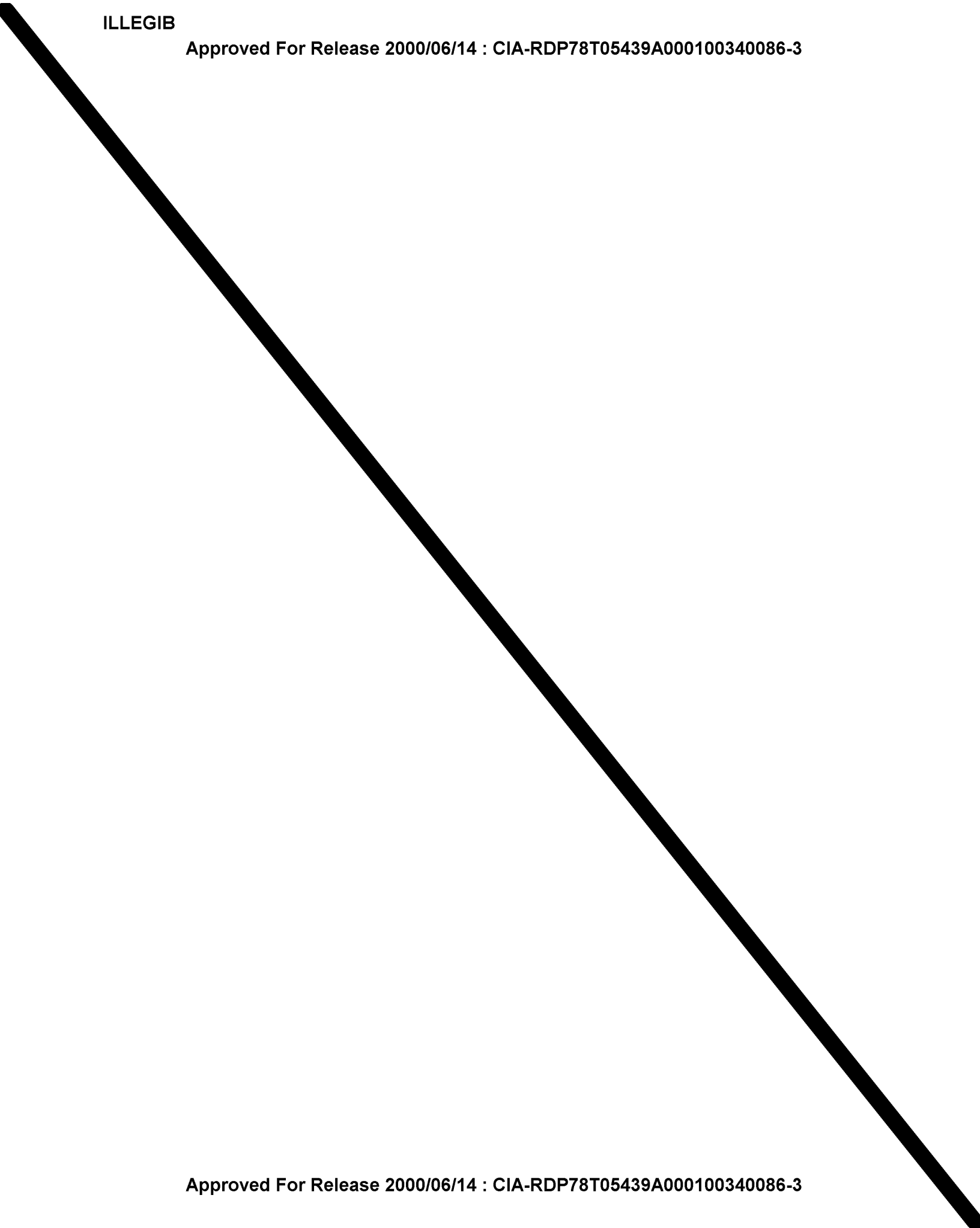

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HIGH-FREQUENCY BROADCAST/BROADCAST-RELAY STATION SVERDLOVSK, USSR

PIC/JR-1001/60
November 1960

Published and Disseminated by
CENTRAL INTELLIGENCE AGENCY
PHOTOGRAPHIC INTELLIGENCE CENTER

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PREFACE

This joint photographic intelligence report has been prepared by the Navy and Central Intelligence Agency and fully answers their requests for a detailed photographic analysis of the Sverdlovsk High-Frequency Broadcast/Broadcast-Relay Station, USSR.

FIGURE 1. SVERDLOVSK HIGH-FREQUENCY BROADCAST BROADCAST-RELAY STATION. This station is 5 nm NNE of Sverdlovsk, USSR.

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INTRODUCTION

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The Sverdlovsk High-Frequency Broadcast/Broadcast-Relay Station, covered by photography of [redacted] (see Figure 1), is located at 56-55N 60-41E, 5 nautical miles north-northeast of Sverdlovsk, USSR (see Figure 2). The station is situated on nearly level terrain, approximately 900 feet above sea level. It includes a fenced operations area, a housing and administration area, and a maintenance and storage area (see Figure 3). All facilities appear to be in the final construction phase. A 25-foot-wide paved road serves the station and connects with the road net in the Sverdlovsk urban area.

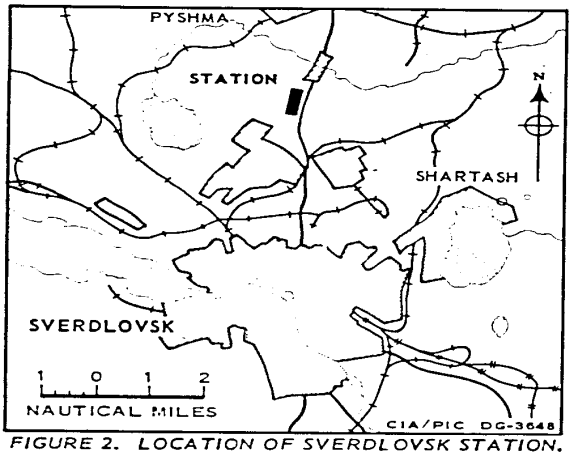

FIGURE 2. LOCATION OF SVERDLOVSK STATION.

OPERATIONS AREA

The operations area is roughly rectangular and covers approximately 436 acres (7,600 by 2,500 feet). Security provisions include a perimeter fence with eight guard towers and a gatehouse at the entrance. An internal fence restricts station personnel to the road and operational structures. The area contains 40 curtain antennas supported by 42 self-supporting lattice towers, 5 rhombic receiving antennas, 2 transmitter buildings, and 19 support-type structures.

Curtain Antennas

The 40 curtain antennas are divided into two groups, designated East Group and West Group. East Group contains 16 curtain antennas of uniform height, width, and number of feeds (Figure 3, items a through p). West Group contains 24 curtain antennas of varying height, width, and number of feeds (items aa through xx). All curtain antennas are similar to types described in a Russian publication GOST 8805-58, Group E93, titled Transmitting Short-Wave Synphase Horizontal Wide-Band Antennas, Moscow, 1958.

All the curtain antenna feed lines are buried. The southernmost transmitter building (item A) feeds antennas a through h in East Group and antennas aa through ll in West Group. The other transmitter building (item Q) feeds antennas i through p in East Group and antennas mm through xx in West Group. The feed lines vary in length from 270 to 780 meters, with an average length of 460 meters (see Table 1).

TABLE 1. FEED-LINE LENGTHS FOR CURTAIN ANTENNAS

From	To Antenna	Length (meters)	From	To Antenna	Length (meters)
Transmitter bldg (item A)	a	400	Transmitter bldg (item Q)	i	675
	b	290		j	560
	c	270		k	440
	d	355		l	360
	e	580		m	360
	f	555		n	360
	g	570		o	425
	h	650		p	505
	aa	425		mm	500
	bb	390		nn	460
	cc	390		oo	425
	dd	360		pp	390
	ee	425		qq	360
	ff	425		rr	320
	gg	460		ss	285
	hh	675		tt	285
	ii	660		uu	360
	jj	710		vv	425
	kk	780		ww	475
	ll	640		xx	555

East Group: The 16 curtain antennas in East Group are supported by 17 towers, each 365 feet high and spaced 380 feet apart (see Table 2). The

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[redacted]

West Group: The 24 curtain antennas in West Group are supported by 25 towers 160 and 210 feet high, spaced 185, 240, 265, and 295 feet apart (see Table 3). The feeds vary in number from 1 to 3. In addition, the feeds

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TABLE 2. DATA ON CURTAIN ANTENNAS, EAST GROUP

Tower Number	Tower Height (ft)	Distance Between Tower Centers (ft)	Antenna Letter	Number of Feeds	[redacted]
1	365	380	a	1	
2	365	380	b	1	
3	365	380	c	1	
4	365	380	d	1	
5	365	380	e	1	
6	365	380	f	1	
7	365	380	g	1	
8	365	380	h	1	
9	365	380	i	1	
10	365	380	j	1	
11	365	380	k	1	
12	365	380	l	1	
13	365	380	m	1	
14	365	380	n	1	
15	365	380	o	1	
16	365	380	p	1	
17	365				

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TABLE 3. DATA ON CURTAIN ANTENNAS, WEST GROUP

Tower Number	Tower Height (ft)	Distance Between Tower Centers (ft)	Antenna Letter	Number of Feeds	[redacted]
18	210	265	aa	1	
19	210	265	bb	1	
20	210	295	cc	2	
21	160	240	dd	2	
22	160	185	ee	1	
23	160	295	ff	2	
24	210	265	gg	1	
25	210	265	hh	1	
26	210	265	ii	1	
27	210	265	jj	2	
28	210	265	kk	3	
29	210	265	ll	1	
30	210	265	mm	1	
31	210	265	nn	1	
32	210	295	oo	3	
33	160	185	pp	1	
34	160	295	qq	3	
35	160	295	rr	3	
36	160	240	ss	3	
37	160	295	tt	3	
38	210	265	uu	1	
39	210	265	vv	1	
40	210	265	ww	1	
41	210	265	xx	1	
42	210				

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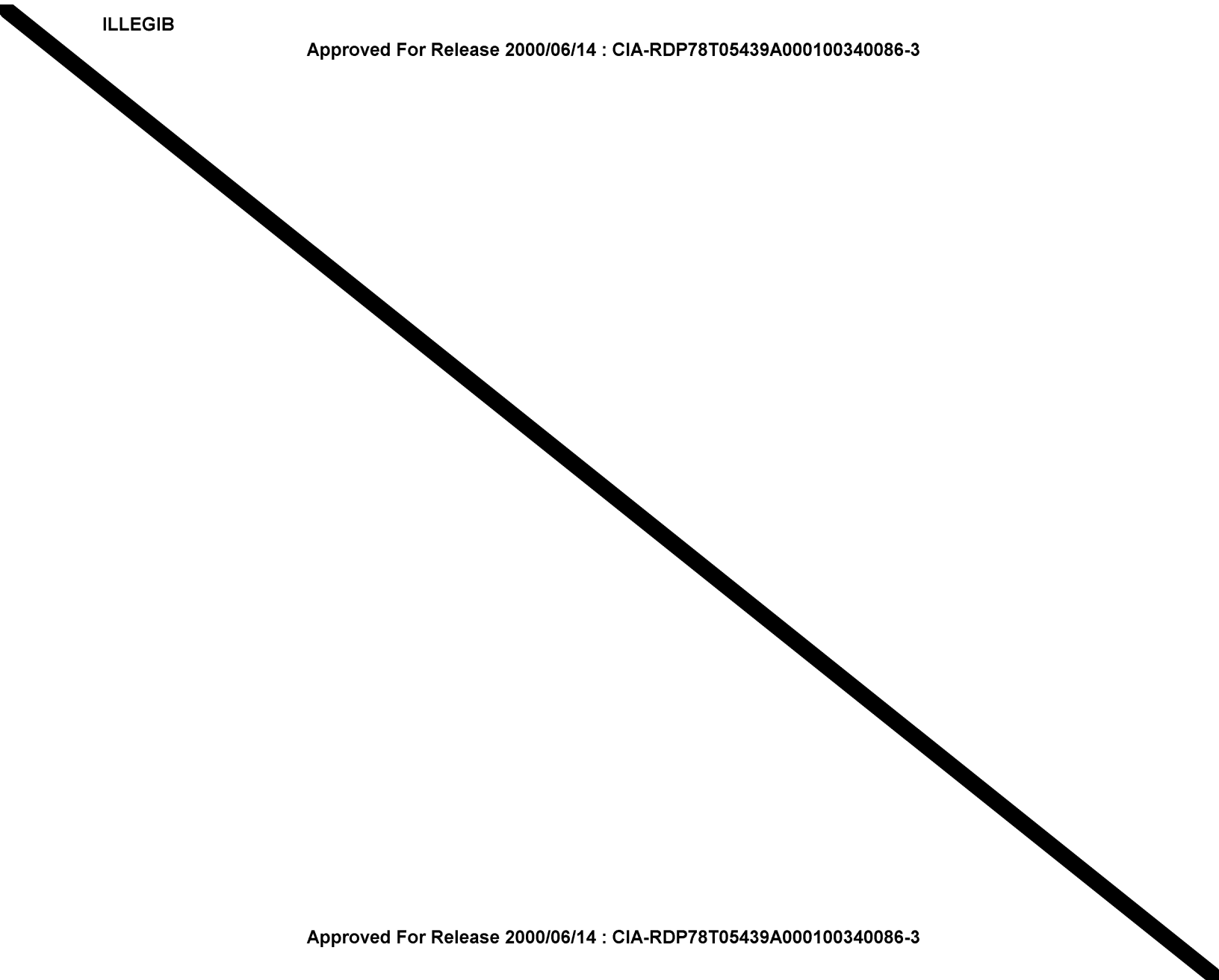

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[redacted]

TABLE 4. ORIENTATIONS OF CURTAIN ANTENNAS

[redacted]	East Group (number)	West Group (number)
	1	
		1
		1
	1	
	2	
		2
		1
	1	
		9
	4	
		7
	3	
	2	
	2	
		3
TOTAL	16	24

4). Twenty-six of the 40 antennas have radiation orientation azimuths of 80-85/260-265 degrees.

Rhombic Antennas

Five rhombic receiving antennas are located in the southern section of the operations area. Three of these rhombics have visible feed lines emanating from transmitter building A. The rhombic antenna measurements are listed in Table 5 (antenna letters are keyed to Figure 3, and their orientations are shown on the gnomonic projection map, Figure 4).

TABLE 5. DATA ON RHOMBIC ANTENNAS 25X1D

Rhombic Letter	Major Axis (ft)	Minor Axis (ft)	Side Length (ft)	Distance Between End Poles (ft)	Pole Height (ft)	Computed Tilt Angle (° ')	[redacted]	Suspected Radiation Terminus
R_a	820	405	455	--	125	63-40		Moscow
R_b	720	330	395	--	110	65-00		Tashkent
R_c	720	330	395	--	110	65-00		Semipalatinsk
R_d	740	345	410	--	110	65-00		Karaganda
R_e	720	330	395	120	125	65-00		Khabarovsk

Operational Structures

The two transmitter buildings (Figure 3, items A and Q) are situated

between the two curtain antenna groups and are connected by a service road. Each building has a modified T-shaped appearance, measures 240 by 75 feet (see Table 6), and provides 18,000 square feet of covered floor space. Each building has a flat roof with a flat-roofed monitor (10 feet high and 30 feet wide), probably for ventilation and light. Also located on the roof are two vents, each 5 feet square. Two cooling ponds, one transformer building, and one operational support building are adjacent to each transmitter building. [redacted]

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[redacted]

Ten buildings are located along the service road between the transmitter buildings. Three of these buildings are for operational support, 3 are for storage, one is for personnel support, 2 are for construction support, and one is under construction. Two other buildings (items S and U) are water pump houses.

Utilities

Utilities for the operations area include external power and internal water. Two overhead power lines lead into the southern section of the

TABLE 6. DATA ON OPERATIONAL STRUCTURES

Structure Letter	Description	Dimensions (feet)	Function
A	One story, monitor roof	240 x 75	Transmitter bldg
B	One story, gable roof	70 x 35	Operational support bldg
C	Circular	50 (dia)	Cooling pond
D	One story, gable roof	55 x 45	Operational Support bldg
E	One story, flat roof	25 x 20	Operational support bldg
F	One story, flat roof	65 x 25	Transformer bldg
G	One story, hip roof	105 x 45	Personnel support bldg
H	One story, flat roof	55 x 25	Operational support bldg
I	One story, gable roof	100 x 45	Storage bldg
J	One story, shed roof	120 x 30	Storage bldg
K	One story, shed roof	90 x 25	Storage bldg
L	One story, shed roof	20 x 20	Construction support bldg
M	U/C	115 x 25	
N	One story, shed roof	75 x 20	Construction support bldg
O	One-story, flat roof	55 x 30	Transformer bldg
P	Circular	50 (dia)	Cooling pond
Q	One story, monitor roof	240 x 75	Transmitter bldg
R	One story, gable roof	70 x 35	Operational support bldg
S	One story, flat roof	25 x 20	Water pump house
T	One story, gable roof	25 x 20	Gatehouse
U	One story, flat roof	25 x 20	Water pump house

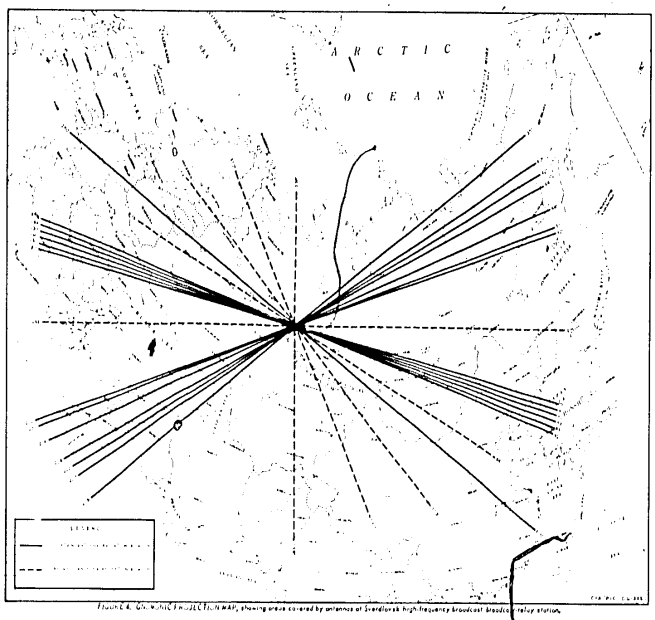

FIGURE 4. GNOMIC PROJECTION MAP, showing areas covered by antennas of Sverdlovsk high-frequency broadcast bloodline relay station.

operations area and terminate at one of the transformer buildings (item F). A secondary power line leads from transformer building F to transformer building O. From each transformer building overhead lines lead into the transmitter buildings. [redacted] 25X1D

25X1D [redacted] No communications lines are visible on the photography.

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HOUSING AND ADMINISTRATION AREA

The housing and administration area is east of the operations area on the south side of the entrance road. This area contains 10 major structures of which 3 are family-type quarters, 3 are barracks-type quarters, 2 are bathhouses, and 2 are administrative-type buildings. The family-type quarters have 28,500 square feet of floor space. The barracks-type quarters have 21,000 square feet of floor space.

MAINTENANCE AND STORAGE AREA

The maintenance and storage area is east of the operations area on the north side of the entrance road. This area contains 29 major structures, 2 motor pools, and 4 open-storage sites. The total covered floor space in the area is approximately 94,000 square feet.

CONCLUSIONS

At the time of photography, the Sverdlovsk Broadcast/Broadcast-Relay Station appeared to be in the final or nearly complete construction phase and may have been partially operational, [redacted] 25X1D

25X1D [redacted] This station will probably broadcast programs which originate here along with programs which originate elsewhere.

REFERENCES

PHOTOGRAPHY

25X1D [redacted] 25X1C

MAPS or CHARTS

WAC 156 (U)
AMS. Series N 502, Sheet NO 41-10, 1st ed, Dec 55 (U)