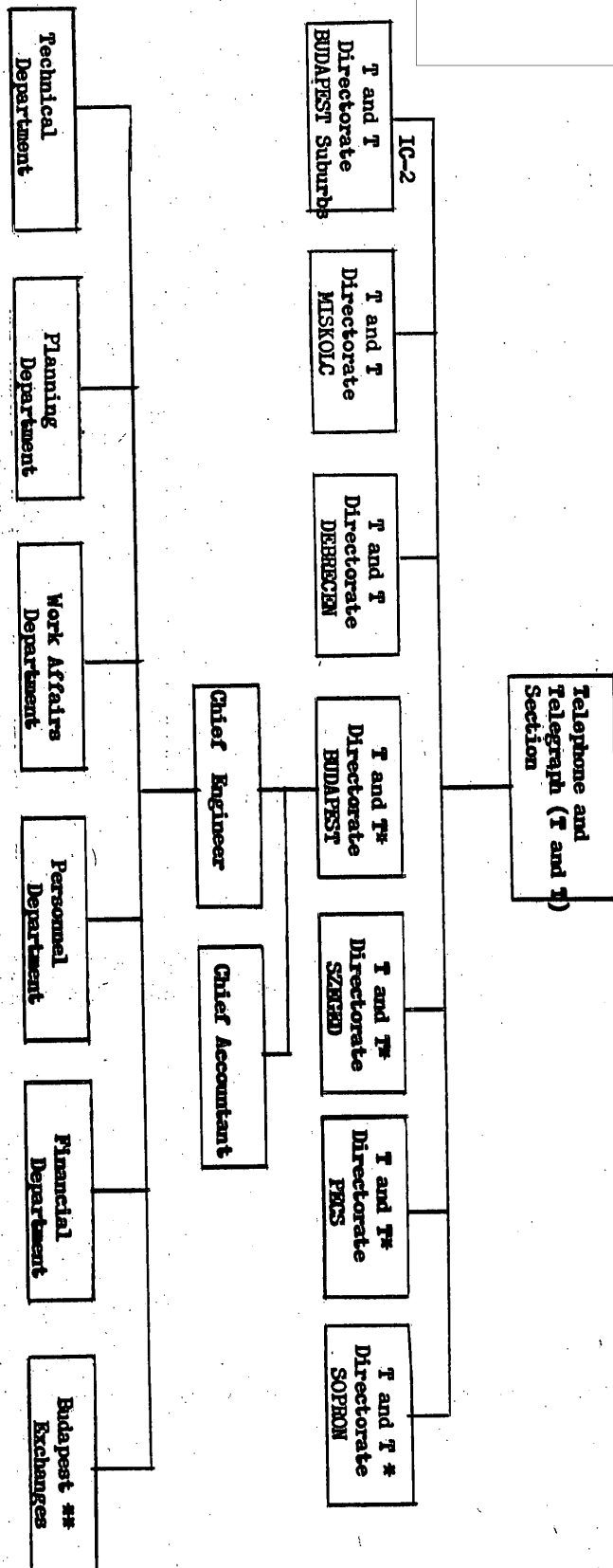
Annex B

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Radio Section



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* Same organization as the T and T Directorate in BUDAPEST

** in addition to the large exchanges such as Jozsef, Krisztina, Lipot, Var, Nagymanyod, Krzeszet and others, there were several small exchanges and a number of Satellite exchanges in BUDAPEST.

SKETCH OF THE ORGANIZATION OF THE TELEPHONE AND TELEGRAPH SECTION OF THE HUNGARIAN PTT GENERAL DIRECTORATE

Annex C

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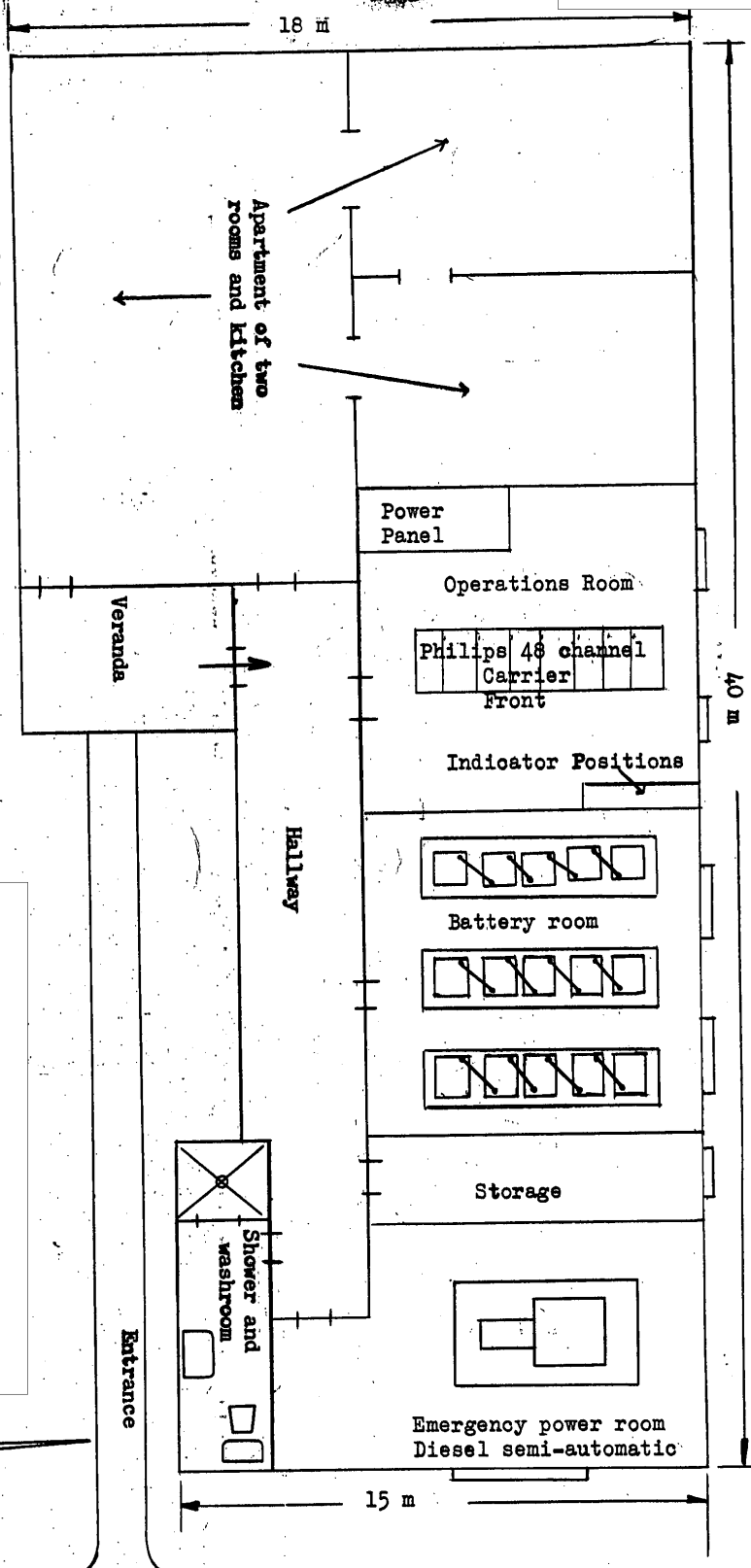
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One story building
Dimensions are approximate.
The building was very clean and neat; it was light gray
with a red roof.



SKETCH OF THE HUNGARIAN PTT AND REPEATER STATION IN TARNOK

Annex E

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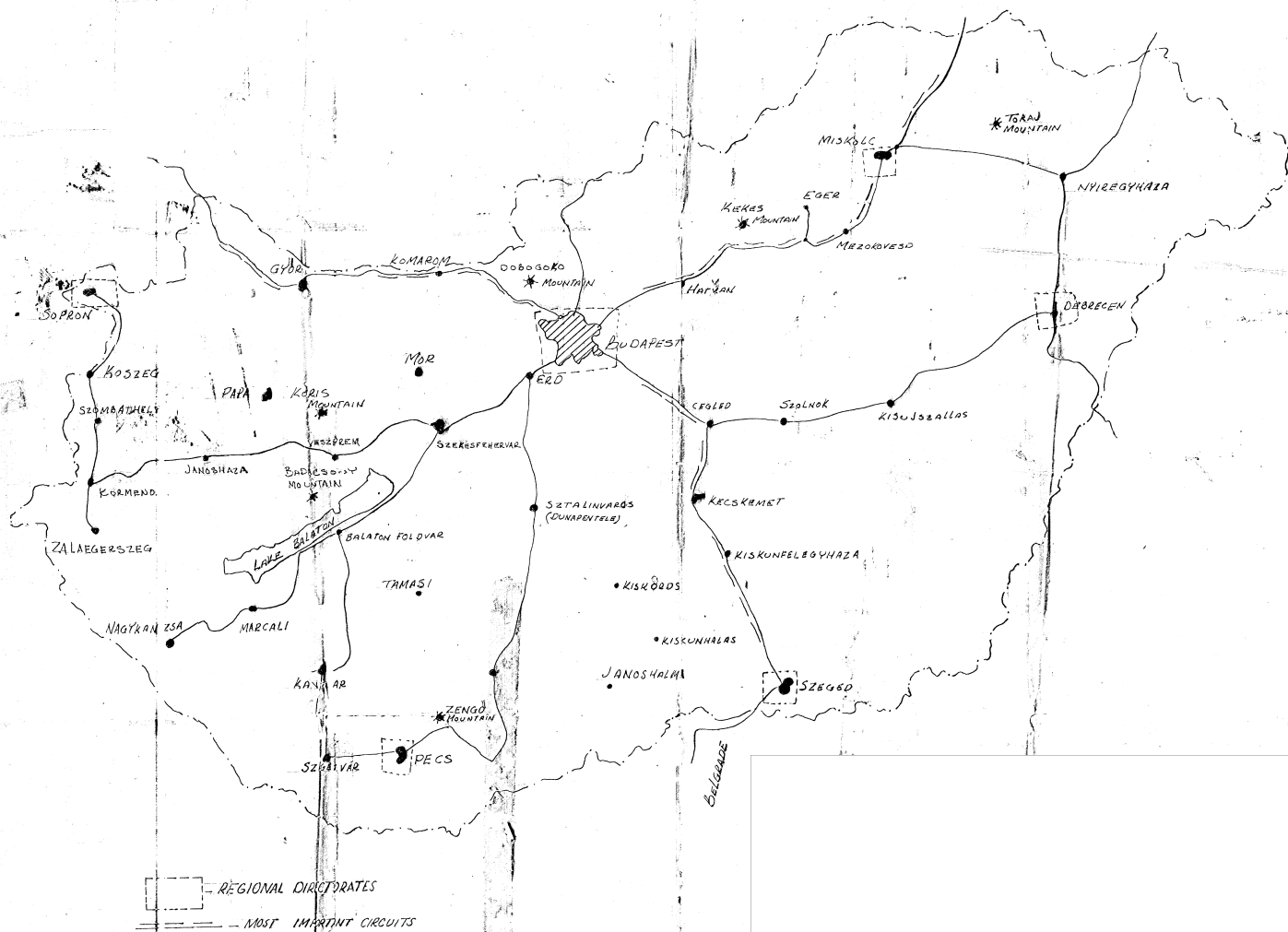
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ANNEX D

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SKETCH OF THE PRINCIPAL CABLE ROUTES IN HUNGARY



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