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DIRECTORATE OF
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Intelligence Report

Radiobroadcasting and Jamming Trends in Eastern Europe and the USSR

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
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INTELLIGENCE REPORT

Radiobroadcasting and Jamming Trends in Eastern Europe and the USSR

Introduction

Expansion of radiobroadcasting has enjoyed high priority in postwar Eastern Europe and the USSR, in part because of its value as a symbol of improving consumer welfare, but principally because the authorities in these countries regard radio as one of their most effective instruments of propaganda. Radiobroadcasting stations have proliferated rapidly, and now almost 67 million radio sets are in use. Efforts by Communist authorities to control what is heard on these radios, however, have still not disappeared from the scene, especially in times of international stress. Thus the occupation of Czechoslovakia by Warsaw Pact forces was accompanied by resumption of large-scale jamming of Western radiobroadcasts -- an effort that is still continuing. This report examines current radiobroadcasting trends in Eastern Europe and the USSR, and assesses the recent upsurge of anti-Western jamming.

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Radiobroadcasting Network

1. At present the East European Communist countries operate a well-developed network of radiobroadcasting stations operating on 436 different frequencies, an increase of 150 frequencies since 1965 (see Table 1). Most of the expansion since 1965 is accounted for by an increase of 90 percent in the number of shortwave (SW) frequencies used and an increase of more than 70 percent in the number of frequencies used by frequency-modulated (FM) stations. Use of medium-wave (MW) frequencies increased only slightly in this period and longwave (LW) frequency usage showed no increase. East Germany, Poland, and Czechoslovakia registered the largest gains of 50, 49, and 27, respectively, in the number of frequencies used. All but one of the 50 new frequencies added by East Germany are in the SW band.

2. The Soviet Union is now broadcasting on 1,070 frequencies, more than twice the number used by all of the East European countries combined. Of this total, 33 are LW, 180 are MW, 730 are SW, and 127 are FM frequencies. Although nearly 70 percent of the frequencies used by the USSR are in the SW band, MW frequency usage registered the largest relative increase in the 1965-68 period. Recent evidence suggests that in the 1970's the Soviet Union will give progressively heavier emphasis to FM broadcasting.

3. The growth recorded in frequency usage indicates that the number of radiobroadcasting transmitters also has increased substantially. A one-for-one relationship between frequency usage and transmitters cannot be assumed, however, as a given transmitter may operate on different frequencies at different times.

Radio Reception Base

4. By the end of 1968 the radio reception base in the East European Communist countries consisted of about 20 million radio sets and about 4 million wired loudspeakers, as shown in Table 2. For radio sets, this represented a net addition of almost 1 million units since the end of 1965. All of the East European countries experienced increases, Romania

registering the largest, with a gain of 344,000 sets, and Poland the smallest, with an increase of only 51,000 sets. Probably owing to the influence of television, the growth rate of radio sets in Eastern Europe has declined in recent years, a trend that is likely to continue into the 1970's.

5. During the same three-year period, the combined total of wired loudspeakers in the East European countries declined by 70,000 units. Bulgaria, Czechoslovakia, and Romania registered moderate gains, but Hungary has virtually phased out its wired broadcasting system and the number of wired loudspeakers in Poland continued a declining trend that has been evident since 1960. East Germany does not have a wired broadcasting system. The total number of wired loudspeakers in Eastern Europe is expected to show a marginal increase in 1969.

6. In the USSR there were slightly more than 44 million radio sets and 41 million wired loudspeakers in use by the end of 1968. This represents a substantial gain over 1965, when the comparable totals were 38 million and 36 million units, respectively. Of the 15 republics in the USSR, the RSFSR has by far the greatest number of radios, with more than 27 million sets, followed by the Ukraine, with nearly 8 million sets (see Table 3). In set density, however, the top ranking republics are Estonia, with 32.8 sets per hundred persons, and Latvia, with 26.5, compared with only 21.2 radios for every hundred persons in the vast RSFSR.

7. The USSR now has more than twice as many radios as all of Eastern Europe, but is still outranked by Czechoslovakia, East Germany, and Hungary in radio set density, as shown in Table 4. East Germany occupies first position with 34.7 radios for every hundred persons compared with only 18.6 per hundred for the USSR. The Soviet Union, however, is gradually closing this gap and is expected to add at least another 2 million sets in use in 1969, compared with an estimated increase of slightly more than 300,000 sets for all of Eastern Europe.

Types of Receivers

8. There are no data that would permit a quantitative distribution, by wavebands, of the radio receivers

in use in the Soviet Union and the East European Communist countries. However, a broad sampling of radio model brochures from the various countries does provide some insight on this question. In a total sample of 157 brochures examined, only seven models (or less than 5 percent) are limited to single-band reception, while 82 models (or slightly more than 50 percent) can receive on all bands -- LW, MW, SW, and FM. Table 5 presents the number of models examined for each country and the bands on which these models are equipped to operate. The table sheds some interesting light on the types of radios produced in Eastern Europe and the USSR, but it would be hazardous to use the sample weights shown to make a direct distribution of sets in use by type.

9. The supply of solid state components is not yet sufficient to meet consumer demand in Eastern Europe and the USSR, but the number of transistorized radio set models has shown steady growth year by year. Many of the transistorized models are of the "portable" class, but relatively few of the "pocket" types are in factory-scale production. Many pocket-sized transistor radios have been designed and publicized, but most of them have to be built on a "do-it-yourself" basis. In general, the pocket radios are designed for one-band operation, but almost all of the transistorized portables are capable of MW and SW reception and many have a third LW band.

Jamming*

10. Increasing steadily after the war, the effort of the USSR and East European Communist countries to block out Western radiobroadcasts reached a peak in early 1963. By this time they were operating

* *This discussion is concerned only with jamming directed against US-sponsored broadcast agencies which specifically target their programs at audiences in Eastern Europe and the USSR. These agencies and their target areas are: Voice of America (VOA), primarily the USSR; Radio Liberty Network (RLN), exclusively the USSR; Radio Free Europe (RFE), Eastern Europe, except East Germany; and Radio in the American Sector of Berlin (RIAS), East Germany.*

a massive radio jamming system, estimated to consist of 2,000-2,500 jamming transmitters located at several hundred sites. High-powered, long-range jammers were used to blanket primarily rural areas, and low-powered local jammers were set up in and around most of the larger cities to provide urban coverage. Debriefing of emigres and Western travelers indicated that this effort was successful in blocking out reception in many parts of large cities but much less effective in the rural areas. Techniques used consisted of both noise jamming by transmitters specially designed for this purpose and the superimposition of disruptive voice and music programs on the target frequencies.

11. In the summer of 1963, jamming stopped abruptly on all VOA broadcasts in Russian, Ukrainian, Armenian, Georgian, Estonian, Latvian, Lithuanian, and Polish. By early 1964, Romania and Hungary had ceased jamming of VOA and RFE, and Czechoslovakia had abandoned its effort against VOA. However, the USSR did not let up on Radio Liberty; Czechoslovakia continued jamming RFE as did East Germany against RIAS; and Bulgaria made no reduction at all in its jamming effort.

12. Coincident with the occupation of Czechoslovakia in August 1968, the USSR resumed a major jamming effort against radiobroadcasts targeted at its western republics and Eastern Europe. Except for the fact that English-language broadcasts and broadcasts to the Soviet Far East are not jammed, the Soviet jamming effort is not selective; all Western broadcasters are uniformly subject to this harassment, as are their entire program schedules, including music.

13. Since the spring of 1969, Soviet jamming of VOA Russian- and Ukrainian-language broadcasts has shown a sharp upward trend and currently is at a level at least equal to the previous peak. VOA broadcasts in Georgian and Armenian are also being heavily jammed. Against VOA, the USSR is using what is called Mayak jamming -- that is, attempting to override frequencies with superimposed Moscow home service broadcasts. Against Radio Liberty Network, however, Soviet jammers are beaming noise.

14. The aggregate level of jamming against US broadcasts in East European languages is currently much higher than before the occupation of Czechoslovakia, but the situation varies from country to country. Bulgaria, aided by the Soviet Union, has consistently maintained a high level of jamming against RFE irrespective of the 1963-68 lull observed by the other Communist countries. RFE's broadcasts to Czechoslovakia are also heavily jammed now, while those to Poland are jammed to a lesser degree.* East Germany continues to jam RIAS at a moderate level of intensity. Romanian and Hungarian language broadcasts, however, are not currently being jammed. Those East European countries targeting RFE are using a composite of both Mayak-type and noise jamming. Preliminary assessments indicate that, as before, the Communist jamming effort appears to be relatively effective in those sections of large cities where jammers are densely deployed but much less so in the countryside because of changing propagation conditions and jammer signal fading.

Conclusions

15. FM broadcasting is increasing very rapidly in Eastern Europe. Thus far, expansion of FM broadcasting in the USSR has been much less rapid than in Eastern Europe but probably will have high priority in the 1970's. With East Germany and Poland leading the way, growth of SW transmission capabilities in Eastern Europe and the USSR is also continuing to receive heavy emphasis. Compared with the effort in FM and SW, Eastern Europe appears to attach a low priority to further expansion of MW broadcasting. Conversely, MW broadcasting in the USSR is continuing to increase rapidly. In Eastern Europe, overcrowding of the MW band is leading to renewed interest in the expansion of LW broadcasting facilities.

16. The increased influence of television is producing a general slowdown in the rate of growth of radio sets in Eastern Europe and the USSR. This

* *There is some evidence to indicate that the jamming currently targeted against RFE's Polish-language broadcasts originates in the western border area of the USSR rather than in Poland.*

trend is more pronounced in the East European countries than in the Soviet Union, where the number of radio sets in use is still increasing by more than 2 million units per year. Following the Western pattern, radios with an FM band are becoming increasingly popular, and a steadily growing share of radio sets sold consists of transistorized models. The importance of wired loudspeakers is tending to decline in Eastern Europe, but the wired loudspeaker system in the USSR is still undergoing rapid expansion.

17. The occupation of Czechoslovakia by Warsaw Pact forces triggered resumption of a large-scale jamming effort against Western broadcasts after a five-year lull. The new Communist jamming pattern is not uniform, however, varying according to the country targeted by Western broadcasters, the identity of the broadcaster, and languages used. At one extreme, Romania and Hungary have not resumed jamming. At the other, Soviet jamming of Russian- and Ukrainian-language broadcasts is now probably at an all-time high. Thus far, however, the USSR has not elected to resume jamming of English-language broadcasts, perhaps because they are considered to be much less sensitive but also possibly because of current limitations on Soviet jamming resources.

Table 1

Distribution of Radiobroadcasting Frequency Usage
in Eastern Europe and the USSR, by Waveband

	Number of LW Frequencies		Number of MW Frequencies		Number of SW Frequencies		Number of FM Frequencies		Total	
	1965	Mid-1969	1965	Mid-1969	1965	Mid-1969	1965	Mid-1969	1965	Mid-1969
Bulgaria	0	0	12	11	10	15	2	6	24	32
Czechoslovakia	1	1	25	29	21	30	23	37	70	97
East Germany	2	2	26	26	19	68	39	40	86	136
Hungary	0	0	12	12	15	14	3	5	30	31
Poland	1	1	15	19	21	38	10	38	47	96
Romania	1	1	14	15	12	19	2	9	29	44
Subtotal	5	5	104	112	98	184	79	135	286	436
USSR	33	33	115	180	577	730	103	127	828	1,070
Total	*38*	*38*	*219*	*292*	*675*	*914*	*182*	*262*	*1,114*	*1,506*

Table 2

Number of Radio Sets and Wired Loudspeakers
in Use in Eastern Europe and the USSR

Thousand Units

	Radios				Wired Loudspeakers			
	1960	1965	1968	1969 a/	1960	1965	1968	1969 a/
Bulgaria	868	1,405	1,544	1,600	560	650	710	750
Czechoslovakia	3,104	3,100	3,230	3,250	690	1,140	1,260	1,300
East Germany	5,574	5,804	5,942	6,025	0	0	0	0
Hungary	1,969	2,320	2,488	2,575	250	160	Negl.	Negl.
Poland	3,796	4,537	4,588	4,600	1,370	1,290	1,100	1,030
Romania	1,283	1,956	2,300	2,375	720	880	980	1,025
Subtotal	16,594	19,122	20,092	20,425	3,590	4,120	4,050	4,105
USSR	27,811	38,228	44,285	46,400	30,837	35,638	41,000	43,300
Total	*44,405*	*57,350*	*64,377*	*66,825*	*34,427*	*39,758*	*45,050*	*47,405*

a. Estimated.

Table 3

Number and Density of Radio Sets in the USSR, by Republic

	Thousand Units			Units per 100 Persons		
	1960	1965	1968	1960	1965	1968
RSFSR	17,512	23,502	27,150	14.6	18.6	21.2
Ukrainian SSR	4,431	6,571	7,600	10.4	14.5	16.3
Kazakh SSR	1,294	1,939	2,160	12.8	16.2	16.9
Uzbek SSR	965	1,255	1,450	11.3	12.2	12.6
Belorussian SSR	633	827	1,150	7.7	9.6	13.0
Georgian SSR	526	716	800	12.6	15.9	17.1
Azerbaijan SSR	482	606	670	12.4	13.2	13.4
Latvian SSR	419	563	610	19.7	25.1	26.5
Lithuanian SSR	330	484	575	11.9	16.3	18.7
Moldavian SSR	236	372	455	7.9	11.2	13.0
Estonian SSR	272	362	430	22.4	28.3	32.8
Armenian SSR	204	306	340	11.0	14.1	14.6
Tadzhik SSR	168	276	335	8.1	10.9	12.1
Turkmen SSR	182	227	285	11.4	12.0	13.8
Kirgiz SSR	157	222	275	7.2	8.5	9.5

Table 4

Radio Set Density in Eastern Europe
and the USSR

	Units per 100 Persons		
	1960	1965	1968
Bulgaria	11.0	17.1	18.4
Czechoslovakia	22.7	21.8	22.4
East Germany	32.8	34.1	34.7
Hungary	19.7	23.0	24.2
Poland	12.8	14.4	14.2
Romania	7.0	10.3	11.7
USSR	13.0	16.6	18.6

Table 5

Waveband Capabilities of a Sample of Radio Sets Offered for Sale in Eastern Europe and the USSR

	Size of Sample (Units)	All Bands (LW, MW, SW, FM)	3 Bands (Unspecified)	2 Bands (Unspecified)	1 Band (Unspecified)	LW, MW, SW	LW, MW, FM	SW, MW, FM	SW, MW	LW, MW	MW
Bulgaria	28	23					2		2		1
Czechoslovakia	3					3					
East Germany	53	28				10		1	10	1	3
Hungary	20	5	9	5	1						
Poland	17	11				5			1		
Romania	15	6				3				5	1
USSR	21	9		5	1	5	1				
Total	*157*	*82*	*9*	*10*	*2*	*26*	*3*	*1*	*13*	*6*	*5*

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