



Polish white-and-red flag with superposed Kotwica ("Anchor") emblem of the Polish Underground State and Home Army.

Local production of radio equipment for the Polish Home Army.

The Polish Home Army (Armia Krajowa) relied much on radio for internal and external communications. Supplies came from production in secret Polish workshops, and later by air from England. Expansion of the 'Z' network, connecting the Polish Government in London to the Polish Home Army and Home Army Liaison Bases in the Balkans, Switzerland, Turkey, Egypt and Sweden, and successive launch of national networks, demanded an increase of radio communication equipment.

Although there were already active secret production workshops, the quality and production did not even correspond with the minimum demand. In order to maintain maximum security against German security forces, a network of small and completely independent manufacturing centres with one or more workshops with a fixed production profile were created. If a workshop was found by the Germans, it did not entail further arrests. About a dozen of these centres were launched in Warsaw from the end of 1940 until the Warsaw Uprising.

In the 'AK' Chapters to follow, technical descriptions, photographs, drawings and circuit diagrams are provided of the currently known AK radios produced in occupied Poland, including broadcast transmitters set-up during the Warsaw Uprising in 1944.

List of radios recorded being used by Armia Krajowa.

Dropped by air	Local production
A 1	OBA's
A 2	OBAr
AP-2	OSB type 1
A 3	OSB type 2
AP-4	OSU
AP-5	NS30
BP-1	NS35
BP-2	NSP
BP-3	NSPIII
BP-4	RK-1
BP-5	Lightning
Mk. I	Thunderstorm
Mk. II	Encyclopaedia set *
B Mk.II	Four valve 'Electric kitchen stove' receiver *
MR-2	
MR-3	Lilka *
AR 11	Piecykowna *
OP-3	Przedza (Yarn) *
MCR-1	Stasia *
RBZ	Szczeniak (Puppy) *
S-Phone	TG-35 *
Eureka	'Unknown' transceiver *
WS No. 46**	UKF-y *

Recorded but no details known:

500W (Probably Kalinka II)
1kW (Probably Kalinka I)

* See next page for limited technical details.

** According this reference.

Armia Krajowa ('AK')

(Polish Home Army)

Introduction

Poland

Introduction to the 'AK' series

The Home Army (Polish: Armia Krajowa, AK) was the dominant Polish resistance movement in Poland, occupied during World War II by Nazi Germany and the Soviet Union. It was formed in February 1942 from the Związek Walki Zbrojnej (Armed Resistance). Over the next two years, it absorbed most other Polish underground forces. Its allegiance was to the Polish government-in-exile, and it constituted the armed wing of what became known as the "Polish Underground State".

Estimates of the Home Army's 1944 strength range between 200,000 and 600,000, the most commonly cited number being 400,000. This last number would make the Home Army not only the largest Polish underground resistance movement but, along with the Soviet partisans, one of the two largest in Europe during World War II. The Home Army was disbanded on 19 January 1945, after the Soviet Red Army had largely cleared Polish territory of German forces. The Home Army sabotaged German operations such as transports headed for the Eastern Front in the Soviet Union. It also fought several full-scale battles against the Germans, particularly in 1943 and in Operation Tempest in 1944. The Home Army tied down substantial German forces and destroyed much-needed German supplies.

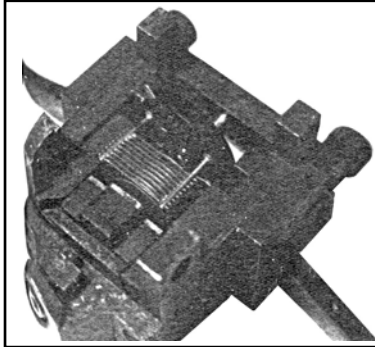
The most widely known Home Army operation was the 1944 Warsaw Uprising. The partisans also defended Polish civilians against atrocities perpetrated by other military formations. Because the Home Army was loyal to the Polish Government-in-Exile, the Soviet Union saw it as an obstacle to Communism in Poland. (Wikipedia)

The main reference for the Armia Krajowa chapters and a major source with reliable information on AK communication and radio equipment produced in Poland during the occupation and the Warsaw Uprising was *Zolnierze Łączności Walki Warszawskiej* (Communications Soldiers of fighting Warsaw), a book written by Kazimierz Malinowski.



References:

- Photos, drawings and circuit diagrams courtesy Bogdan Szkudlarek, SP3LD, Poland, with many thanks. This Chapter, and the following in this series on Armia Krajowa radios, constructed in secret workshops for use in occupied Poland, was only possible with his help.
- *Zolnierze Łączności Walki Warszawskiej* (Communications Soldiers of fighting Warsaw), Kazimierz Malinowski, Warszawa, 1983, isbn 83-211-0378-2.
- *Wireless for the Warrior, Volume 4, Clandestine Radio*, Louis Meulstee, Wimborne 2004, isbn 095263 36 0.
- Wikipedia: https://en.wikipedia.org/wiki/Polish_resistance_movement_in_World_War_II
- ** *Radio communications during the Warsaw Rising*, Z.S. Siemaszko, The Polish Underground Movement Study Trust, London, 2004.



Two production groups, 'Adlera' and 'Zwory', manufactured large quantities of miniature variable capacitors, based on a Hammarlund model, used for production of transmitters and receivers. Till the end of July 1944 several thousand high quality capacitors were made. A special tool for this purpose was built by a group of engineers from the State Telecom Institute in Warsaw (left).

From: *Zolnierze Lacznoej Warszawy*,
Kazimierz Malinowski.



Variable capacitor fitted in a NS 30 transmitter (left).



Variable capacitor in an OSB type II receiver (right).

Technical details of other locally developed Polish radio equipment known to exist.

- **Encyclopaedia Transmitter/receiver:** Concealed in three (thick) volumes of a German encyclopaedia was a radio set comprising separate receiver, transmitter and mains power unit operating on a frequency range of 2-15MHz. In early WW2, four sets were produced in Warsaw. This group also produced the 'Stove' receivers and Szczenik ('Puppy').

- **Four valve miniature receivers** housed in an electric kitchen stove were specially designed for receiving BBC messages.

- **Lilka:** CW only transceiver; Receiver: Super-gainer with IF stage, ECH3/EF9/EBC3/AZ4, Transmitter: Crystal/variable oscillator-RF power amplifier: EL3/2xEL6, 22W RF power.

- **Pieczkowna (Kitchen warmer or stove)** was a set which comprised three parts concealed in electric stoves. Transmitter: crystal controlled operating between 4.5-9.5MHz, Receiver: 3.5-9MHz.

- **Przedza (Yarn):** CW/MCW/AM transceiver; Receiver: Receiver: Super-gainer, 6K8/6K7, Transmitter: crystal/variable oscillator-RF Amplifier: 6N7/2x6L6.

- **Stazla:** CW only transceiver; Receiver: Superheterodyne, Valves: EF8/ECH3/EF9/EBC3/2xAZ4, Transmitter: Crystal/variable oscillator-RF power Amplifier: EL3/2xEL6, 28W RF power.

- **Szczenik ('Puppy')** was a miniature transceiver with very small dimensions of 15x10x10cm, produced by the same group who made the 'Encyclopedia' set.

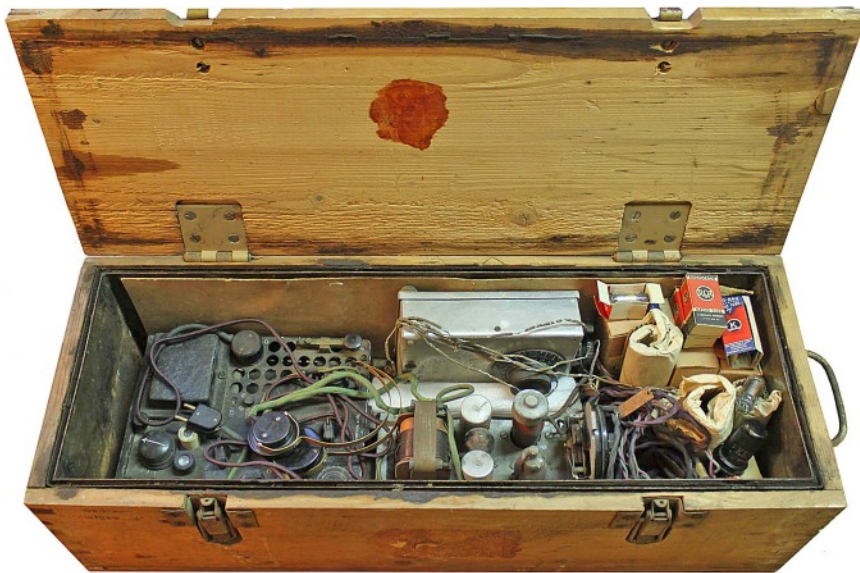
- **TG35:** CW/MCW/AM transceiver; Receiver: Superheterodyne, EF8/ECH4/EF9/2xEBC3, Transmitter: crystal/variable oscillator-RF Amplifier: EL3 and 2xPC05/15 (This was probably a combination of the NS 35/F and a receiver built in a single unit).

- **UKFy:** In the second half of 1943 a prototype of a portable UHF transceiver was developed operating between 0.7 and 1M wavelength. Though reported it worked '...perfect..', it could not be made in series due to difficulties in obtaining suitable valves.

Eventually a new design of a portable VHF transceiver (UKFy) operating on 6.15-6.25M was produced in a quantity of 50 pieces in 1944. These sets had many advantages such as highly portable, not dependent from AC mains, and above all: virtually impossible to intercept and locate by German DF. However, due to poor quality of available components, and probably the character of VHF (blocking of signals by buildings etc.), low power, the radios frequently failed, and could only be used under ideal conditions.

- **'Unknown' transceiver:** A CW only transceiver, after the Stanmore A 1 design. It was intended for use by Polish Government Delegates operating from 3.3-7.55MHz powered by AC mains or 12V DC rotary transformer. Valves: EL6, ECH3, EF6 (2x) and AZ4.

Armia Krajowa communication facilities in the Czestochowa district.



Polish Stanmore A 1 transceiver.



Museum of the City of Czestochowa. These devices constituted the communication node of the Polish Home Army in the Czestochowa District.

AC mains regenerative receiver.



Dry batteries powered receiver.