Below is a rough translation of "Megszüntetésre ítélték a MÁV hosszúhullámú-rádióhálózatát", pp.455-456 in "XX. Század 1951-1970" ["20th century 1951-1970"], Chapter 7 (pp. 431-560) of "A magyar vasúti távközlés rendhagyó krónikája" ["Unusual chronicle of Hungarian railway telecommunications 1846-2000"], János Pap, 2019, 940 pp. Source: bgok.hu. This translation is a Google translation, partly optimized by Frank Dörenberg, January 2022, ©.

MÁV's longwave radio network ordered to be terminated

In 1941, the Hungarian king granted permission to build a long-wave radio network. Post office, but the construction of the network began on December 1, 1940. The radiotelegraph network was needed because of the great increase in the country's domestic and military transportation and the number of business telegrams due to the country's territorial expansion. German Telefunken and Lorenz radio transmitters and Autophon receivers joined the network.

However, the winds of war ruined the network. The radios were either dismantled, smashed, or owned by a foreign country, and so on. A typical example of this was Mosonmagyaróvár, where the Soviets threw the packaged equipment out of the truck on the grounds of a "robot from Malinka". However, they fortunately escaped this brilliant adventure. Or, the case of Sándor Köteles, who collected radios and spare parts at a junkyard in Vienna.

With these enthusiastic professionals who love their profession and work, the railway began to rebuild the long-wave radio network, using the original equipment found and other similar equipment on the Hungarian market.

The purpose of putting some radios into operation, according to experts, is to establish a good and secure connection between the board of directors and the business management, as the war had destroyed 90% of the railway's overhead line network (war conditions, theft by the population, etc.).

MÁV's leaders, including President László Vargha, who later became the victim of a conceptual lawsuit, recognized the need for telecommunications as early as 1945-46, to put it back in order and, if possible, expand it. Otto Barátfalvi, Sándor Köteles, Richárd Küsztel and then Győző Balogh were entrusted with the complete construction of the network. Later, on March 15, 1949, together with the organizational reorganization of the entire MÁV, the KTTH (Central Telegraph and Telephone Office) was established, headed by Sándor Köteles, and included a radio laboratory, whose duties were, among other things: ...

16. Maintenance of all state railway radiotelegraphy equipment, including power supply and antenna equipment.
17. Establishment of new railway radio stations and relocation of existing ones.
18. Installation and technical supervision of passenger information and other railway sound amplification equipment.
19. Carrying out electrical measurements and laboratory work related to the maintenance of radio and sound amplification equipment.

The reinstallation of the network began with the recovery, refurbishment and commissioning of old radio equipment. Of course, the first telegraph station became the property of MÁV, followed by the business directorates. However, due to the lack of Telefunken AS33 or Lorenz 200 equipment, new equipment had to be looked for in the country market.

Companies also applied to MÁV with their equipment, so, e.g., the GVSz, "Machine and Electricity Cooperative" set up by the engineers of the Siemens plant with the GVSz equipment. Either the army with the FuG 10 and FuG 16 type equipment, or Siemens with a receiver radio, in addition to the Hungarian military military R7 and the post-war military radio equipment R50.

TRANSMISSION:

The GVSz transmitter, which was originally the result of a development for a different purpose, but was made suitable for MÁV by the designers, led by engineer Vidareny, i.e., it was integrated into the original long-wave system. The radio was the size of a huge three-door cabinet. On two sides was a long-wavelength equipment with an output power of 500 W operating in the range of 100 kHz to 1 MHz, and on the other side was a short-wave transmitter covering the band 1-5 MHz. A power supply was placed between them, and fed both sides.

Both transmitters operated with the Telefunken RS384 transmitter tube, which was later used in the AS33 transmitter, and later with the Tungsram OS450 transmitter tube. Rectification was done with mercury vapor tubes. These have been shown to be much more reliable than selenium rectifiers, despite the limited lifespan of mercury vapor tubes. Both transmitters (long and short) were suitable for A1 [keyed carrier telegraphy], A2 [tone modulated telegraphy], in addition to A3 [AM voice], but the railway was still unable to use the latter two.

MÁV did not use the shortwave part.

FuG 10 is a German military transmitter, which was developed and adapted by the MÁV laboratory for the railway operation. The original equipment was on several types of aircraft, most notably large aircraft carrying overnight supplies. The whole transmitter unit is approx. It was condensed into a cube with a side length of 230 mm.

It housed three RL12P35 Wehrmacht-type vacuum tubes. One was the oscillator tube and two gave the final power. The original device had an output power of 60-70 W. This was set to 80-90 W in the radio lab. It was very reliable equipment. The approx. The anode voltage of 400-500 V was provided by a separate vacuum tube power supply designed by MÁV. Its wavelength range was 300 ... 600 kHz. It included an antenna tuning unit located in the far end of the aircraft, in the vicinity of the antenna connection. The tuning of the cockpit is a so-called it could be carried out very finely by remote control with five wires via an electric shaft (synchronous). The output power was shown on an instrument on the transmitter, which could also be used to tune the antenna when switching to another frequency. Here, as with all long-wave MÁV transmitters, this antenna tuning unit used a variometer. The complete device was housed in a standing cabinet with a floor area of about 50x50 cm, cf. Figure 2.

The power supply was at the bottom, the transmitter unit above it, and then the antenna tuner unit at the top.

RECEPTION

The list of receivers, even after the war, was driven by Autophon equipment purchased in the 1940s for long-wave radio. Unfortunately, due to their lack, only board and store radios could be restarted from these.

GVSz receiver equipment, GVSz was designed for transmitter equipment, but in addition to its waveband, it also encompassed many shortwave bands. The device lasts for approx. It was built into a heavy aluminum casting housing 60 cm wide, 30 cm high, of the same depth. The construction followed the reliable Siemens technology. It used mixed types of vacuum tubes (claw, 21 and steel tube series). However, the services and overall quality of GVSz customers did not reach Autophon customers.

The FuG 10 receiver was used with the transmitter on aircraft. The size was the same as the original FuG 10 transmitter. It was originally powered from 24V. All functions in the receiver are provided by the universally usable German military electron tube type RV12P2000. The overall waveband was also the same as the FuG 10 transmitter.

The original FuG 10E receiver was installed by MÁV for approx. It was built into a 60x25x30 cm housing that also contained the power supply that generated the voltages needed for operation.

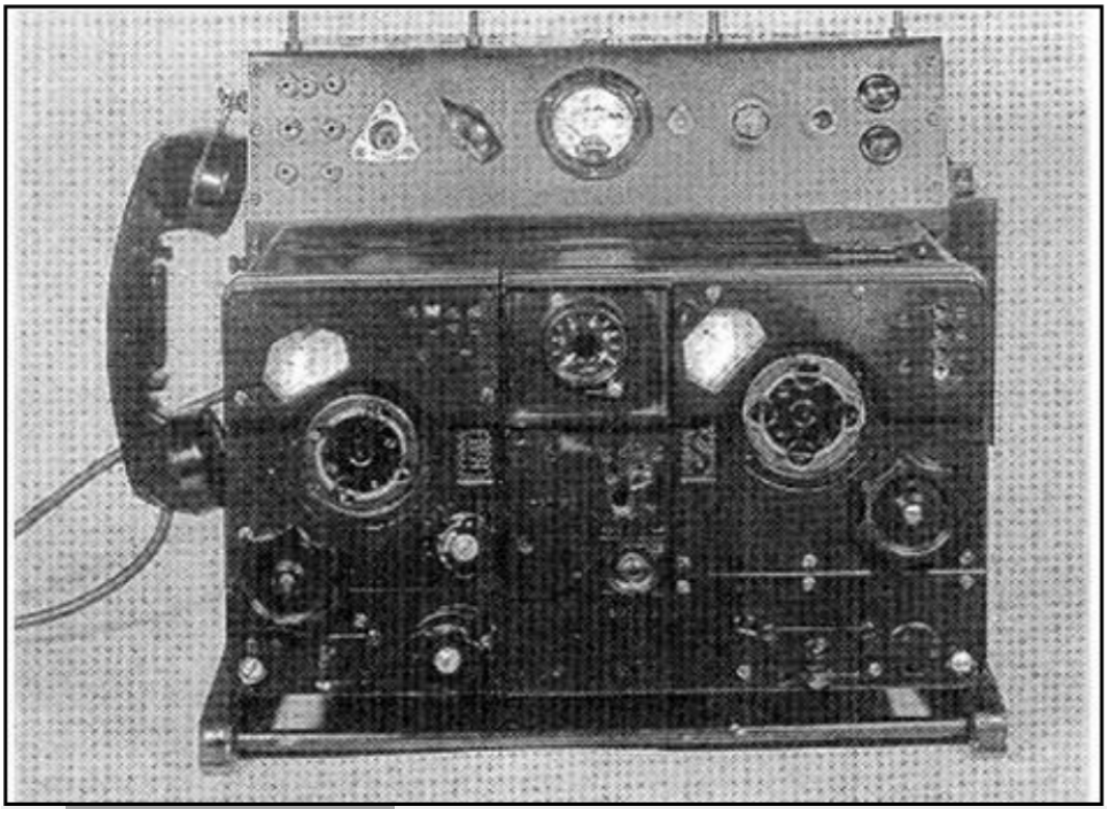

Figure 2: FuG 10E aircraft transceiver

A total of about 10 such receivers were made, which were mainly used in radio telegrams with FuG 10 and Lorenz transmitters.

The special use of FuG 10 receivers in some boards was also to synchronize accurate timing. The minute change signal of the control clock of the MÁV Clock Center in Budapest (Bp. Keleti pu) was transmitted by the transmitter of the radio station of the General Directorate 5 minutes before 12 noon every day, to the control panel of the clock control panel, which the control panel can thus synchronize.

Siemens ship receiver. This system was developed by a manufacturer for maritime shipping in the early 1950s. The manufacturer of the Siemens E11 installed steel (electron) tubes. The disadvantage was that, in view of the wide variety of voltage and current energy sources available on it was universally powered, which made maintenance and troubleshooting complicated and inconvenient.

Each of the receivers used in the railway longwave radio network had a beat oscillator that enabled A1-mode [*FD*: keyed carrier, no tone modulation] telegraph reception. Autophon included a very useful adjustment bandwidth adjustment circuit. This service, which was very useful in the event of confusion and poor reception, could only be provided to a limited extent by GVSz and ship buyers. The reception bandwidth of the FuG 10 receivers could not be changed.

MÁV's long-wave radio network assisted railway management works as a proven and reliable method of telecommunications. The telegraphists also formed a very close circle of friends as a nationwide family. In the lesser hours of traffic, there was great conversation, of course in the form of Hell telegrams, into which the so-called All radio telegraphs in service, from Záhony-Nagykanizsa, Szombathely to Miskolc, etc., could be connected by means of broadcasts. both.

It was characteristic of the professional skills of railway radio telegraphers that almost every year MÁV radio telegraphists won the Post, MTI, Army, Aviation, etc. a national telegraph competition with the participation of telegraphists from organizations. They provided outstanding performance with transmission and reception speeds and telegraph transmission accuracy. Some telegraphs were able to describe the text they were taking with one hand while handing over the key with the other hand to deliver a message. Within the framework of the railway telecommunication service, one whole day a month is called. It was a telegraph meeting, mostly in Budapest, which, in addition to discussing current issues, provided technical training and an informal exchange of views.

The political situation intensified in the 1950s and its impact on telecommunications was felt not only for the country but also for the railways. The importance of short-range radio communications in bridging long distances has increased. At the same time, the disruption of such broadcasts on the instructions of the leaders of the Hungarian Workers' Party, which had not been noticeable since the end of the war, was once again raging. One such target was the interference of Radio Europe, which was then widely listened to. In the October 1956 revolution, the announcements of Radio Free Europe were listened to throughout the country. However, in addition to the political news, there were also rail transport data, along with the corresponding comments. Investigations to prevent data leakage may have resulted in a formal decision in the spring of 1958 to halt the distribution of rail telegraph on the rail long-wave radio network with immediate effect. However, the shutdown of the network was not followed by the immediate decommissioning of the equipment. This did not happen until the early 1960s, when the short-sightedness and blindness of the measures required the scrapping of equipment of unique value carrying irreplaceable monuments of technical and historical significance. It must be completely destroyed. It was also destroyed, smashed with a hammer.

It is technically possible to explain what triggered this blocking measure. In order to ensure the national reception of telegrams on the long-distance railway radio network, it was inevitable that the broadcasts could not be received in the territory of another country. The telegrams were transmitted using Hell telegraph equipment, so that railway telegrams could only be received with another Hell telegraph. This in itself hid all secrets, as such a system of telegraphy no longer worked in neighboring countries. Furthermore, the transmission powers used in MÁV's network did not help to bridge long distances in the used wavelength range. Of course, close to the border, it was possible to capture and record telegrams using a Hell device.

Thus, the fate of MÁV's long-wave radio network was sealed. This is how its successful, useful and instructive operation ended. Unfortunately, it is also the case that many other, irreplaceable railway relics have suffered a similar fate.

[SzT] [HZ]