

Jamming Free Speech from the VOA and BBC



The long haul of shortwave radio proved successful in reaching the enemy's backyard during World War II and beyond. One measure of that success is the consistent effort to block free speech broadcasts.

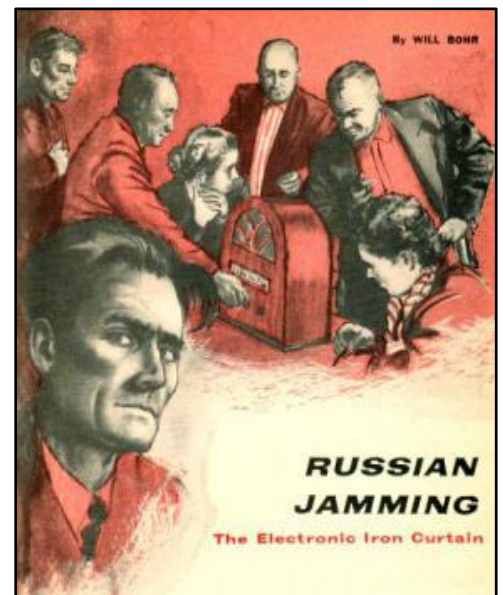
Far in advance of WWII, radio emerged in 1920s and by 1923, many countries understood and aggressively embraced the strategic military value of long-distance radio communications. Governments quickly used shortwave to push their propaganda messages beyond their borders.

In the late 1920s, Berlin jammed the programs of Radio Comintern (Communist International). By 1931, the Soviet Union jammed Romanian radio, and, in 1934, Austria jammed German radio. The Soviet Union jammed Lithuanian language broadcasts from Vatican radio in 1940.

By 1948, the Soviet Union developed the greatest jamming network ever deployed and targeted Russian language broadcasts by the Voice of America and the British Broadcasting Corporation.

While the Soviet Union deployed several high-power jamming transmitters (1 MW and ½ MW), their strategy was a distributed network of low-power transmitters. The vertical curtain array and rhombic antennas were used for long-range jamming.

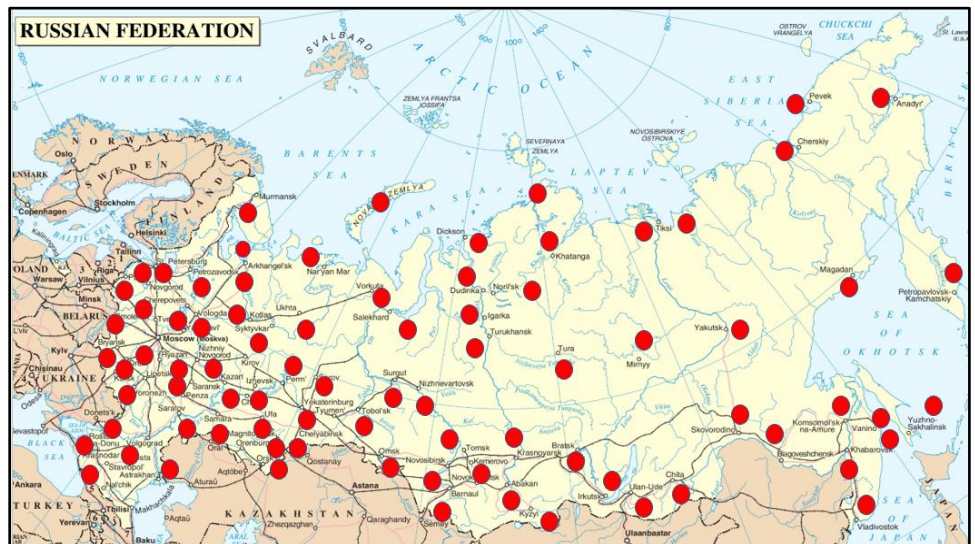
Because a shortwave signal will skip around the world, varying propagation conditions can easily cause the signal to miss large sections of a population. At a large cost, the Soviet Union solved that problem by placing jamming transmitters in every city. Not just one jammer but a jamming transmitter for every offending signal! If five broadcasts were received, there were five jamming broadcasts circling a city.



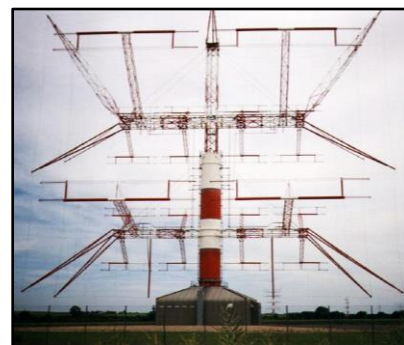
When the Polish government ceased its radio jamming broadcasts, Poland informed the world about the cost of operations. For every dollar spent by the VOA to produce Polish language programs, the Polish government spent over a hundred dollars—in the vain effort to obliterate reception!

According to page 42 of *Popular Electronics* for April 1959, over 2,500 jamming stations were scattered throughout the Soviet Union. This strategy reduced the cost per transmitter because only a few thousand watts were required—much less than the super high-power stations used normally. It has been reported that, for every dollar the VOA spent on broadcasting the truth, the Soviet Union spent from five to a hundred dollars for jamming.

Each red dot on the map below represents a city where several jammers were deployed within the Soviet Union; for example, at least five jammers encircled Moscow.



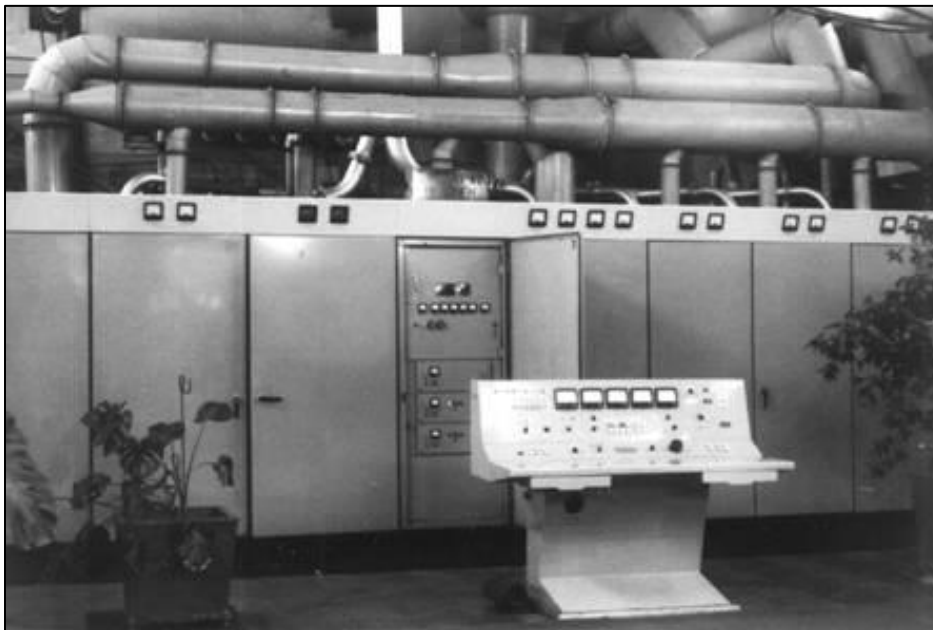
In contrast to the Soviet Union, China spent megabucks on super high-power shortwave jamming stations. In the Xinjian Province (colored red below) of Western China, thirteen ½ MW transmitters were deployed—each connected to rotatable curtain antennas for pinpoint accuracy.



China

Rotatable shortwave curtain antenna beaming the ½ MW jamming signal in any direction.

Shown below are the more traditional jamming transmitters as used in Leningrad (St. Petersburg) in the Soviet Union from 1971 to 1988. The purpose of such broadcast was cross-border jamming of the Radio Free Europe/Radio Liberty (RFE/RL) Polish language programs.



In the Soviet Union—particularly in wartime—women received training to operate jamming stations such as this 500-kW

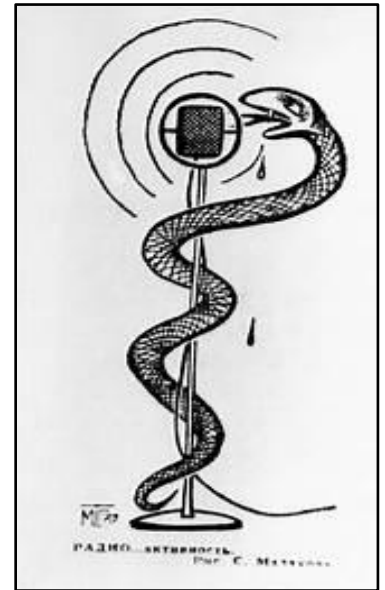
mediumwave station jamming Lithuania.

This cartoon titled *Radio-Activity* appeared in the newspaper *Soviet Estonia* on January 24, 1970, as part of the Soviet press campaign against the daily broadcasts of the Voice of America (Source: AP).

Repressive governments aggressively spent big money and used large scale technology to block the free speech from the VOA and BBC.



Today, the VOA uses satellites for broadcast, and opposition governments aggressively attempt to block those signals.

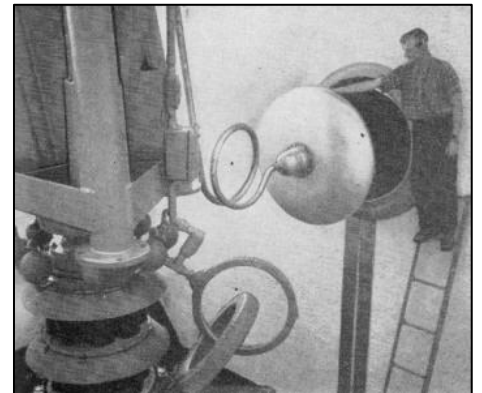


VOA Fights Back

Shortly after WWII, when the US could occupy Germany, the VOA located a high-power (1 MW) longwave broadcast station in Munich, Germany. The station could override most jamming signals.

Longwave was chosen because prior to WWII, Hitler distributed over 15 million longwave and medium Volksempfänger radios throughout the population of Germany.

Shown to the right is the antenna tower base of the 1- MW VOA transmitter. Also shown is the feedthrough insulator for the 173 kHz Hz transmitter.



To avoid jammers the VOA employed a frequency hopping technique—quickly changing frequency once jamming began. The frequency did not move far from the original broadcast—only a tiny amount up or down the dial. This allowed listeners to locate the VOA broadcasts readily enough. This strategy forced jammers to move their signal up and down the dial in a game of cat and mouse wherein the mouse was clever and agile; the cat, baffled and slow.

The practice of “cuddling”—broadcasting close to Soviet propaganda frequencies to deceive the propagandists into jamming their own signals—was effective and allowed over 30% of the VOA broadcasts to arrive safely.

VOA engineers could select the best propagation conditions to broadcast the most important messages, making jamming more difficult.

The VOA would also broadcast the same message on several channels simultaneously, frustrating the jammer’s attempts to block all broadcasts.

Today, there are five VOA signals going into Cuba: three shortwave, one TV station and one AM station. Because Cuba aggressively jams the radio and TV broadcast signals, the audio portion of the TV program is broadcast over shortwave radio.

The success of the VOA and BBC broadcasts is exemplary, given the extraordinary efforts from opposition countries to block free speech.

Leland L. Hite 09-27-2019

[Source 1](#), [Source 2](#), [Source 3](#), [Source 4](#), Source 5 (VOA Greenville, North Carolina)