

Midgets for Spies

Civilian Radio Technology Goes to War
1939 – 1945 and Thereafter

-- A Presentation [as emended] to the
Antique Wireless Association World Convention, 2010

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A Classic 'Midget' Radio, Silvertone Pee Wee, 1939, with AM & Police Bands, AC Powered



A Very
Small
Radio

Police Band to Spies' Band

- The Pee Wee received short-wave frequencies from 1.8 to 4.9 MHz.
- Frequencies around three to four MHz make ionospheric 'skip' circuits of several hundred miles possible at night.
- These distances cover most of Western Europe from England and *vice versa*.
- Before WW II, miniaturized receiver technology enabled clandestine operation.

A Pee Wee Chassis



Very Compact
Construction

The Low Radiation Pee Wee

- The Pee Wee and many midgets were compact tuned radio frequency (TRF) sets.
- TRF receiver operation in a clandestine context has the advantage of no tell-tale radiation from regeneration or from a local oscillator for a superheterodyne circuit.

Another Pee Wee



Detrola 197, 1938



www.tuberadioland.com/detrola197PeeWee_main.html

Detrola 1938 Chassis



'Miniature' Tubes made for Smaller Radios Powered by Batteries



From: Radiolaguy.com,
C.E. 'Sonny' Clutter (AWA)

1941 Zenith model 4K600B, battery only, four miniature tubes.

1941 Zenith model 4K600B



From: www.radiolaguy.com, C.E. 'Sonny' Clutter (AWA)

The Army 'Pogo Stick' SCR-511, 1940, Early Crystal Controlled **Transceiver**, Superheterodyne Receiver, Nine 'Miniature' Civilian Tubes



A Very Small Radio,

Designed for Cavalry Tactical
Communications;

(known as the 'Horse-Talky'
but used by Infantry mostly).

SCR-511, 'Pogo Stick,' 1940



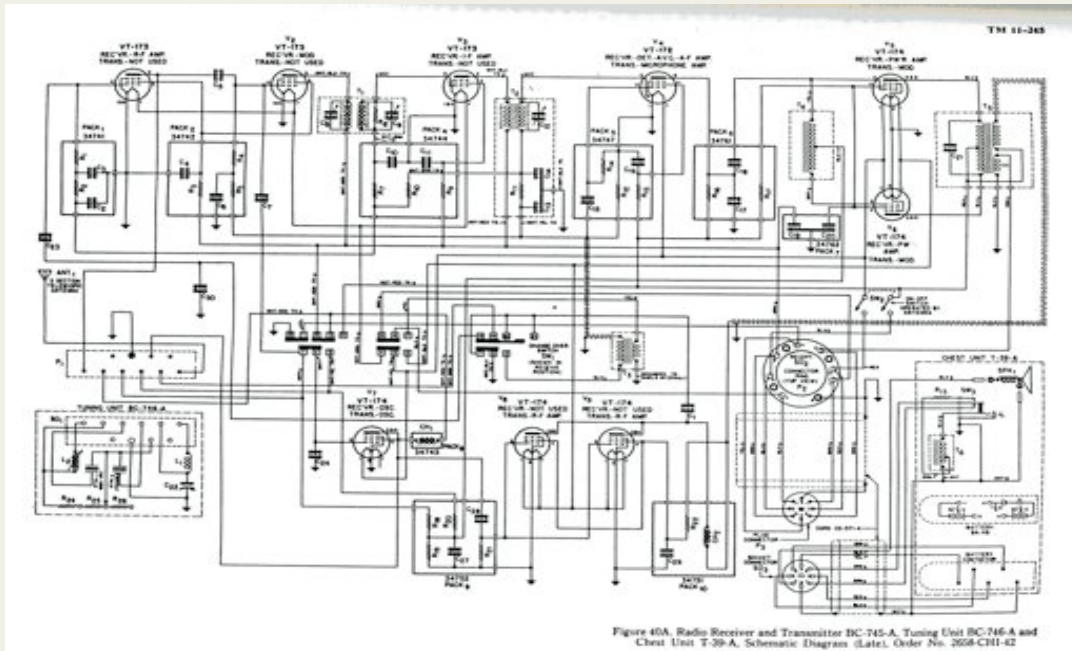
SCR-511, designed for cavalry in 1940, was the only light Walkie-Talkie when WW II broke out, and saw wide use by infantry.

From:

Morgan McMahon,
A Flick of the Switch,
Page 270 (1975)

The pole at the bottom fit into a saddle holster; the stick at the top is the antenna.

Pogo Stick Schematic Diagram



Miniature Tubes:

Five 3S4

Three 1T4

One 1S5

On Transmit, two 3S4s
Deliver $\frac{3}{4}$ watt out

The Pogo Stick and the BC-611 Handy-Talky Transceiver also using miniature tubes, may have been designed for low power output to foil interception, but the circuitry could be 'amped-up' for long range work in a still compact package ...

Pogo Stick Interior



The Antenna 'Stick' goes down the hole in the middle of the chassis.

Photo by Bjorn Fosberg, SM54UR (AWA) of a Pogo Stick in his collection.

Pogo Stick Interior, Side View



Photo by Bjorn Fosberg, SM54UR (AWA) of a Pogo Stick in his collection.

Czech 1935 Spy Set-- Transmitter



Titled: RP 17 III, RP 11 III by www.radiomilitari.com/rv17-rp11

Compiled by Antonio Fucci of Fano (Italy)

Czech 1935 Spy Set -- Receiver



Image titled: RV 17, RP 111 by www.radiomilitari.com

Czech Spy Radio Output Tube



German Spy Radio Captured in Scotland at the Beginning of the War



Italian 1941 Transceiver TXO OC3

-- high quality, built by the Geloso Company



From www.radiomilitari.com compiled by Antonio Fucci of Fano , Italy

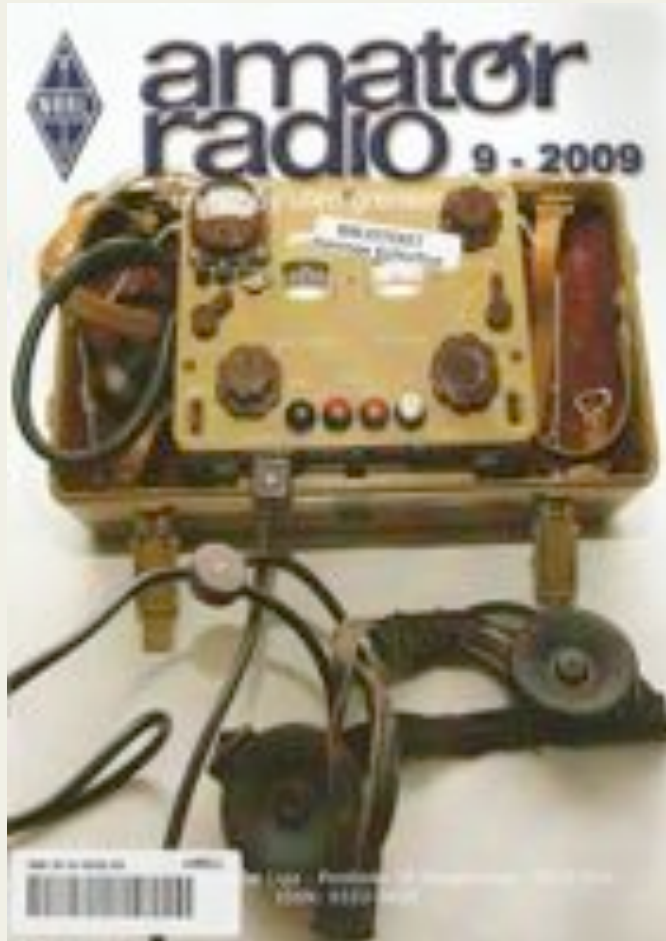
Chassis Top Italian 1941 TXO OC3



Under-Chassis Italian 1941 TXO OC3



A Russian WW II Spy Transceiver



Russian WW II Spy
Radio Used by a
Norwegian Spy,
Made to Look Like
US Manufacture

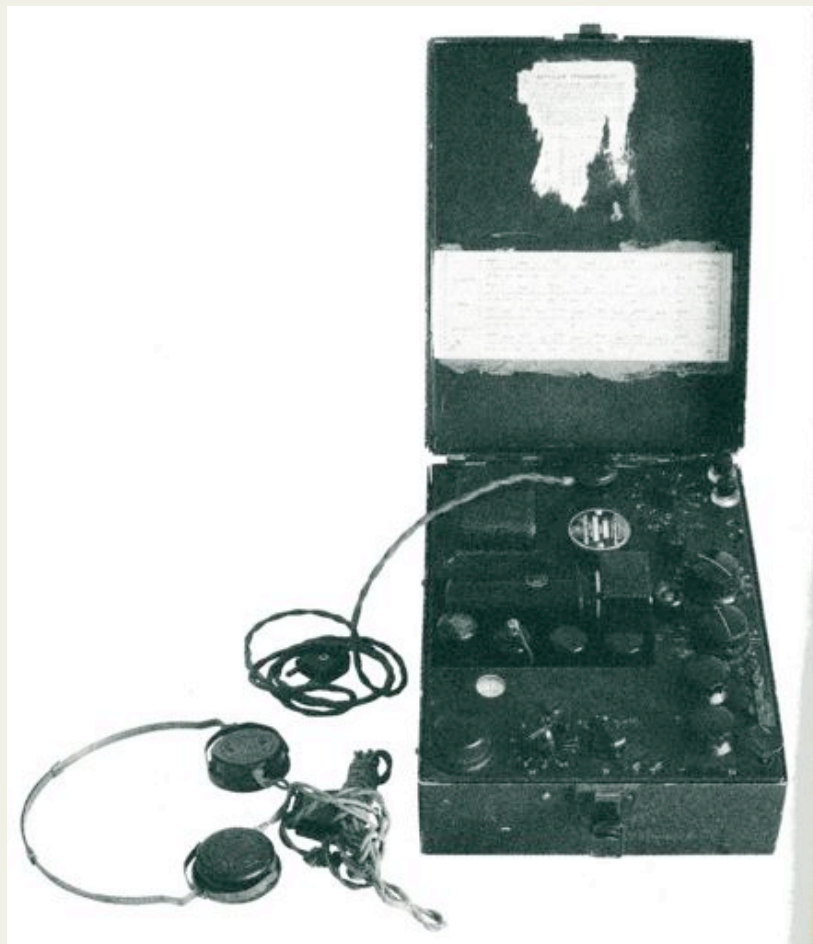
Image: Cover of the Norwegian Amateur
Radio Association magazine, Sept, 2009

Russian Portable Transceiver Model 'North' (*Sever*) 1941



From: *Wireless For The Warrior* www.wftw.nl Louis Meulstee

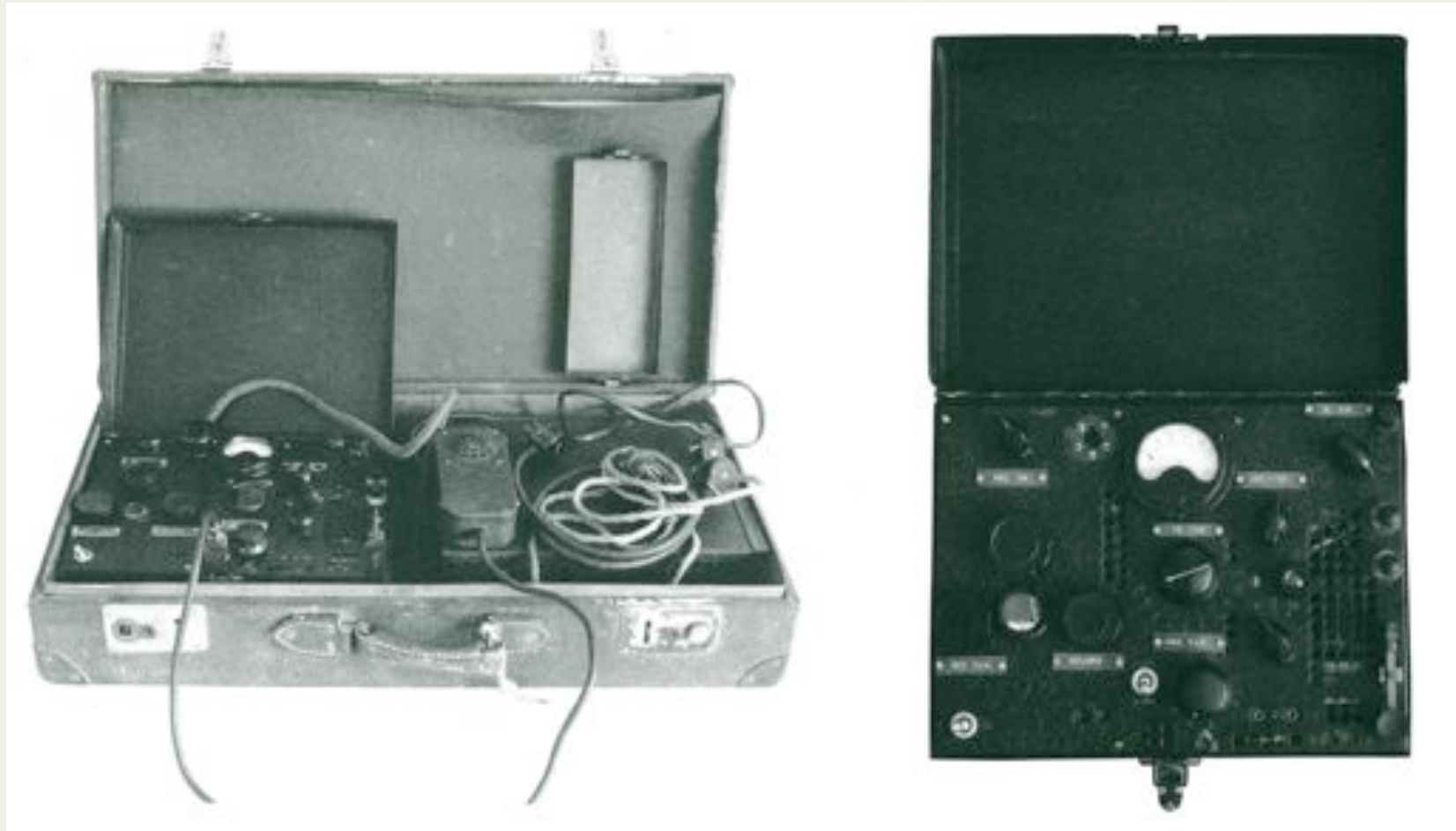
A Polish early WW II Spy radio



The Poles contributed greatly to WW II Victory, both in fighters (*e.g.*, the Battle of Monte Casino) and in technology, such as these spy radios (used by the British S.I.S.) , and of course, the early mathematical work on the German Enigma machine and its encryption, provided to the British.

This and the following B&W Images: British Vintage Wireless Society Bulletin (Vol 26, No 3, 2001)

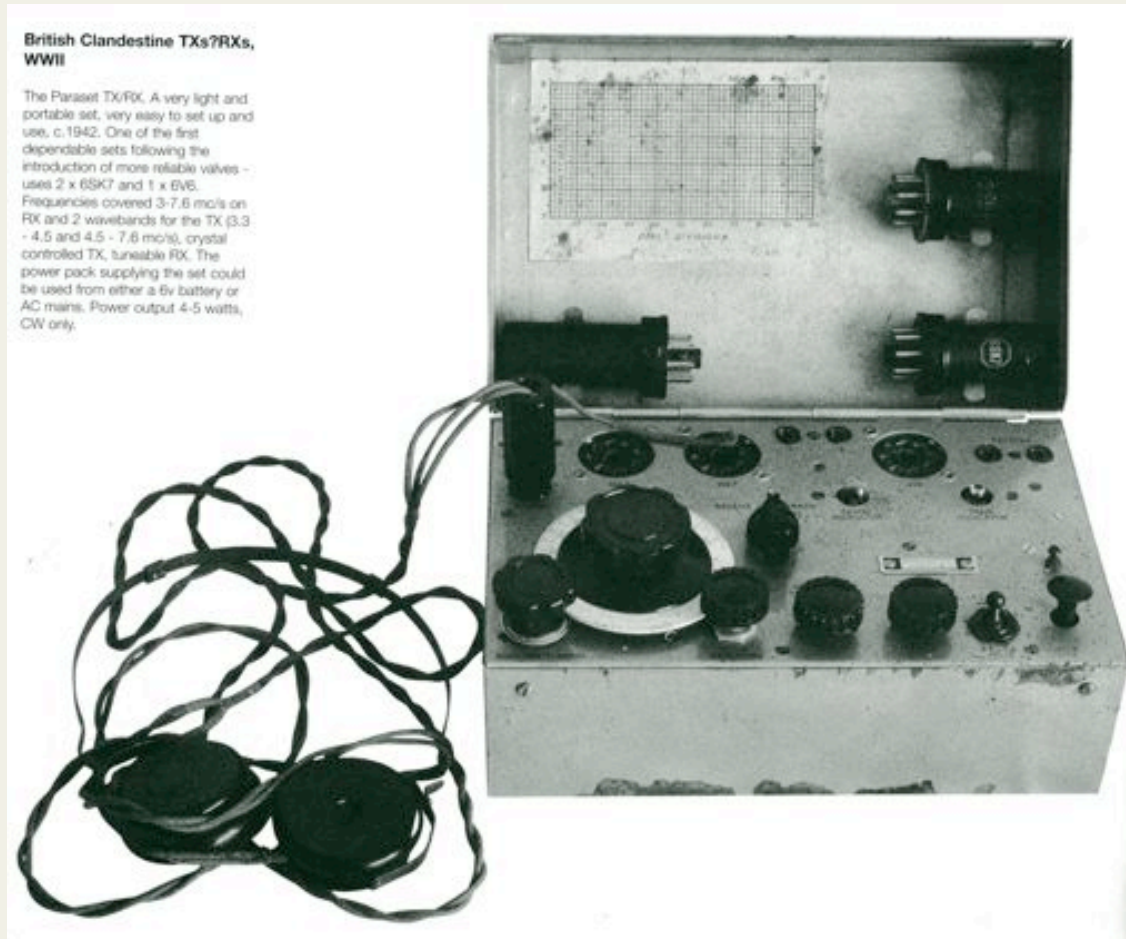
Another Polish WW II Spy Radio



Spies vs. Saboteurs

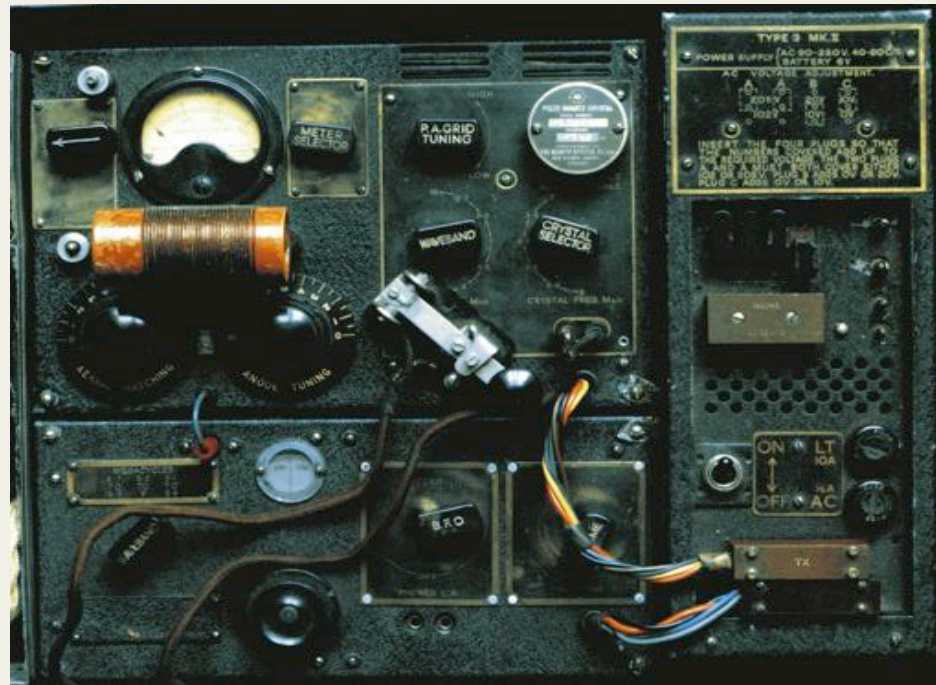
- Spies want everything to be quiet, normal and unremarkable, to remain undetected. Spy radios should look like briefcases. Transmissions must be short, or else. Battery power is best, to foil counter-measures (*e.g.*, turning off power block by block).
- Saboteurs, resistance fighters, *etc.*, (*e.g.*, OSS and SOE in occupied Europe) like to blow things up and kill enemies. These disturbances are bad for spies.
- Covert actions can undercut intelligence gathering.

An Early British Spy and SOE 'Paraset' 1942



The First Dependable British Covert-Action/ Spy Transceiver

British SOE Type 3 Mk II



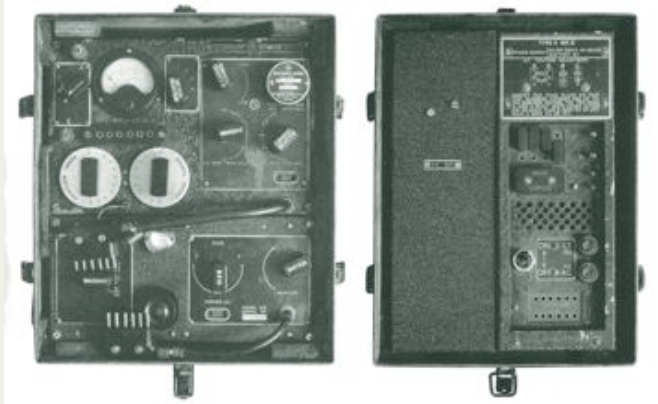
The Classic British Covert Action Transceiver

Image: British Vintage Wireless Society Bulletin (Vol 25, No 1, 2000); cover photo by Carl Glover

British Type 3 Mk II, 1943



The Type 3 Mk II (R2) radio set (Type 3) The most widely used set from 1942/3 through to 1945. A very good set, able to operate with a power supply of 20 watts, capable of being used from AC/DC mains or batteries - it could be swapped over from mains to batteries simply by reversing a plug on the power unit which would operate from 27-220 volts AC. The main set above is shown in a suitcase. Below illustrates the set in their portable container as they would have been if dropped to the Resistance.



Designed for the
'Special Operations Executive,'
(SOE) tasked by Churchill to
'set Europe ablaze.'

British Type 3, Mk II in its Box



German mid-War Transceiver S108

The British used a similar set, 'MCR' (modular clandestine receiver)



LA6NCA German WW II Radio Collection

German mid-war S108 Transmitter Module

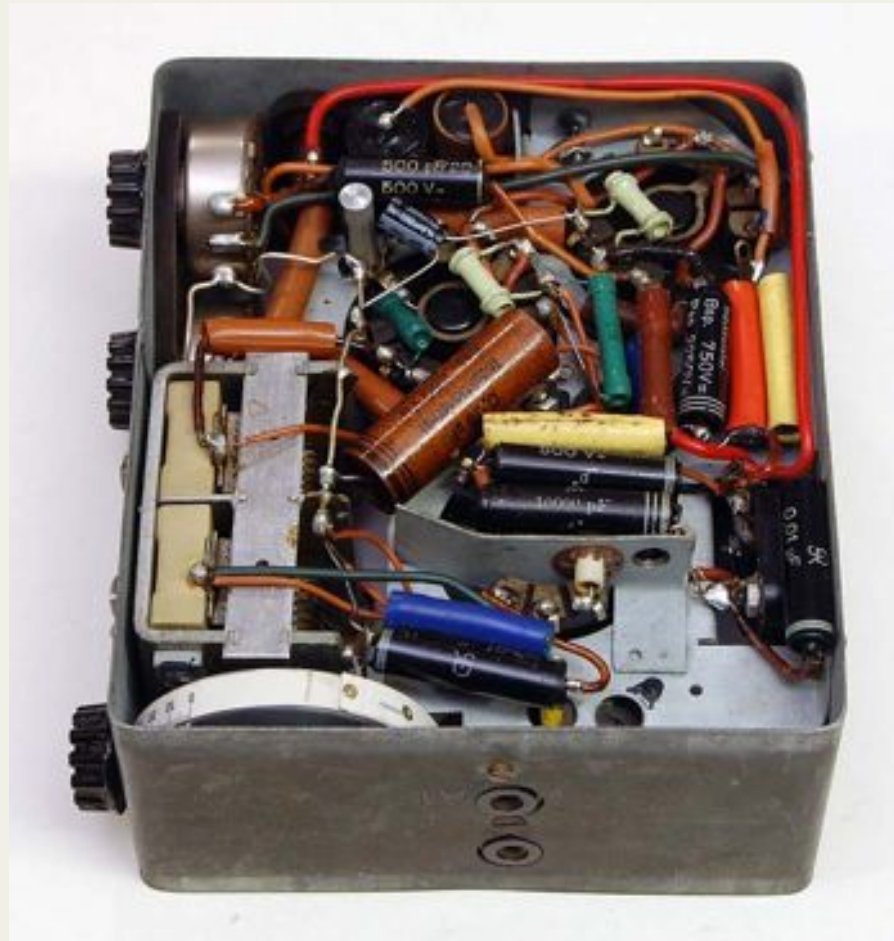


German S108 Receiver Module



Compare to Detrola 1938 Midget Chassis

German S108 Under-Chassis



S108/10 Transmitter Restored



LA6NCA German WW II Radio Collection; www.laud.no/ww2/se108

US OSS WW II SSTR-1

The Workhorse Covert Action Set



An RF amplifier, SST-103 (with an 815) could be added for longer range, but at the risk of more interception and direction finding and triangulation.

From Peter McCollum
Bill Strangfeld photo

Receiver – Power Supply – Transmitter, (6L6 - 8-15 W, Crystal Controlled)

US WW II OSS AN/PRC-5 (AR 11)

The 1944 Evolution of the Compact Transceiver for Covert Action



Image:
British
Vintage
Wireless
Society
Bulletin
(Vol 26, No 3,
2001); cover
photo by
Carl Glover

AN/PRC 5 in its case



One of the Best Internet Sources:

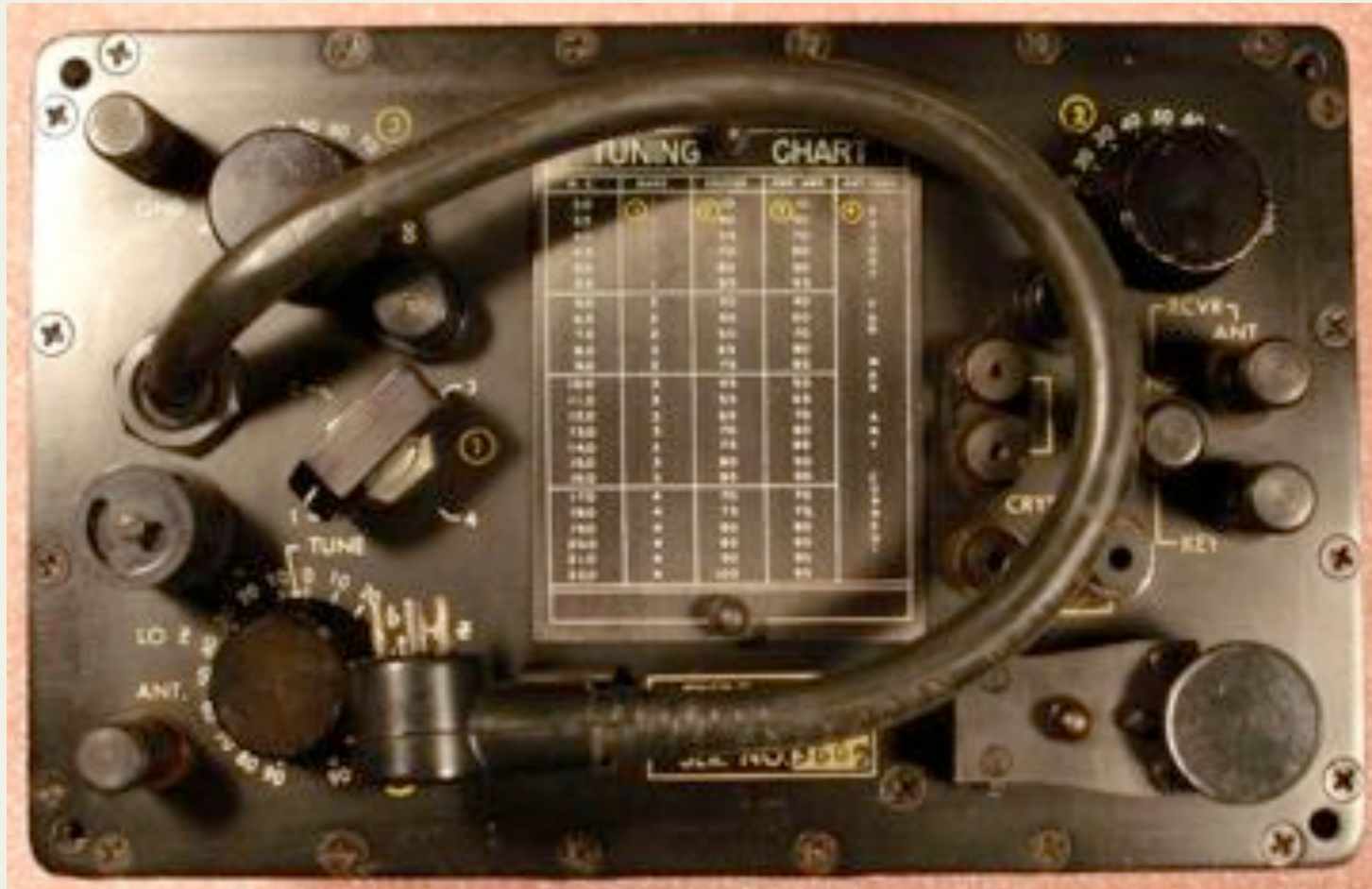
- www.militaryradio.com/spyradio/
- **U.S. Clandestine Radio Equipment**
- **Written/compiled by Peter McCollum,**
- **Who can be reached at: Saipan59@Q.com**
- **Most of the following images are from this site**
- **But just Google 'Spy Radios' for a Plethora of Useful, Reliable Text and Images**

US Post War CIA RS-1 For Covert Action and Special Forces



Peter McCollum collection, his photo

Transmitter RT-3



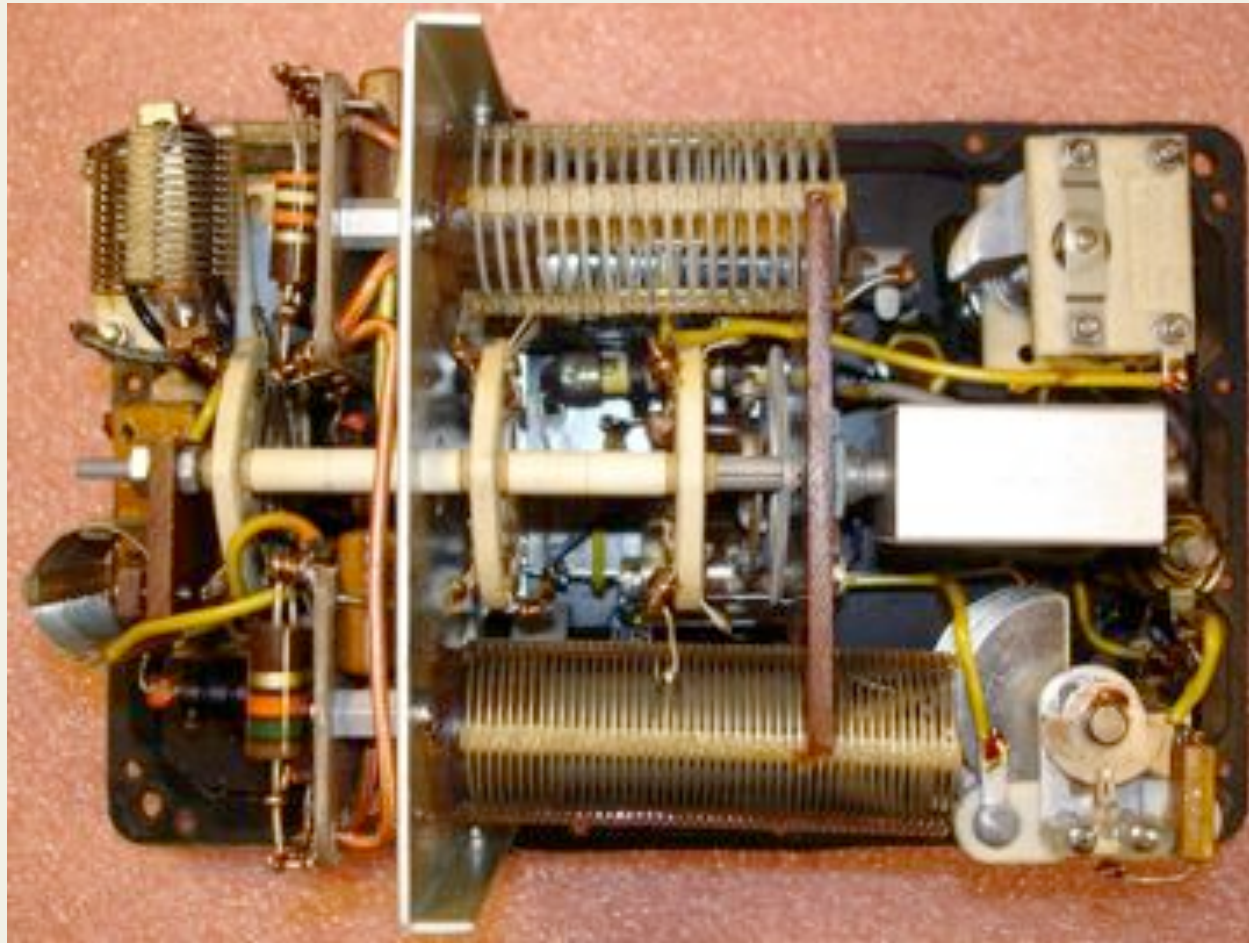
From Dennis Monticelli's (AE6C, CHRS) Collection, his photo

RT-3 Inside (1/3; power tube)



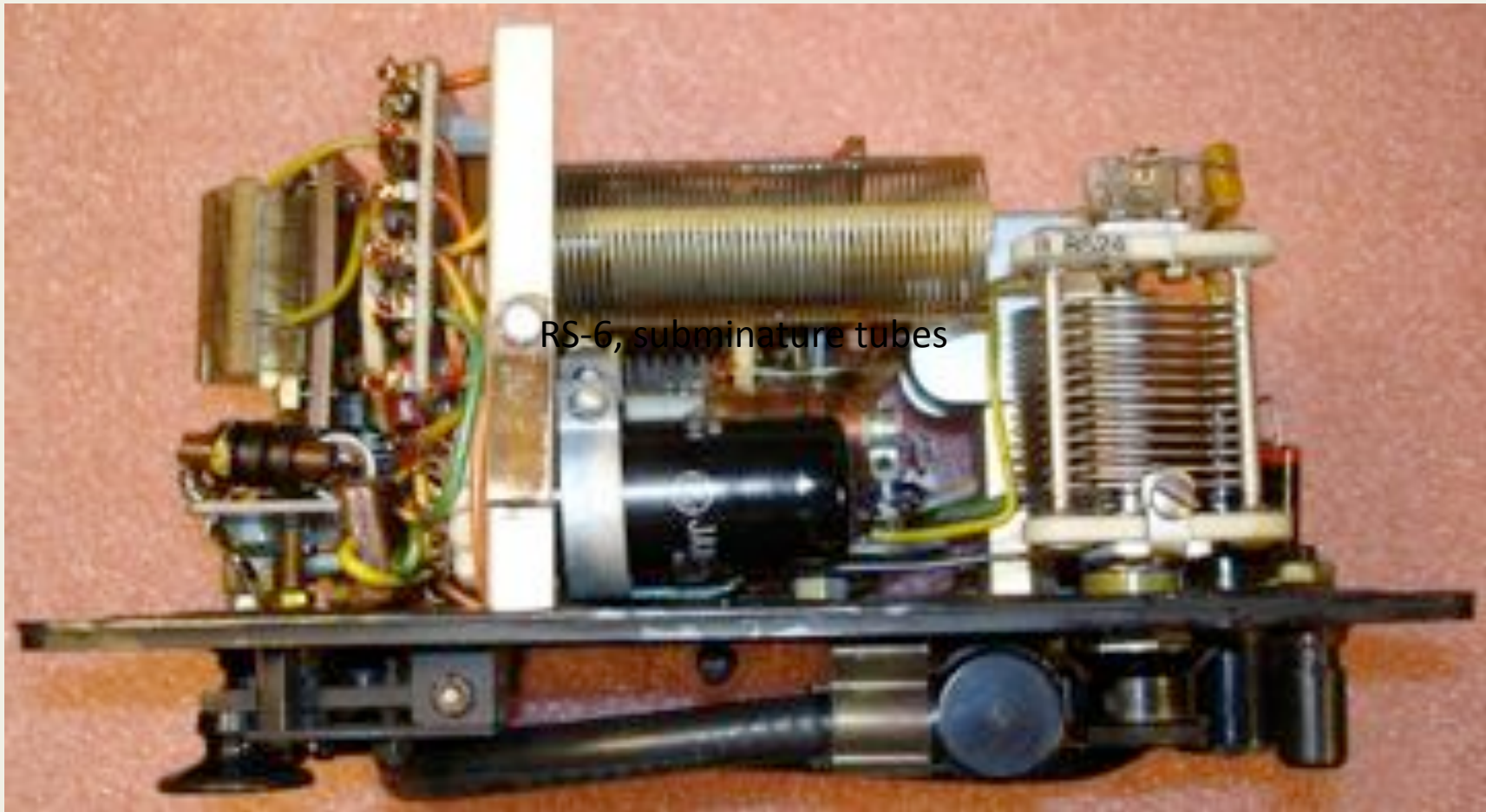
From Dennis Monticelli's (AE6C, CHRS) Collection, his photo

RT-3 (2/3)



From Dennis Monticelli's (AE6C, CHRS) Collection, his photo

RT-3 inside (3/3)



From Dennis Monticelli's (AE6C, CHRS) Collection, his photo

Receiver RR-2B

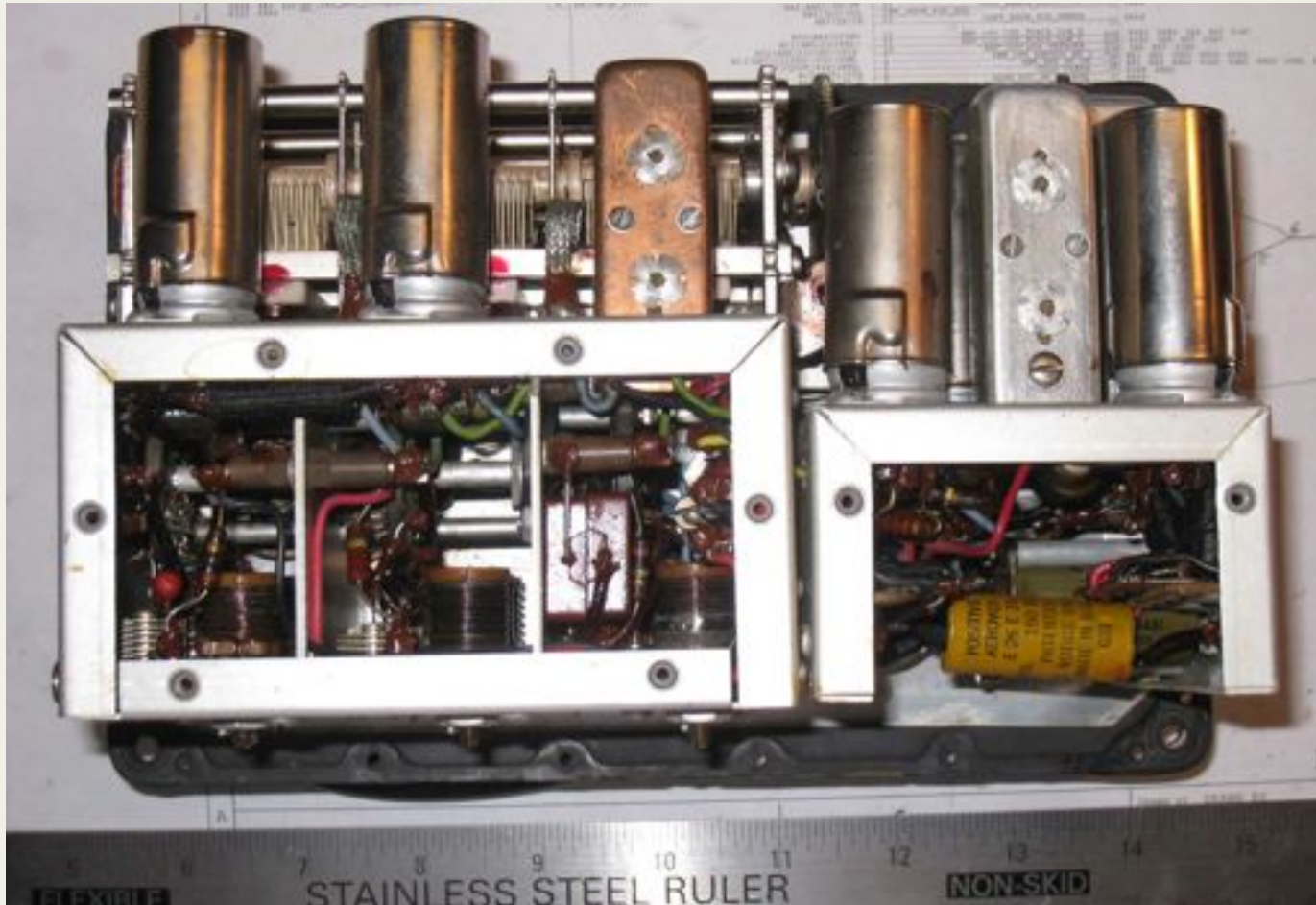


RS-1 RR-2 Receiver (1/2)— The Miniature Tube Comes to the Fore



Compare to 1941 Zenith and Army Pogo Stick.

RS-1 RR-2 Receiver (2/2)



RS-6, Subminiature Tubes, 1960s;
Special Forces, CIA, SAC & ??

Did Special Forces Cache these Radios
in Eastern Europe?



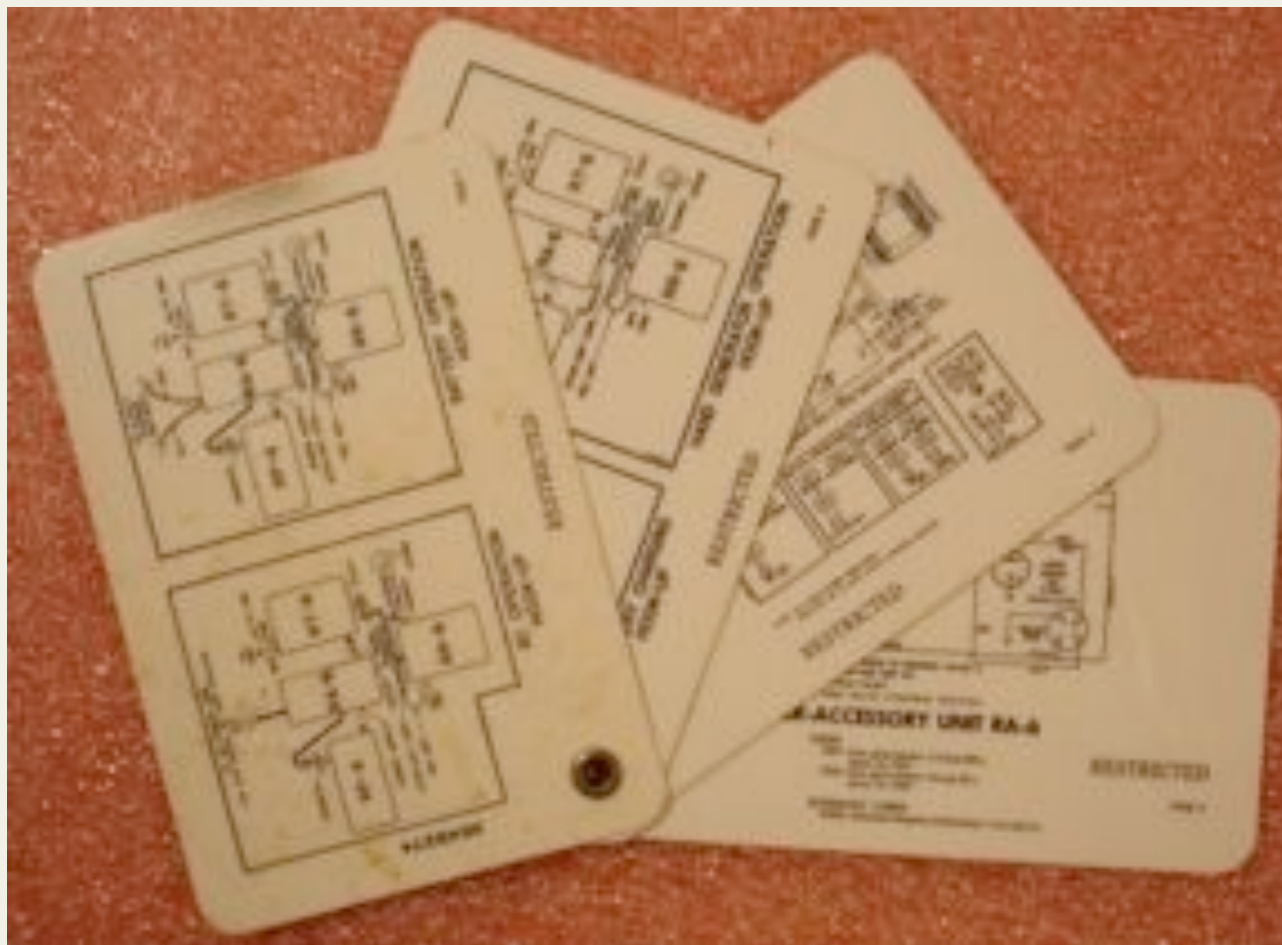
Peter McCollum
collection, his
photo

RS-6 Receiver



Bart Lee collection, now at the CHRS Museum, photo and restoration by Dennis Monticelli

RS-6 Receiver Instruction Cards



Bart Lee collection, now at the CHRS Museum, photo by Dennis Monticelli

Panasonic Transistor Short-Wave Receiver Used by Americans Acting as Spies for Cuba to Receive One-Time-Pad Encrypted 'Numbers' Broadcasts



Civilian Technology
Again put to
Espionage Use!

Spy Radios in Popular Culture



The Simpsons, Season One, Episode 11; April 15, 1990

Bart Simpson is Sent to Albania for his Mischief, and an Albanian Exchange Student Comes to Live with the Simpsons, only to Spy on Homer's Work at the Atomic Power Plant!

The Albanian Kid's Midget Spy Radio!



Event Diploma, for
Bart Lee, K6VK, xKV6LEE, WPE2DLT



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