PIR

PHOTOGRAPHIC INTERPRETATION REPORT

SELECTED MAJOR COMMUNICATIONS FACILITIES NORTH VIETNAM

NPIC/R-134/68

JANUARY 1969

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 25X1C

TITLE

NRTC/R 13/68 JANUARY 1969

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PHOTOGRAPHIC INTERPRETATION REPORT

SELECTED MAJOR COMMUNICATIONS FACILITIES NORTH VIETNAM

JANUARY 1969

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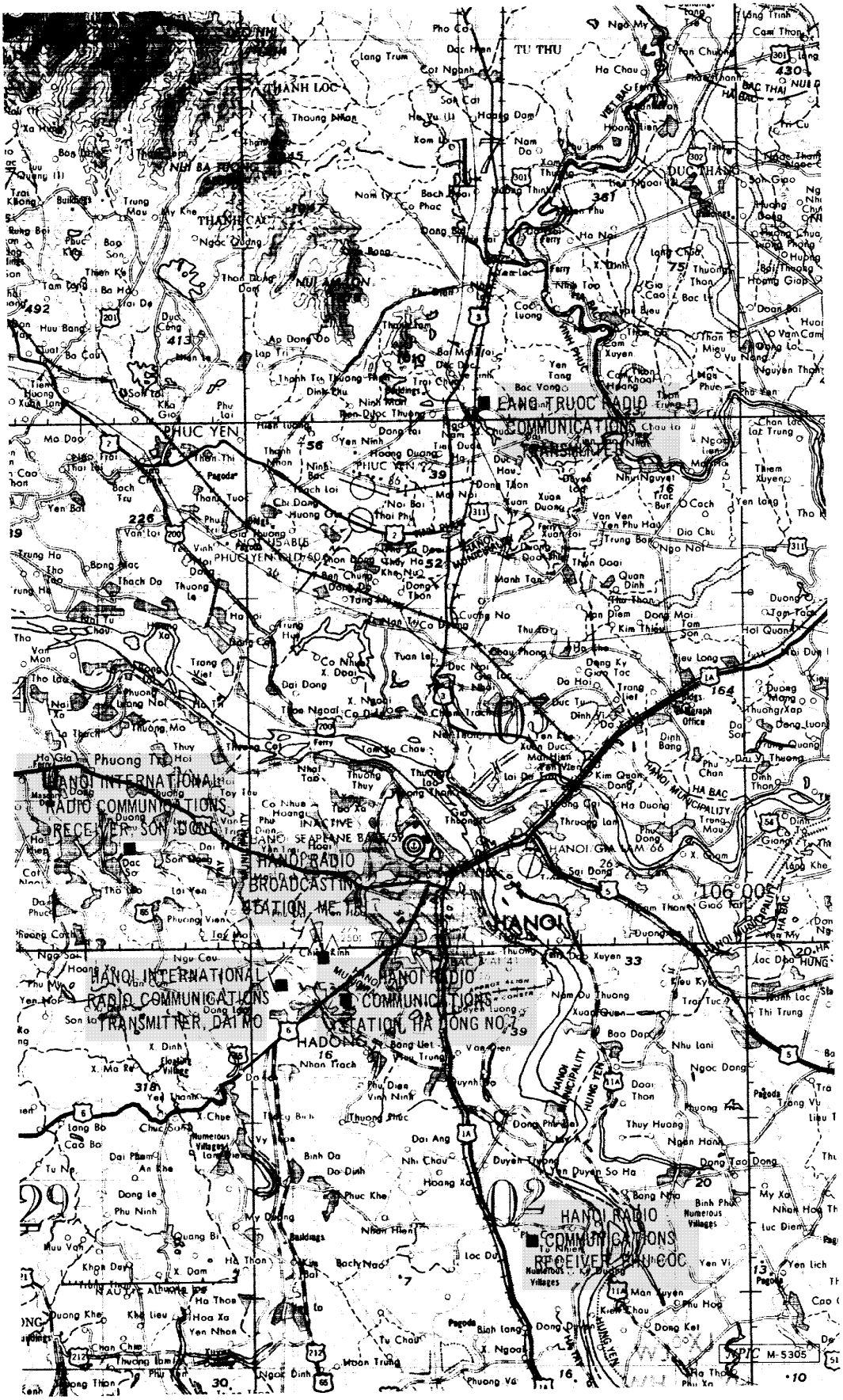


FIGURE 1. LOCATION MAP.

25X1C

INTRODUCTION

The North Vietnamese have established at least nine major communications facilities in North Vietnam. Six of these, in the immediate Hanoi area (Figure 1), are treated in detail in this report. These installations provide Hanoi with the comprehensive transmitting and receiving capability of a modern national and international communications network for direct support of North Vietnamese military and civilian needs. The installations and the order in which they appear in this report are as follows:

NAME	GEO. COORDS.	BE NO.	PAGE NO.
Hanoi International Radio Communications Transmitter, Dai Mo	20-58 [redacted] N 105-46 [redacted] E	[redacted]	2
Hanoi International Radio Communications Receiver, Son Dong	21-02 [redacted] N 105-41 [redacted] E		8
Lang Truoc Radio Communications Transmitter	21-15 [redacted] N 105-52 [redacted] E		14
Hanoi Radio Broadcasting Station, Me Tri	20-59 [redacted] N 105-47 [redacted] E		20
Hanoi Radio Communications Station, Ha Dong No 7	20-58 [redacted] N 105-47 [redacted] E		26
Hanoi Radio Communications Receiver, Phu Coc	20-51 [redacted] N 105-53 [redacted] E		32
	25X1D 25X1D	25X1A	

25X1C

25X1C

HANOI INTERNATIONAL RADIO COMMUNICATIONS TRANSMITTER, DAI MO

[redacted]

25X1A

25X1C

INSTALLATION OR ACTIVITY NAME			COUNTRY
Hanoi International Radio Communications Transmitter, Dai Mo 25X1A			VN
UTM COORDINATES 25X1D	GEOGRAPHIC COORDINATES 25X1D 20-58[redacted]N 105-46[redacted]E	CATEGORY [redacted]	COMIREX NO. None / NIETB NO. None
MAP REFERENCE: AMS Series L7014, Sheet 6150 I, 1st ed, 1965, Scale 1:50,000 (Unclassified)			
LATEST IMAGERY USED [redacted]	NEGATION DATE (If required) None 25X1A		

25X1D

This station is located 5.7 nautical miles (nm) southwest of Hanoi and is served by an all-weather dirt road leading 1.1 nm southeast to Route 6 at Ha Dong. Two AAA sites are within 0.5 nm east and south of the station (Figure 2).

The antenna farm contains 12 rhombic, four VEE, and 12 horizontal dipole antennas (Figure 3). The rhombic antennas provide long range, high frequency communications to Europe, Asia, and Africa with double rhombic antennas oriented toward Europe and north Africa (Figure 4). The VEE antennas, [redacted] are probably for omni-directional, short range communications. The horizontal dipole antennas are oriented for high frequency transmissions (primarily in the vicinity of [redacted] megahertz) throughout southern China and Southeast Asia (Figure 5). The entire antenna farm is probably fed from the main control building with some of the rhombic antennas having an alternate feed from the alternate control area.

25X1B 25X1B 25X1D

The primary transmitting facilities are housed in the H-shaped building surrounded by an earth-mounded concrete wall (inset, Figure 3) except for three sections where the antenna feeds leave the building. These three sections consist of earth fill between two concrete walls. Also within the main control area are six support buildings, a substation, two guard towers, two cooling ponds, a probable pumphouse, and an underground reservoir.

South-southeast of the main control area is the alternate control area which was constructed in [redacted] It contains two earth-mounded bunkers, one, a control bunker with feed lines leading to some of the rhombic antennas; the other bunker is probably for support.

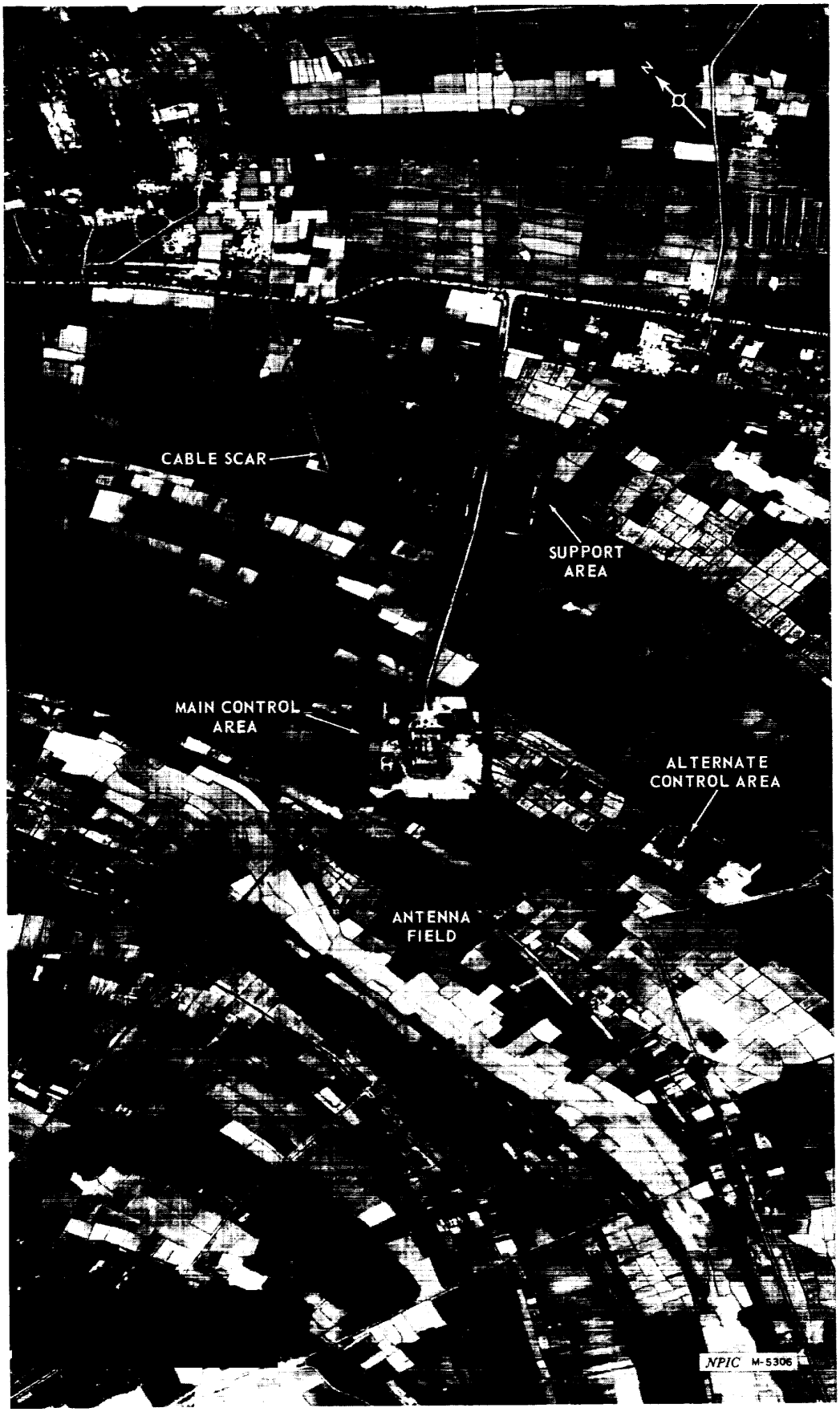
25X1D

The fenced support area northeast of the main control area contains four probable barracks, one messhall, a substation, and three support buildings.

25X1B

The control building at Dai Mo is connected to the Hanoi Radio Broadcasting Station, Me Tri ([redacted] 1.6 nm northeast, by a cable scar (Figure 2). Another cable scar and a land line are evident leading northeast from the Me Tri control building toward the Hanoi Citadel. This communications line is probably used to link the government control facilities in Hanoi with the two radio transmitting stations.

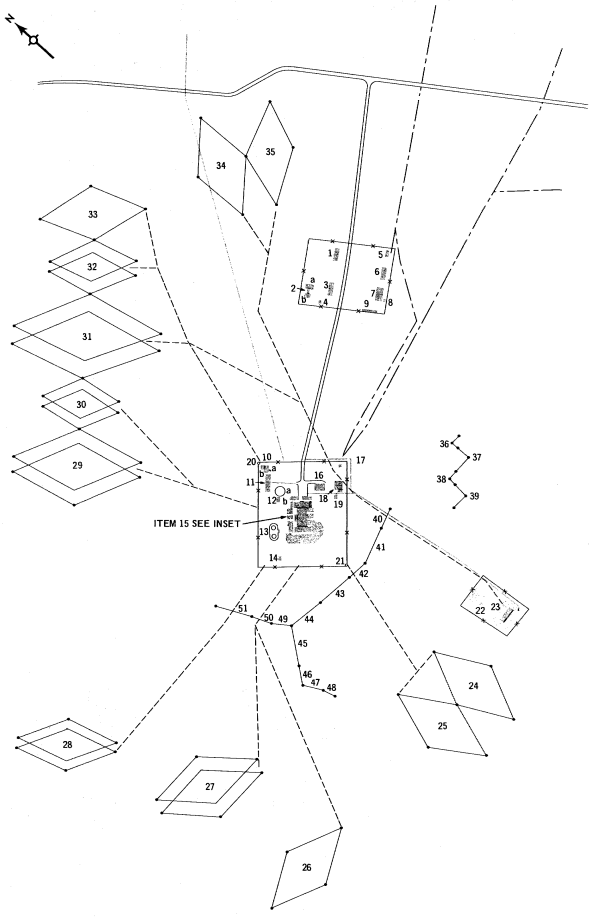
Electric power is provided by external sources via substations within the control and support areas. Diesel generators for emergency power are probably available; however, they have not been identified on photography.



25X1D

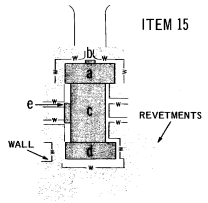
FIGURE 2. HANOI INTERNATIONAL RADIO COMMUNICATIONS TRANSMITTER, DAI MO, NORTH VIETNAM.

25X1C



25X1D

ITEM	DESCRIPTION	DIMENSIONS (FT)
1	PROBABLE BARRACKS	[redacted]
2a	KITCHEN	
b	MESSHALL	
c	PASSAGEWAY	
3	PROBABLE BARRACKS	
4	SUPPORT BUILDING	
5	SUBSTATION	
6	PROBABLE BARRACKS	
7	PROBABLE BARRACKS	
8	SUPPORT BUILDING	
9	SUPPORT BUILDING	
10	SUPPORT BUILDING	
a	SECTION	
b	SECTION	
11	SUPPORT BUILDING	
12a	PROBABLE UNDERGROUND WATER RESERVOIR	
b	PROBABLE PUMPHOUSE	
13	2 COOLING PONDS	
14	SUPPORT BUILDING	
15	REVETTED TRANSMITTER BUILDING	
a	SECTION	
b	SECTION	
c	SECTION	
d	SECTION	
e	SECTION	
16	SUPPORT BUILDING	
17	SUBSTATION	
18	SUPPORT BUILDING	
19	SUPPORT BUILDING	
20	GUARD TOWER	
21	GUARD TOWER	
22	SUPPORT BUNKER (EARTH COVERED)	
23	REVETTED ALTERNATE TRANSMITTER BUNKER	



ROAD
TRAIL
FENCE
POWERLINE
FEEDLINE
CABLE SCAR
ANTENNA CONFIGURATION
MAST

200 0 500
FEET (APRX)
NPIC M-5307

25X1D

ANT NO	AXIS (FT) MAJ	AXIS (FT) MIN	AVERAGE LENGTH ONE SIDE (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 4)	COMPUTED FREQUENCY (MEGAHERTZ)
24	[redacted]				SOUTH VIETNAM, EASTERN CAMBODIA, SOUTHERN LAOS, JAVA	[redacted]
25					SOUTH VIETNAM, EASTERN CAMBODIA, SOUTHERN LAOS, JAVA	
26					LAOS, BURMA, INDIA	
27					CAIRO, NORTH AFRICA	
28					EUROPE	
29					EUROPE	
30					EUROPE	
31					EUROPE	
32					EUROPE	
33					TIBET, TASHKENT, SOUTHERN EUROPE	
34					PEKING	
35					[redacted]	

25X6

NOTE: EACH ANTENNA HAS A [redacted] AND IS ASSUMED TO BE 4 WAVE LENGTHS LONG ON A SIDE.

25X1D

ANT NO	POLE SEPARATION (FT)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
36	50	[redacted]
37	90	
38	50	
39	90	

25X1D

NOTE: EACH ANTENNA HAS 90° INCLUDED (APEX) ANGLE, IS OMNI-DIRECTIONAL AND EACH LEG IS ¼ WAVE LONG.

25X1D

ANT NO	POLE SEPARATION (FT)	EST ANT LENGTH (FT)	INITIAL GREAT CIRCLE (°)	PROBABLE CORRESPONDENT (SEE FIGURE 5)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
40	[redacted]			HUE/HA GIANG	[redacted]
41				HUE/HA GIANG	
42				CAO BANG/PHNOM PENH	
43				CAO BANG/PHNOM PENH	
44				CAO BANG/PHNOM PENH	
45				YULIN/LAO CAI	
46				YULIN/LAO CAI	
47				SOUTHEAST CHINA/NORTHEAST LAOS	
48				MONG CAI/LUANG PRABANG	
49				NANNING/PLAINE DES JARRES	
50				SOUTHEAST CHINA/NORTHEAST LAOS	
51				SOUTHEAST CHINA/NORTHEAST LAOS	

25X1D

FIGURE 3. HANOI INTERNATIONAL RADIO COMMUNICATIONS TRANSMITTER, DAI MO, NORTH VIETNAM.

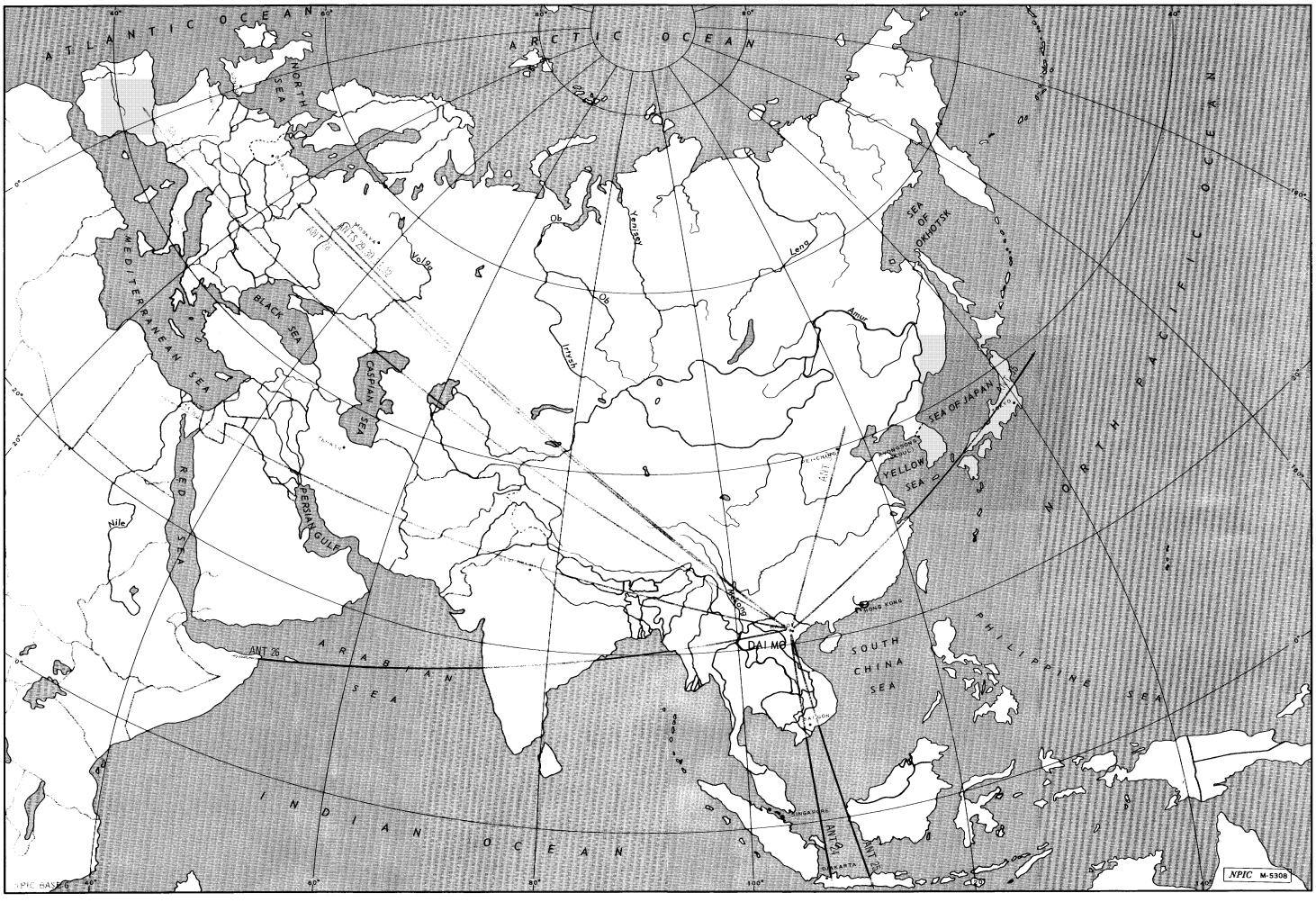


FIGURE 4. FORWARD AZIMUTH PROJECTIONS FOR RHOMBIC ANTENNAS AT HANOI INTERNATIONAL RADIO COMMUNICATIONS TRANSMITTER, DAI MO, NORTH VIETNAM.

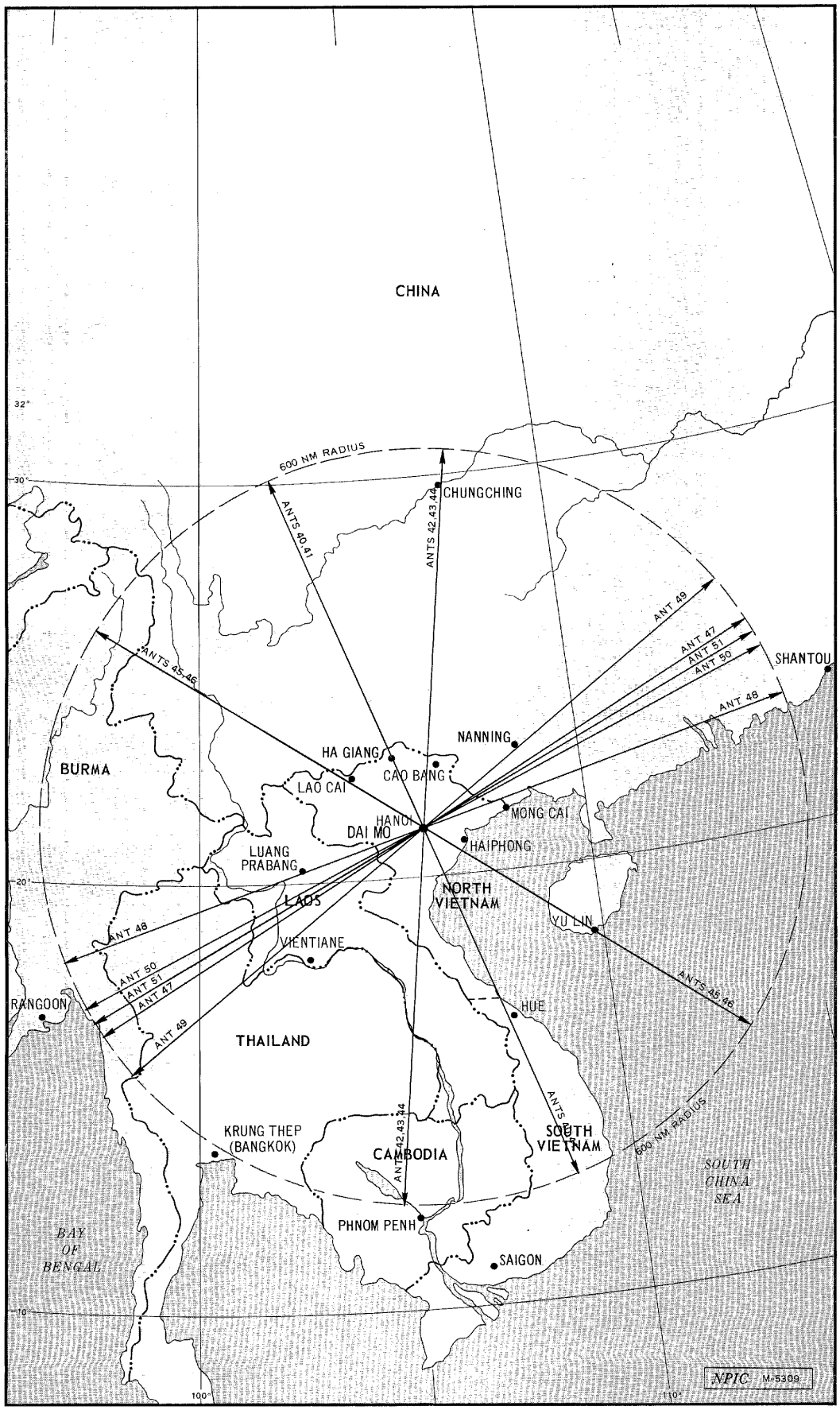


FIGURE 5. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT HANOI INTERNATIONAL RADIO COMMUNICATIONS TRANSMITTER, DAI MO, NORTH VIETNAM.

HANOI INTERNATIONAL RADIO COMMUNICATIONS RECEIVER, SON DONG

[redacted] 25X1A

INSTALLATION OR ACTIVITY NAME				COUNTRY
Hanoi International Radio Communications Receiver, Son Dong 25X1A				VN
UTM COORDINATES 25X1D	GEOGRAPHIC COORDINATES 21-02-[redacted]N 105-41-[redacted]E 25X1D	[redacted]	COMIREX NO. None	NIETB NO None
MAP REFERENCE AMS Series L7014, Sheet 6151 III, 1st ed, 1965, Scale 1:50,000 (Unclassified)				
LATEST IMAGERY USED [redacted]		NEGATION DATE (If required) None 25X1A		

25X1D

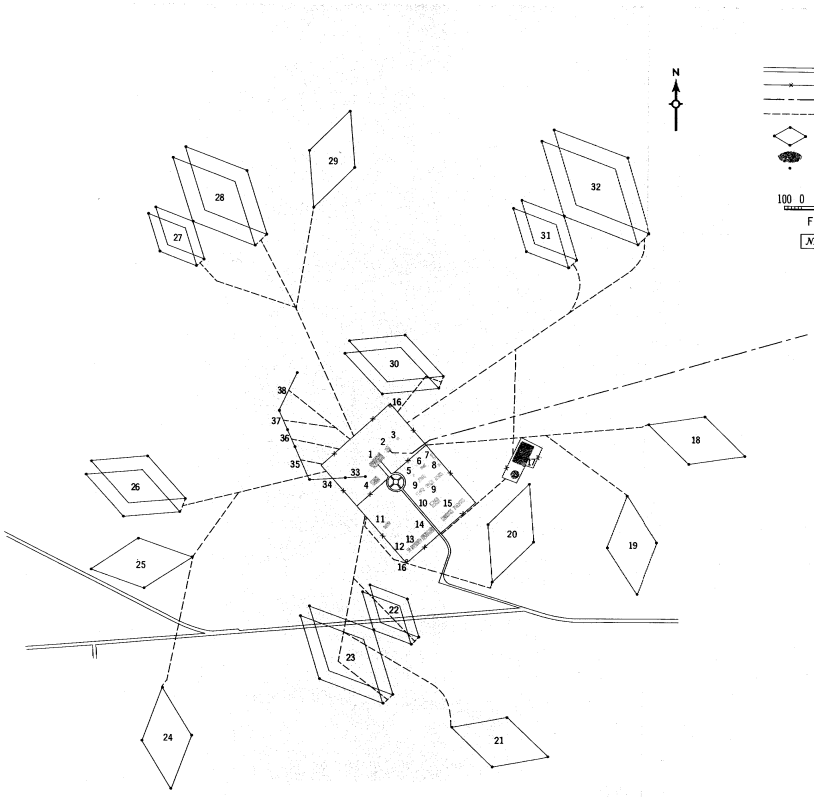
The Son Dong receiving station, 8.6 nm west-northwest of Hanoi, is served by an unnumbered dirt road leading 1 nm west to Route 65 at Que Duong. One eight-gun AAA site is 0.5 nm southwest of the station (Figure 6).

The antenna farm contains 15 rhombic and six horizontal dipole antennas (Figure 7). The rhombic antennas are capable of receiving long range, high frequency communications from Europe, Asia, and Africa with double rhombic antennas oriented toward Europe and north Africa (Figure 8). The horizontal dipole antennas are oriented for high frequency reception (primarily between [redacted] mega- 25X1D
hertz) throughout southern China and Southeast Asia (Figure 9). Feed lines from all the antennas lead to the control building with feeds from the rhombic antennas, oriented toward Europe, also leading to a bunkered probable alternate receiver building.

The control area consists of the primary receiving facilities housed in a single-story building, a generator and transformer building, two support buildings, and a guard tower. A secured alternate control area contains two earth-mounded bunkers, one, a probable receiver bunker and the other, a probable support bunker. The support area, separated from the control area by a wall, contains 15 support buildings and a guard tower.

25X1D

FIGURE 6. HANOI INTERNATIONAL RADIO COMMUNICATIONS RECEIVER, SON DONG, NORTH VIETNAM.



STRUCTURES

ITEM	DESCRIPTION	DIMENSIONS (FT)
1	RECEIVER BUILDING	[redacted] 25X1D
2	GENERATOR AND TRANSFORMER BUILDING	
3	SUPPORT BUILDING	
4	SUPPORT BUILDING	
5	SUPPORT BUILDING	
6	SUPPORT BUILDING	
7	SUPPORT BUILDING	
8	SUPPORT BUILDING	
9	4 SUPPORT BUILDINGS	
10	SUPPORT BUILDING	
11	SUPPORT BUILDING	
12	SUPPORT BUILDING	
13	SUPPORT BUILDING	
14	SUPPORT BUILDING	
15	2 SUPPORT BUILDINGS	
16	2 GUARD TOWERS	
17	EARTH-MOUNDED PROB ALTERNATE RECEIVER BUILDING	

*APPROXIMATE

RHOMBIC

25X1D

ANT NO	AXIS (FT) MAJ	MIN	AVERAGE LENGTH ONE SIDE (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 8)	COMPUTED FREQUENCY (MEGAHERTZ) 25X1B
18	600	315	340	[redacted]	MANILA	[redacted]
19	595	295	335		SOUTH VIETNAM, THAILAND, CAMBODIA	
20	610	290	340		NORTH (PEKING, KOREA, JAPAN)	
21	600	300	340		MANILA	
22	425	210	240		EUROPE	
23	720	360	400		EUROPE	
24	600	290	335		SOUTH VIETNAM, THAILAND, CAMBODIA	
25	605	290	340		BURMA	
26	600	290	330		CAIRO	
27	420	210	235		EUROPE	
28	710	370	400		EUROPE	
29	605	290	340		NORTH (PEKING, KOREA, JAPAN)	
30	600	290	330		CAIRO	
31	480	240	370		EUROPE	
32	830	410	465		EUROPE	

NOTE: EACH ANTENNA AVERAGES [redacted] AND IS ASSUMED TO BE FOUR WAVE LENGTHS LONG ON A SIDE.

25X1D

DIPOLE

ANT NO	POLE SEPARATION (FT)	EST ANT LENGTH (FT)	INITIAL GREAT CIRCLE (°)	PROBABLE CORRESPONDENT (SEE FIGURE 9)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
33	[redacted]	[redacted]	180/360	LAOS/IN-COUNTRY	[redacted] 25X1B
34			180/360	LAOS/IN-COUNTRY	
35			70/250	HONG KONG/LAOS AND IN-COUNTRY	
36			70/250	HONG KONG/LAOS AND IN-COUNTRY	
37			70/250	HONG KONG/LAOS AND IN-COUNTRY	
38			120/300	YULIN/MENGTZU	

25X1D

FIGURE 7. HANOI INTERNATIONAL RADIO COMMUNICATIONS RECEIVER, SON DONG, NORTH VIETNAM.

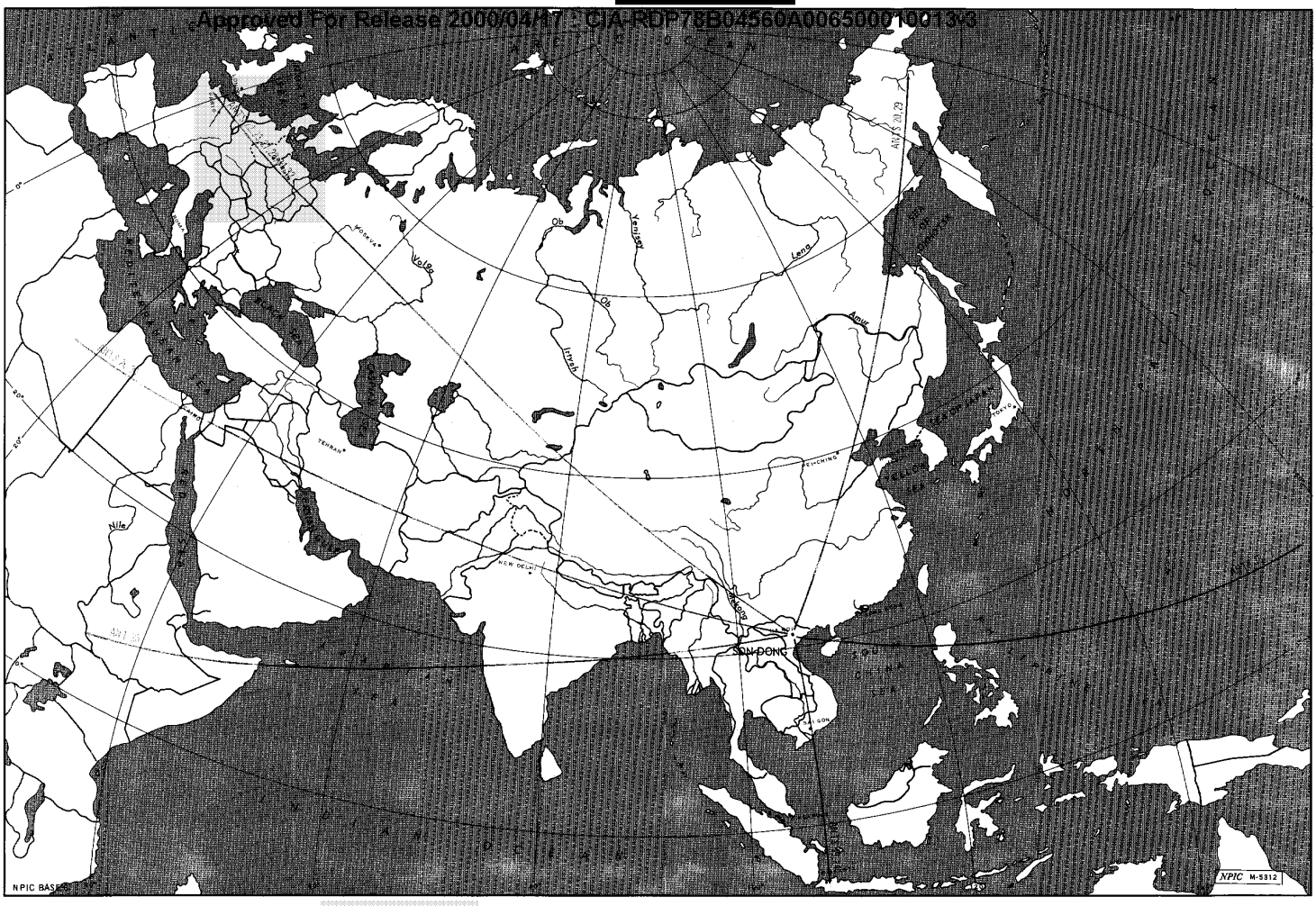


FIGURE 8. FORWARD AZIMUTH PROJECTIONS FOR RHOMBIC ANTENNAS AT HANOI INTERNATIONAL RADIO COMMUNICATIONS RECEIVER, SON DONG, NORTH VIETNAM.

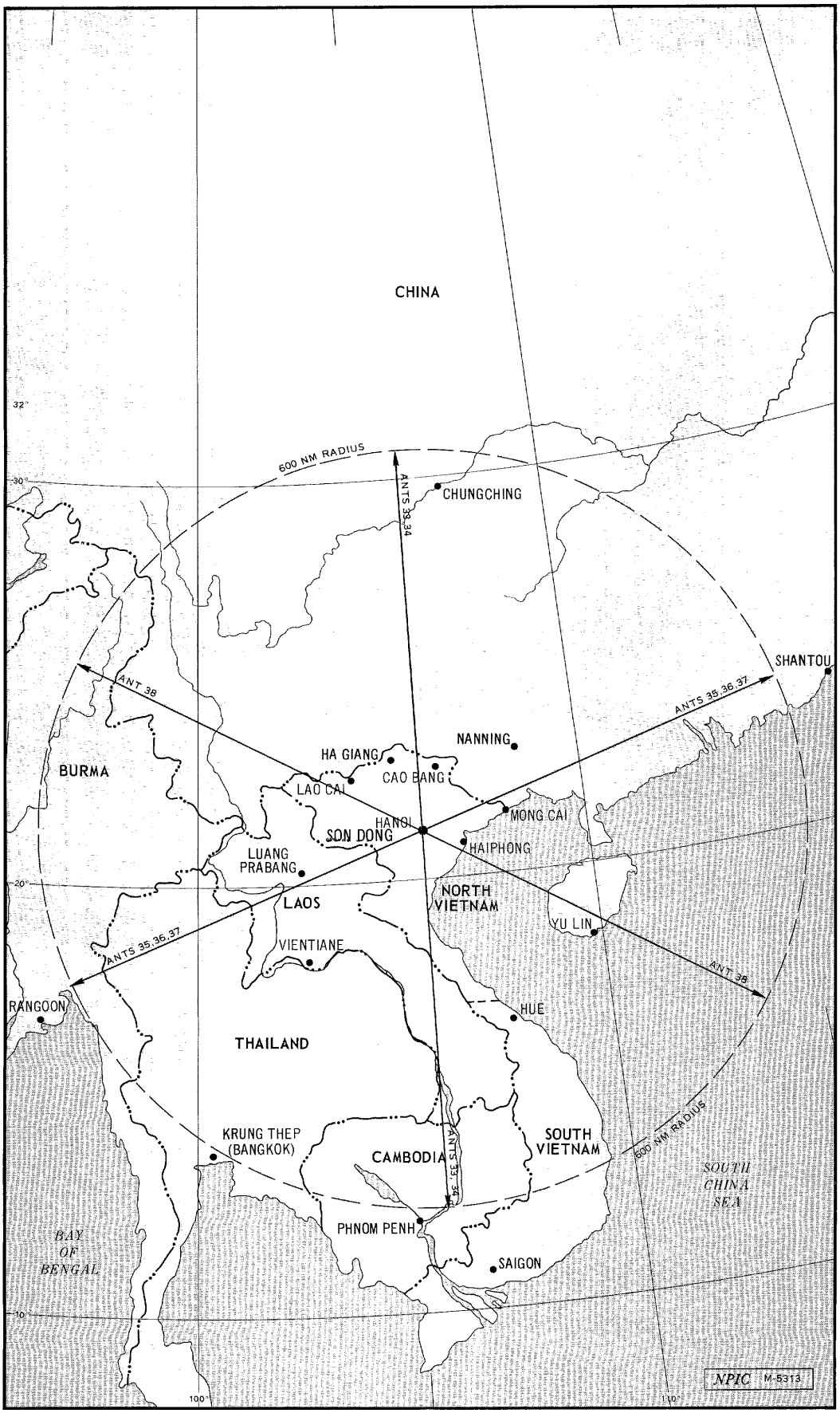


FIGURE 9. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT HANOI INTERNATIONAL RADIO COMMUNICATIONS RECEIVER, SON DONG, NORTH VIETNAM.

LANG TRUOC
RADIO COMMUNICATIONS
TRANSMITTER

[redacted] 25X1A

INSTALLATION OR ACTIVITY NAME				COUNTRY	
Lang Truoc Radio Communications Transmitter 25X1A				VN	
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	[redacted]	COMIREX NO.	NIETB NO.
[redacted]	21-15[redacted]N 105-52[redacted]E	[redacted]		None	None

25X1D

MAP REFERENCE
AMS Series L7014, Sheet 6151 I, 1st ed, 1965, Scale 1:50,000
(Unclassified)

LATEST IMAGERY USED	NEGATION DATE (If required)
[redacted]	None

25X1A

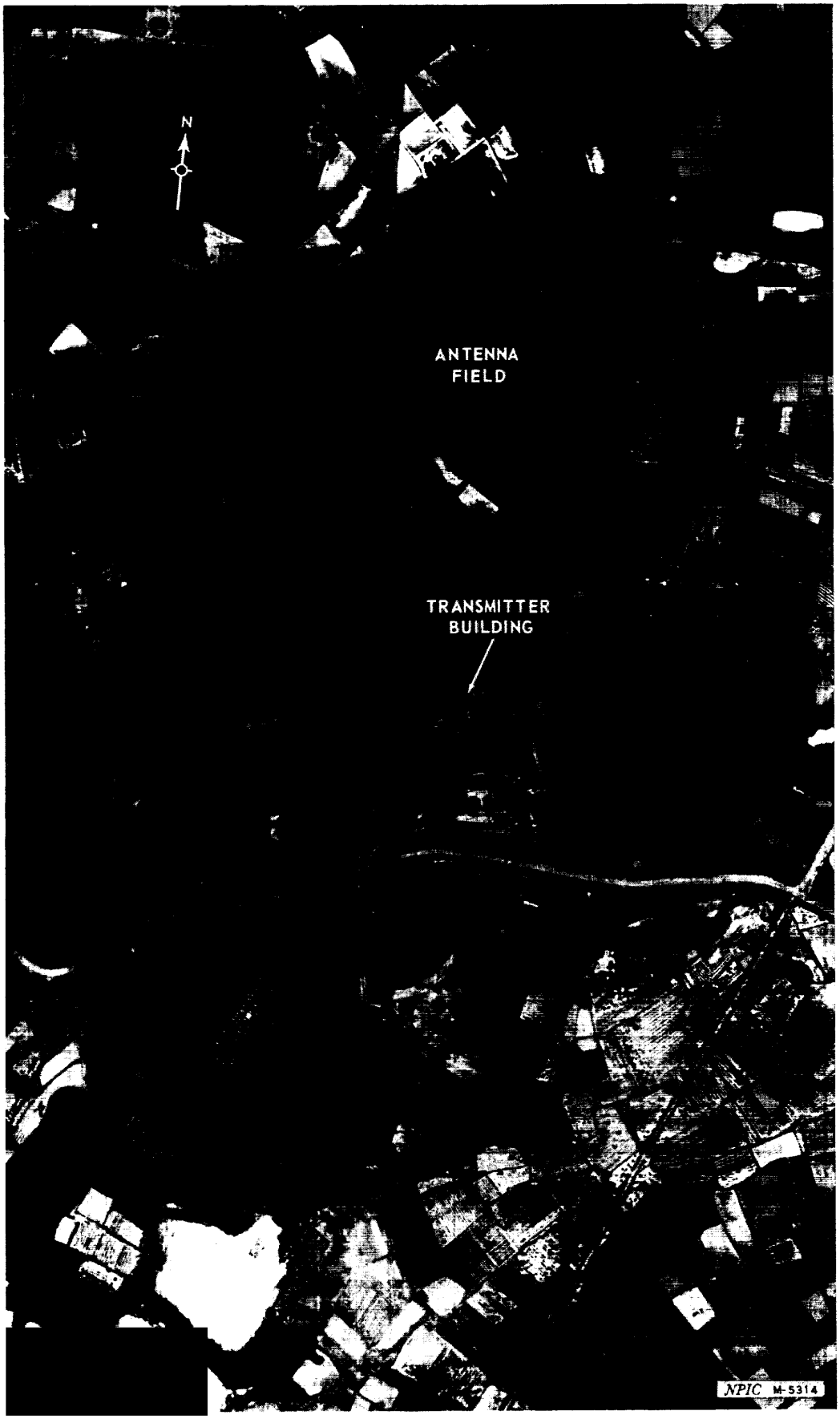
25X1D

The Lang Truoc facility is located 13.9 nm north of Hanoi and is served by a dirt road leading 1 nm west to Route 3 at Tien Duoc Thuong. The Hanoi-Thai Nguyen Railroad Line passes immediately west of the facility. This station, constructed [redacted] is probably being used to support insurgency operations in Southeast Asia (Figure 10).[3] 25X1D

The antenna farm contains three rhombic, four VEE, and 13 horizontal dipole antennas (Figure 11). Two of the rhombic antennas are oriented for day-night transmission toward Moscow, while the third rhombic antenna is oriented for transmission toward Peking (Figure 12). The VEE antennas, [redacted] 25X1B

25X1B [redacted] are probably for omni-directional, short range communications. The majority of the horizontal dipole antennas are oriented for high frequency communications to all of Southeast Asia from Rangoon to the South Vietnam coast. The back azimuths for these antennas cover all of southern China (Figure 13). Antenna feedlines for all antennas lead from the transmitter building.

The transmitting facilities are housed in a single-story, H-shaped, concrete building. A pumphouse, a generator, and an adjacent support building are also in the control area. A pipeline for cooling water leads from a lake 0.8 nm south to the transmitter building.



25X1D FIGURE 10. LANG TRUOC RADIO COMMUNICATIONS TRANSMITTER, NORTH VIETNAM.

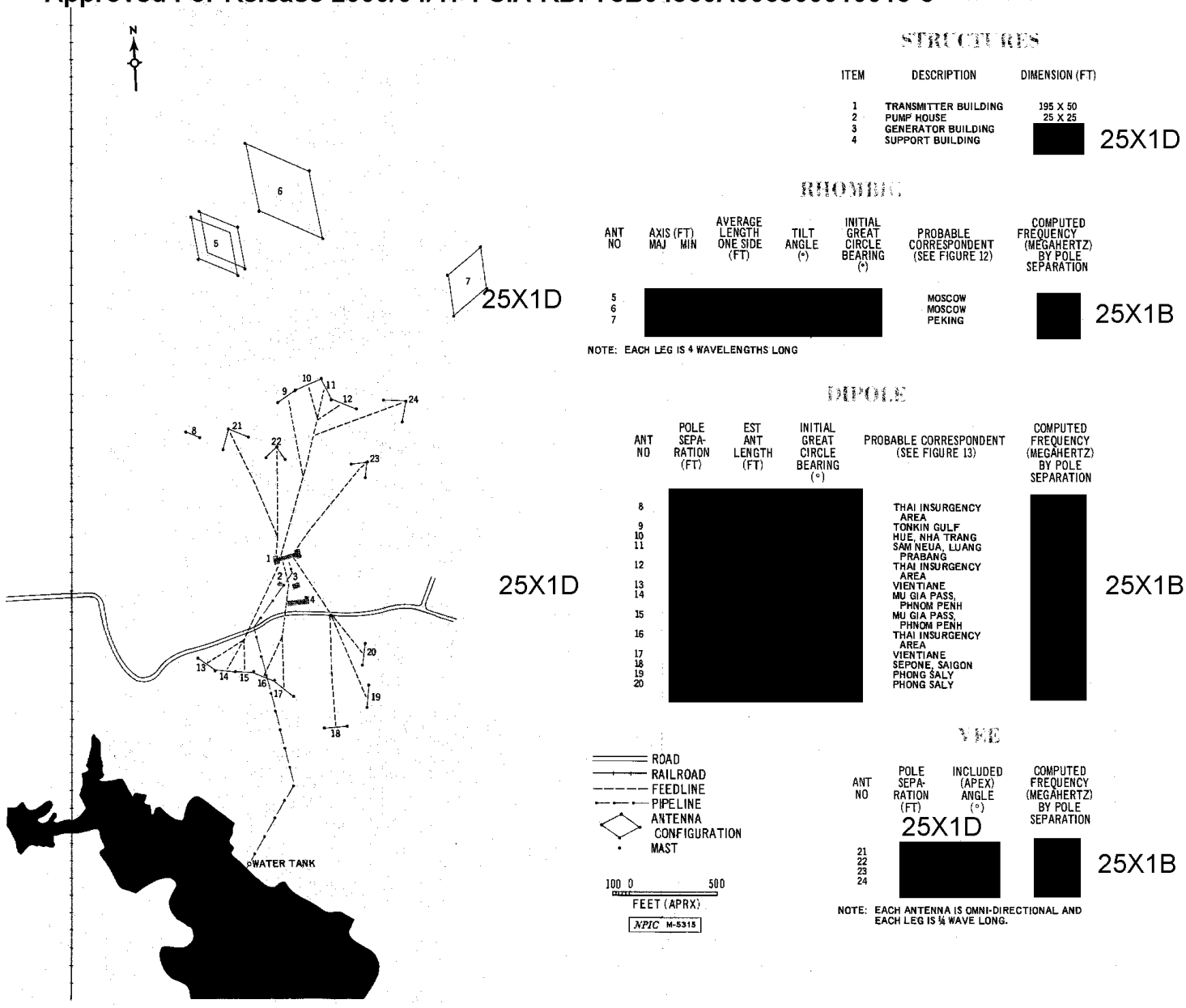


FIGURE 11. LANG TRUOC RADIO COMMUNICATIONS TRANSMITTER, NORTH VIETNAM.

FIGURE 12. FORWARD AZIMUTH PROJECTIONS FOR RHOMBIC ANTENNAS AT LANG TRUOC RADIO COMMUNICATIONS TRANSMITTER, NORTH VIETNAM.

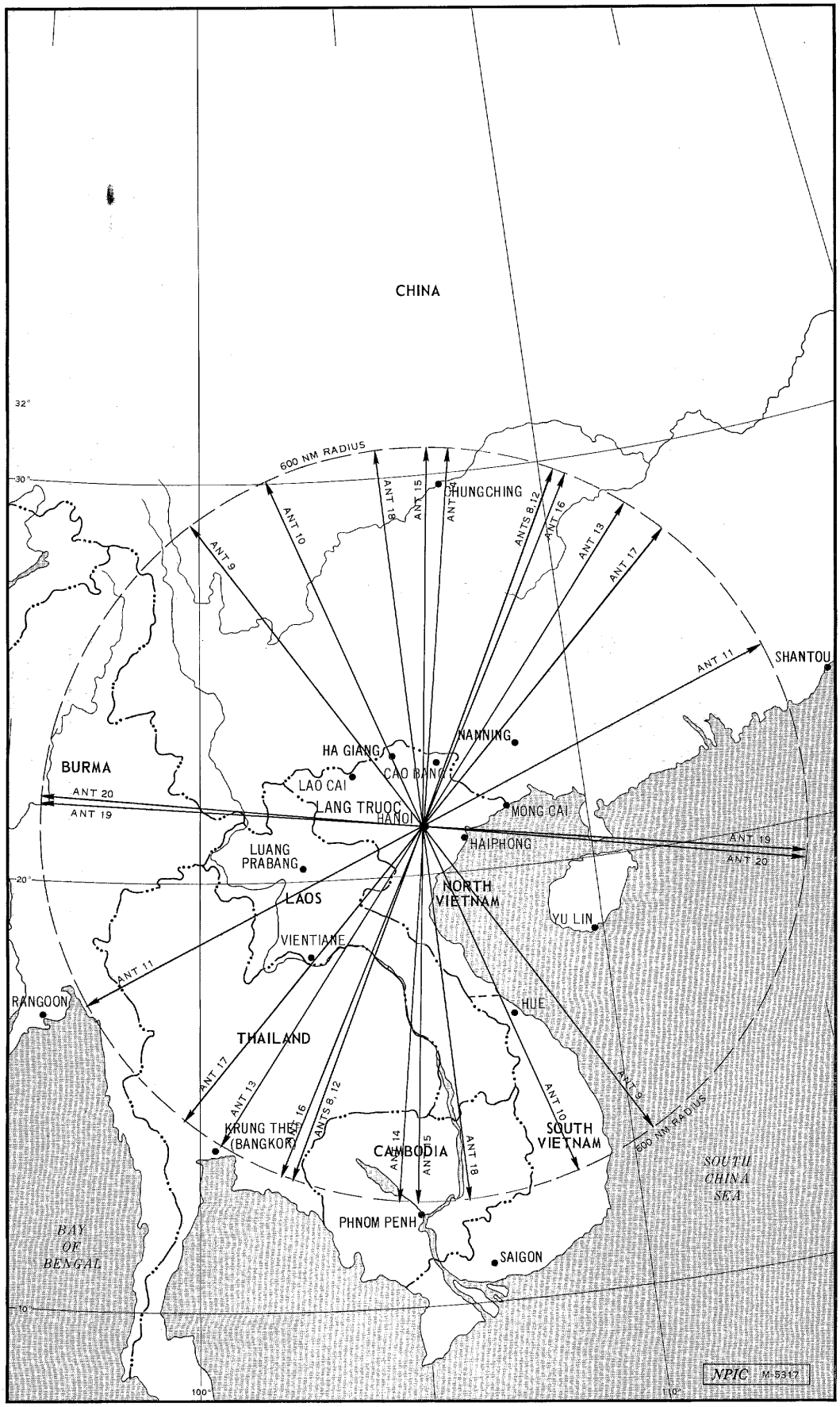


FIGURE 13. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT LANG TRUOC RADIO COMMUNICATIONS TRANSMITTER, NORTH VIETNAM.

25X1C

HANOI RADIO BROADCASTING STATION, ME TRI

[redacted] 25X1A

25X1C

INSTALLATION OR ACTIVITY NAME				COUNTRY
Hanoi Radio Broadcasting Station, Me Tri 25X1A 25X1A				VN
UTM COORDINATES	GEOGRAPHIC COORDINATES		COMIREX NO.	NIETB NO.
[redacted]	20-59-[redacted]N 105-47-[redacted]E	[redacted]	None	None
MAP REFERENCE				
AMS Series L7014, Sheet 6150 I, 1st ed, 1965, Scale 1:50,000 (Unclassified)				
LATEST IMAGERY USED		NEGATION DATE (If required)		
[redacted] 25X1D		None		

25X1D
25X1D
25X1D

The Me Tri Broadcasting Station is located 4.3 nm southwest of Hanoi and is served by a secondary road leading 1 nm southeast to Route 6 at Phung Khoang. Defenses for this installation include four AAA sites within 0.5 nm of the station (Figure 14). The entire station, including the antenna masts, is located within a rectangular fenced area with a guard tower at each corner.

The antenna farm contains two vertical radiators, four double rhombic antennas in day-night pairs, and seven horizontal dipole antennas (Figure 15). The towers for the vertical radiators were apparently first constructed to support a horizontal dipole broadcast array; however, they presently support top loaded vertical radiators for omni-directional transmission. One pair of rhombic antennas is oriented for transmission toward Saigon and Djakarta, while the other pair of rhombic antennas is oriented for transmission toward central Europe (Figure 16). On the rhombic antennas oriented toward the south, certain antenna masts are shorter than others, indicating that each double rhombic consists of a high and a low antenna. One pair of horizontal dipoles is aligned with the antennas parallel to each other and oriented for north-south communications with a provision for switching the feed from one dipole to the other. Another horizontal dipole is oriented for transmission toward the Gulf of Tonkin or Kunming, China (Figure 17). Feedlines to these antennas lead from the main transmitter building. Four additional horizontal dipole antennas are oriented for transmission in a north-south direction and cut for different frequencies with feedlines leading from the secondary transmitter building. 25X1D

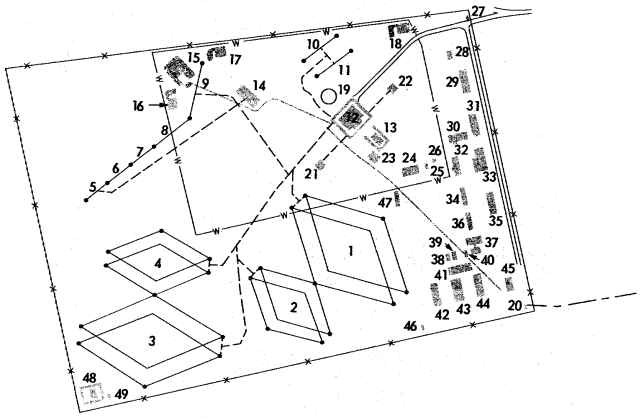
The control area of the facility contains the main transmitter building, as well as an adjacent generator building (separately surrounded by double-walled, earth-filled, blast walls approximately [redacted] feet thick), an unprotected secondary transmitter building, a bunkered support building, three partially revetted buildings, a water tower, a cooling pond, and three additional support buildings. The support area contains a gatehouse, a messhall, a substation, seven barracks, and 14 support buildings. One of the support buildings in the western corner of the compound had foundations laid for blast walls in [redacted] 25X1D however, the foundations remain incomplete.

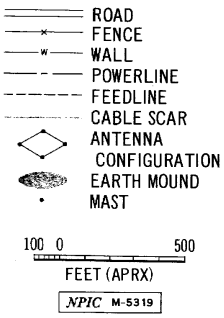
A cable scar connects the main transmitter building to the control area of the Hanoi International Radio Transmission Station, Dai Mo, 1.6 nm southwest. Another cable scar and a land line are discernible leading northeast from the Me Tri control building toward the Hanoi Citadel. This communications line, constructed in [redacted] is probably 25X1D used to link the government control facilities in Hanoi with the two transmitting stations.

Electric power is provided to the station from external sources via a substation, and from a diesel generator within the control area.

25X1D

FIGURE 14. HANOI RADIO BROADCASTING STATION, ME TRI, NORTH VIETNAM.





RHOMBIC

ANT NO	AXIS (FT) MAJ	AXIS (FT) MIN	AVERAGE LENGTH ONE SIDE (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 16)	COMPUTED FREQUENCY (MEGAHERTZ)
1	[redacted]				SAIGON, DJAKARTA	25X1D
2					SAIGON, DJAKARTA	
3					CENTRAL EUROPE	
4					CENTRAL EUROPE	

25X1D

NOTE: EACH ANTENNA TILT ANGLE IS 65° AND IS ASSUMED TO BE FOUR WAVELENGTHS LONG ON A SIDE.

DIPOLE

ANT NO	POLE SEPARATION (FT)	EST ANT LENGTH (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 17)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
5	[redacted]			SAIGON/CHUNGKING	[redacted]
6				SAIGON/CHUNGKING	
7				SAIGON/CHUNGKING	
8				SAIGON/CHUNGKING	
9				TONKIN GULF/KUNMING	
10				SAIGON/CHUNGKING	
11				SAIGON/CHUNGKING	

25X1D

25X1D

STRUCTURES

ITEM	DESCRIPTION	DIMENSIONS (FT)
12	MAIN TRANSMITTER BUILDING (WALLED)	[redacted]
13	GENERATOR BUILDING (WALLED)	
14	SECONDARY TRANSMITTER BUILDING	
15	BUNKERED SUPPORT BUILDING	
16	PARTIALLY REVETTED BUILDING	
17	PARTIALLY REVETTED BUILDING	
18	PARTIALLY REVETTED BUILDING	
19	COOLING POND	
20	SUBSTATION	
21	320 FT VERTICAL RADIATING ANTENNA MAST	
22	325 FT VERTICAL RADIATING ANTENNA MAST	
23	SUPPORT BUILDING	
24	SUPPORT BUILDING	
25	SUPPORT BUILDING	
26	WATER TOWER	
27	GATEHOUSE	
28	SUPPORT BUILDING	
29	SUPPORT BUILDING	
30	SUPPORT BUILDING	
31	SUPPORT BUILDING	
32	SUPPORT BUILDING	
33	SUPPORT BUILDING	
34	BARRACKS	
35	BARRACKS	
36	BARRACKS	
37	MESSHALL AND KITCHEN	
38	SUPPORT BUILDING	
39	SUPPORT BUILDING	
40	SUPPORT BUILDING	
41	BARRACKS	
42	BARRACKS	
43	BARRACKS	
44	BARRACKS	
45	SUPPORT BUILDING	
46	SUPPORT BUILDING	
47	SUPPORT BUILDING	
48	SUPPORT BUILDING	
49	SUPPORT BUILDING	

25X1D

FIGURE 15. HANOI RADIO BROADCASTING STATION, ME TRI, NORTH VIETNAM.

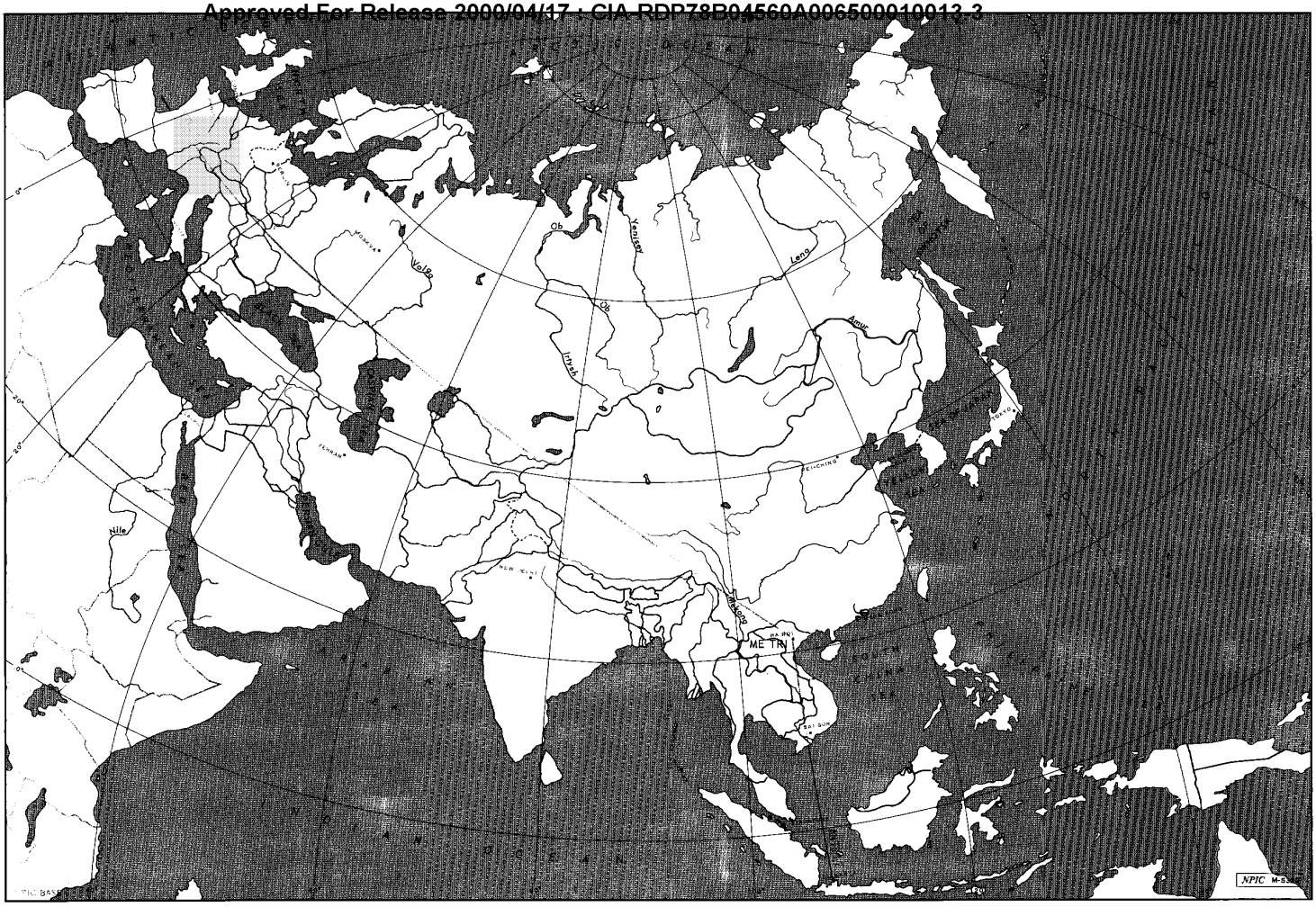


FIGURE 16. FORWARD AZIMUTH PROJECTIONS FOR RHOMBIC ANTENNAS AT HANOI RADIO BROADCASTING STATION, ME TRI, NORTH VIETNAM.

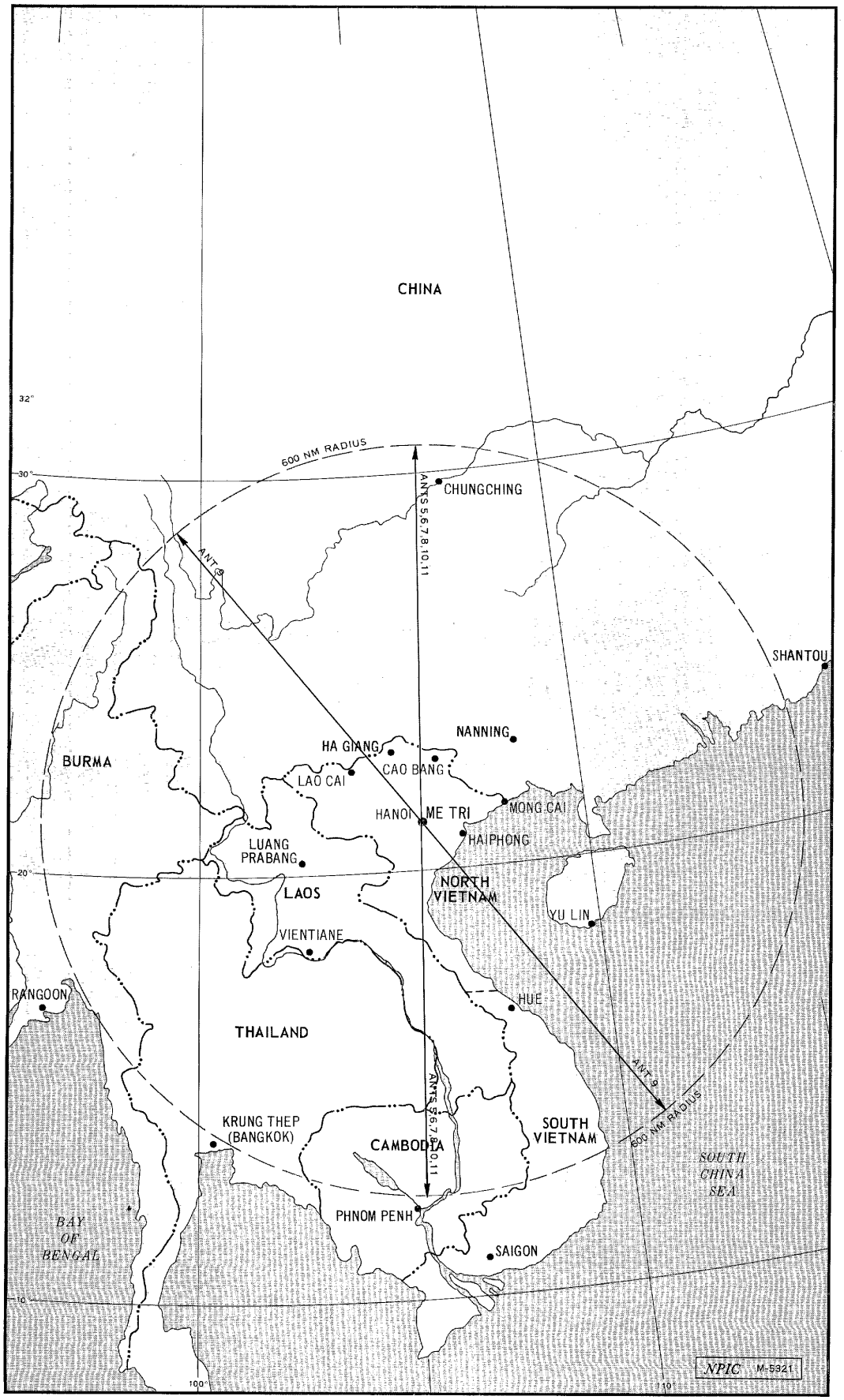


FIGURE 17. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT HANOI RADIO BROADCASTING STATION, ME TRI, NORTH VIETNAM.

HANOI RADIO COMMUNICATIONS STATION, HA DONG NO 7

[redacted] 25X1A

25X1D

INSTALLATION OR ACTIVITY NAME				COUNTRY
Hanoi Radio Communications Station, Ha Dong No 7 25X1A				VN
UTM COORDINATES [redacted]	GEOGRAPHIC COORDINATES 20-58-[redacted]N 105-47-[redacted]E	CATEGORY [redacted]	COMIREX NO. None	NIETB NO. None
MAP REFERENCE AMS Series L7014, Sheet 6150 I, 1st ed, 1965, Scale 1:50,000 (Unclassified) 25X1A				
LATEST IMAGERY USED [redacted]		NEGATION DATE (If required) None		

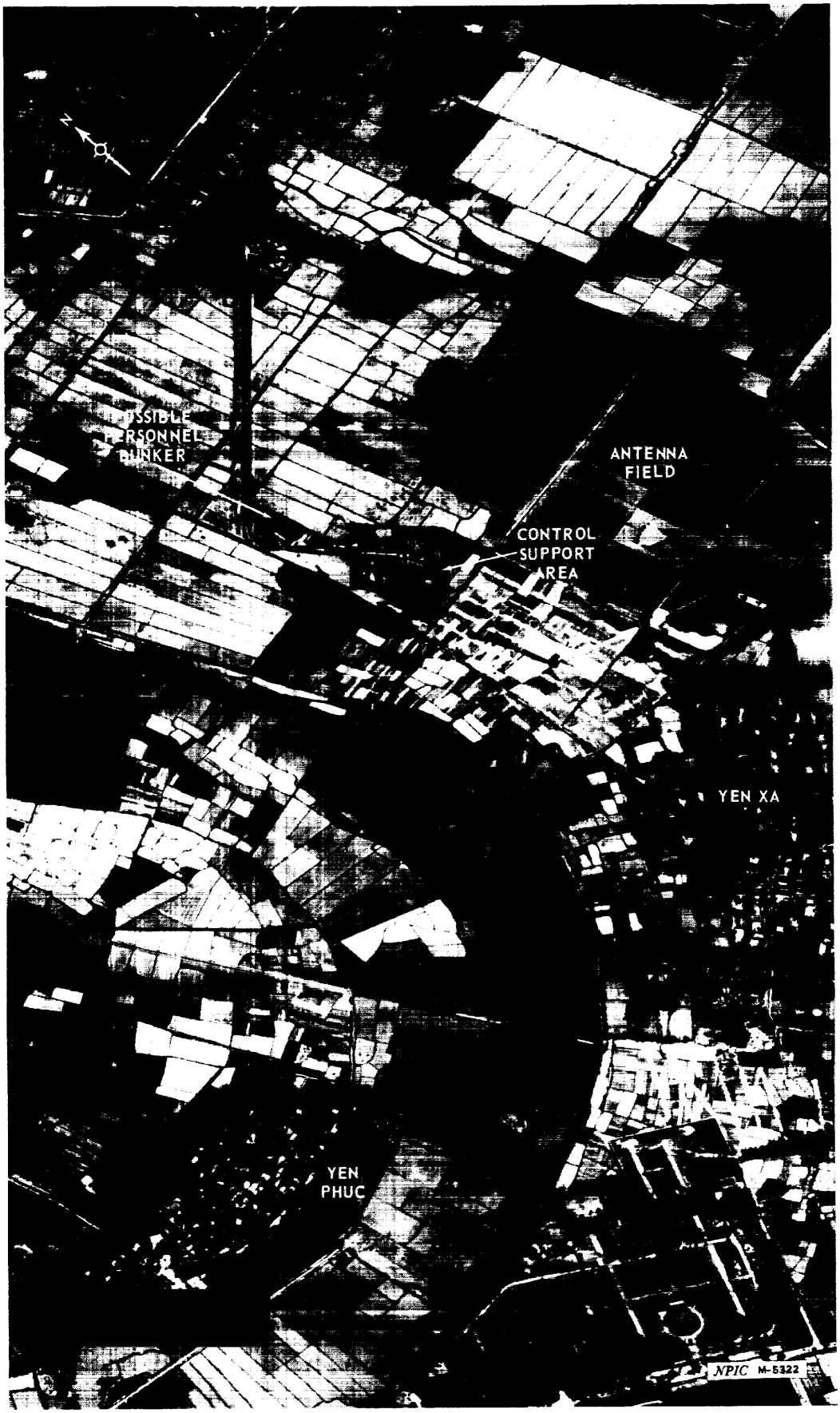
25X1D

This station is located 3.5 nm southwest of Hanoi and 1.1 nm east of Ha Dong. It is served by a dirt road leading 0.5 nm northwest to Route 6. One AAA site is within 0.5 nm of the station (Figure 18).

The antenna farm contains two double rhombic antennas (one day-night pair), six horizontal dipole antennas (including two day-night pairs), and one VEE antenna (Figure 19). Feedlines lead from the transmitter building to all of the antennas. The feedlines for the rhombic antennas lead to a switch in the center of each antenna. Feeds leading from this switch to each end of the antenna permit transmission toward either Saigon or Lanchou, China (Figure 20). In addition, a dissipation line connected to the switch allows for a continuing connection to the end of the antenna opposite the antenna feed. One day-night pair of horizontal dipole antennas is oriented for transmission toward the Gulf of Tonkin and Lao Cai, while the other pair is oriented for transmission toward Nam Dinh and Kunming, China. The other two horizontal dipoles are oriented for transmission toward Chungking and Saigon and toward Cao Bang and Phnom Penh, Cambodia (Figure 21). The VEE antenna [redacted] 25X1B
25X1B [redacted] is probably for omni-directional, short range communications.

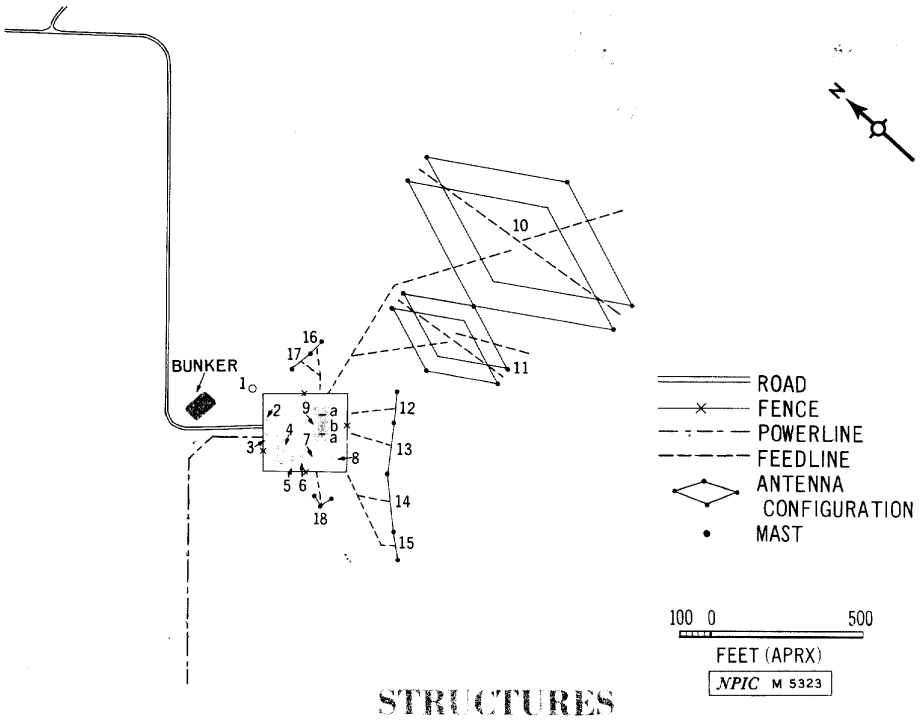
The transmitters are in a single-story concrete building. Four support buildings, a barracks, a water tower, a gatehouse, and a substation are also within the walled control area. A possible personnel bunker and a water pond are outside the control area.

Electric power is provided from external sources via a substation within the control area. A diesel generator is probably available for emergency power; however, none has been identified on photography.



25X1D

FIGURE 18. HANOI RADIO COMMUNICATIONS STATION, HA DONG NO 7, NORTH VIETNAM.



STRUCTURES

ITEM	DESCRIPTION	DIMENSIONS (FT)
1	POND	[redacted] 25X1D
2	GATEHOUSE	
3	SUBSTATION	
4	BARRACKS	
5	SUPPORT BUILDING	
6	SUPPORT BUILDING	
7	WATER TOWER	
8	SUPPORT BUILDING	
9	TRANSMITTER BUILDING	
a	(2)	
b		

RHOMBIC

ANT NO	AXIS (FT) MAX	AXIS (FT) MIN	AVERAGE LENGTH ONE SIDE (FT)	TILT ANGLE (°)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 20)	COMPUTED FREQUENCY (MEGAHERTZ)
10	815	545	[redacted]	65	175/355	SAIGON, DJAKARTA LANCHOU	[redacted] 25X1D
11	425	280		65	175/355	SAIGON, DJAKARTA, LANCHOU	

25X1D

NOTE: EACH ANTENNA IS ASSUMED TO BE FOUR WAVELENGTHS LONG ON A SIDE.

DIPOLE

ANT NO	POLE SEPARATION (FT)	EST ANT LENGTH (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 21)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
12	[redacted]	[redacted]		NAM DINH/KUNMING	[redacted] 25X1D
13				NAM DINH/KUNMING	
14				TONKIN GULF/LAO CAI	
15				TONKIN GULF/LAO CAI	
16				CHUNGKING/SAIGON	
17				CAO BANG/PHNOM PENH	

25X1D

NOTE: ITEM 18, VEE ANTENNA, DATA IS UNKNOWN.

FIGURE 19. HANOI RADIO COMMUNICATIONS STATION, HA DONG NO 7, NORTH VIETNAM.

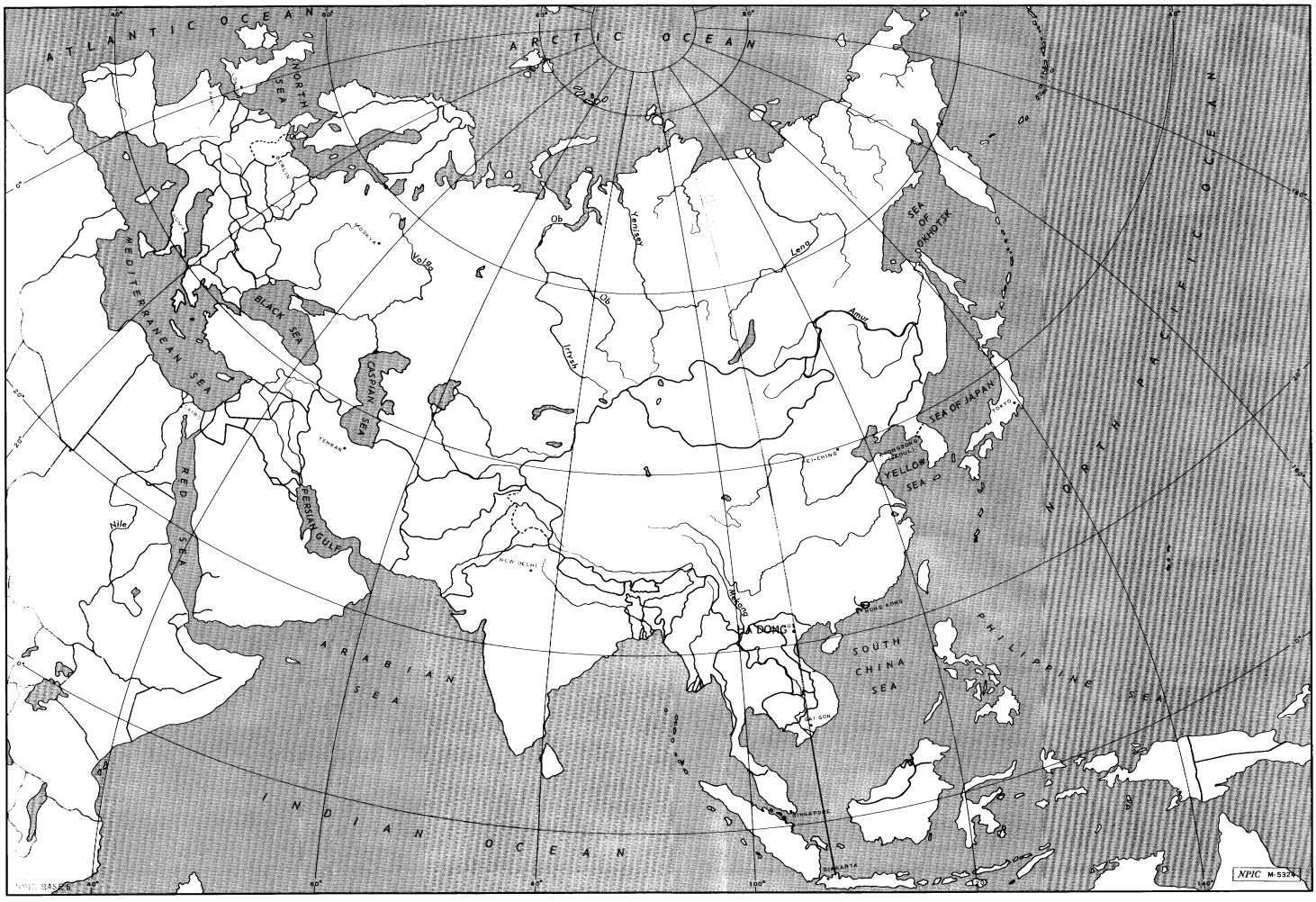


FIGURE 20. FORWARD AZIMUTH PROJECTIONS FOR RHOMBIC ANTENNAS AT HANOI RADIO COMMUNICATIONS STATION, HA DONG NO 7, NORTH VIETNAM.

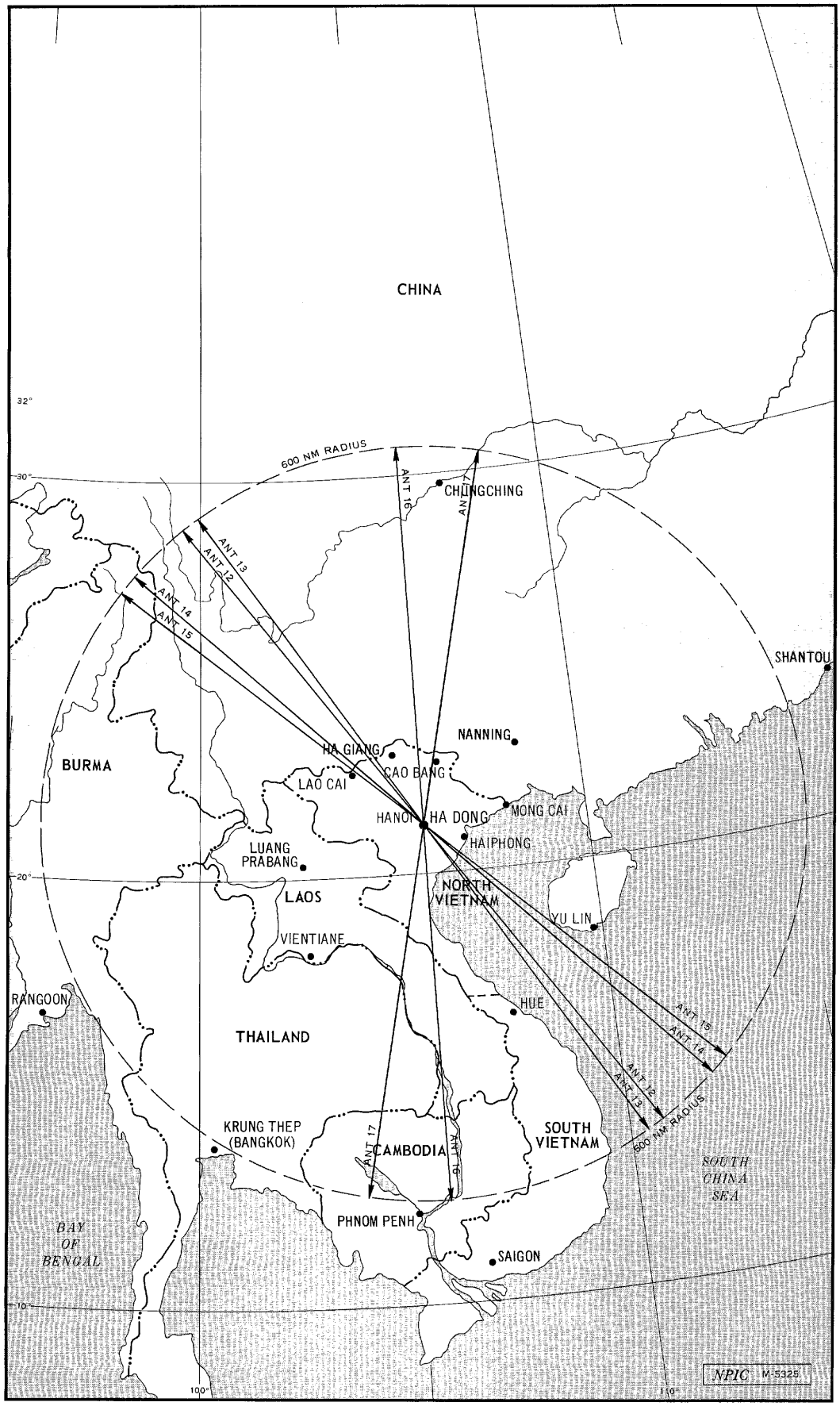


FIGURE 21. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT HANOI RADIO COMMUNICATIONS STATION, HA DONG NO 7, NORTH VIETNAM.

25X1C

HANOI RADIO COMMUNICATIONS RECEIVER, PHU COC

[redacted] 25X1A

25X1C

INSTALLATION OR ACTIVITY NAME				COUNTRY
Hanoi Radio Communications Receiver, Phu Coc 25X1A				VN
25X1D UTM COORDINATES [redacted]	GEOGRAPHIC COORDINATES 20-51[redacted]N 105-53[redacted]E 25X1D 25X1D	CATEGORY [redacted]	COMIREX NO. None	NIETB NO. None
MAP REFERENCE AMS Series L7014, Sheet 6150 I, 1st ed, 1965, Scale 1:50,000 (Unclassified)				
LATEST IMAGERY USED [redacted]		NEGATION DATE (If required) None		

25X1D

25X1A

This station, located 10.5 nm south-southeast of Hanoi and 0.4 nm east of Phu Coc, is served by a dirt road leading 1.2 nm west to Route 1A and the Hanoi-Vinh Railroad Line (Figure 22).

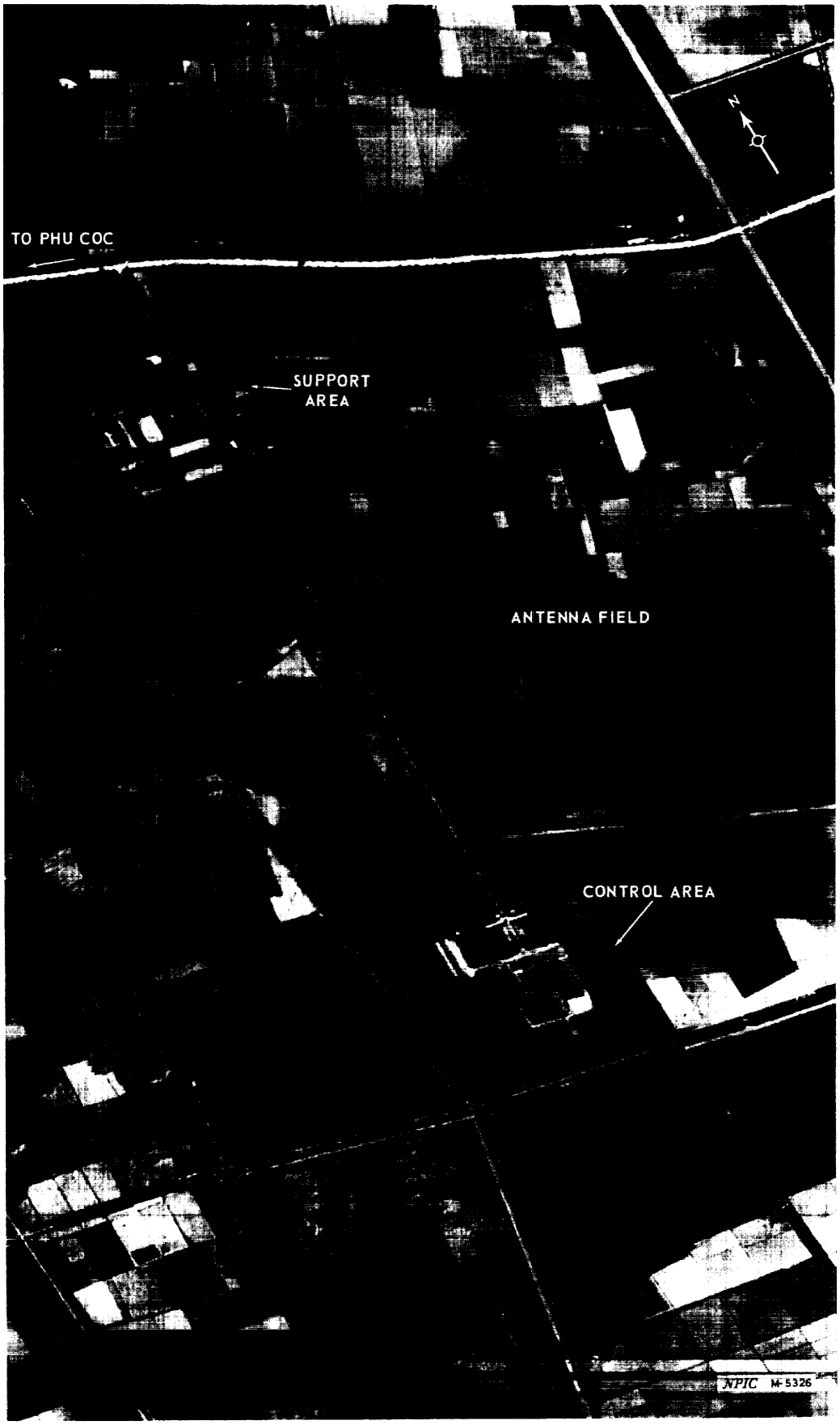
The antenna farm contains six double-bay FISHBONE, eight VEE, and six horizontal dipole antennas (Figure 23). [redacted] 25X1B

25X1B [redacted]

25X1B [redacted] The FISHBONE antennas would, however, still provide wide band, long range, high frequency reception from north Africa, Europe, southern China, Taiwan, southern Japan, Saigon, Cambodia, Java, and Sumatra (Figure 24). The VEE antennas [redacted] are probably for omni-directional, short range communications. The horizontal dipole antennas consist of three day-night pairs oriented for communications with Lang Son-Vientiane, Haiphong-Hoa Binh, and Dong Hoi-Ha Giang (Figure 25). Antenna feedlines from all antennas lead to the receiver building. 25X1B

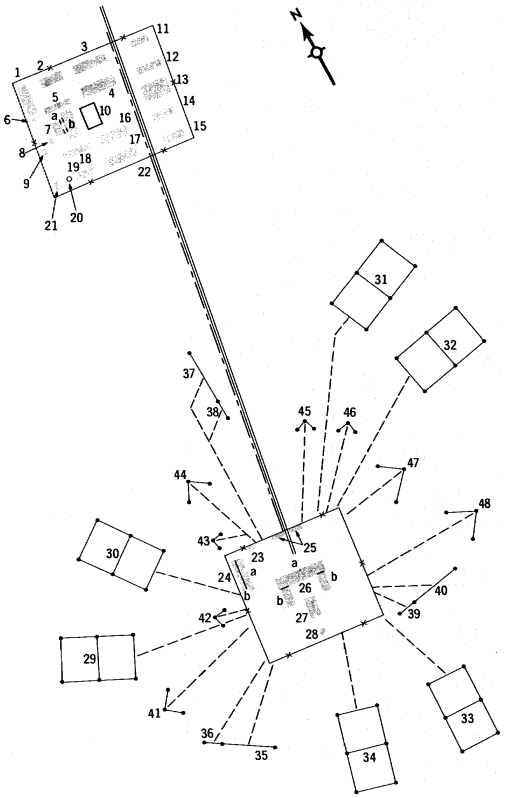
The walled control area contains a two-story concrete receiver building, three support buildings, two gatehouses, and a substation. The fenced support area just north of the control area contains an auditorium, four two-story barracks, a messhall, a gatehouse, a substation (outside the fenced area), 13 support buildings, a water tower, a probable swimming pool, and a basketball court.

Electric power is provided from external sources via substations within the control and support areas. Diesel generators for emergency power are probably available; however, they have not been identified on photography.



25X1D

FIGURE 22. HANOI RADIO RECEIVER, PHU COC, NORTH VIETNAM.



STRUCTURES

ITEM	DESCRIPTION	DIMENSIONS (FT)
1	POOL	[redacted]
2	SUPPORT BUILDING	
3	BARRACKS	
4	BARRACKS	
5	SUPPORT BUILDING	
6	SUPPORT BUILDING	
7	MESSHALL	
a	KITCHEN	
b	MESSHALL	
8	SUPPORT BUILDING	
9	SUPPORT BUILDING	
10	BASKETBALL COURT	
11	SUPPORT BUILDING	
12	SUPPORT BUILDING	
13	AUDITORIUM	
14	SUPPORT BUILDING	
15	SUPPORT BUILDING	
16	BARRACKS	
17	BARRACKS	
18	SUPPORT BUILDING	
19	SUPPORT BUILDING	
20	WATER TOWER	
21	SUPPORT BUILDING	
22	SUBSTATION	
23	SUBSTATION	
24	SUPPORT BUILDING	
a		
b		
25	2 GATEHOUSES	
26	RECEIVER BUILDING	
a		
b	(2)	
27	SUPPORT BUILDING	
28	SUPPORT BUILDING	

25X1D

[redacted]

ANT NO	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 24)
29	[redacted]	NORTH AFRICA
30		EUROPE
31		SOUTHERN CHINA, SOUTHERN JAPAN
32		SOUTHERN CHINA, TAIWAN
33		SAIGON, JAVA
34		CAMBODIA, SUMATRA

25X1D

[redacted]

ANT NO	POLE SEPARATION (FT)	EST ANT LENGTH (FT)	INITIAL GREAT CIRCLE BEARING (°)	PROBABLE CORRESPONDENT (SEE FIGURE 25)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
35	230	[redacted]	[redacted]	LANG SON/VIENTIANE	[redacted]
36	80			LANG SON/VIENTIANE	
37	230			HAIPHONG/HOA BINH	
38	80			HAIPHONG/HOA BINH	
39	80			DONG HOI/HA GIANG	
40	230			DONG HOI/HA GIANG	

25X1D 25X1D

[redacted]

ANT NO	POLE SEPARATION (FT)	INCLUDED (APEX) ANGLE (°)	COMPUTED FREQUENCY (MEGAHERTZ) BY POLE SEPARATION
41	80	[redacted]	[redacted]
42	50		
43	40		
44	80		
45	50		
46	50		
47	125		
48	125		

NOTE: EACH ANTENNA IS OMNI-DIRECTIONAL AND EACH LEG IS ¼ WAVE LONG.

25X1D 25X1D

FIGURE 23. HANOI RADIO RECEIVER, PHU COC, NORTH VIETNAM.

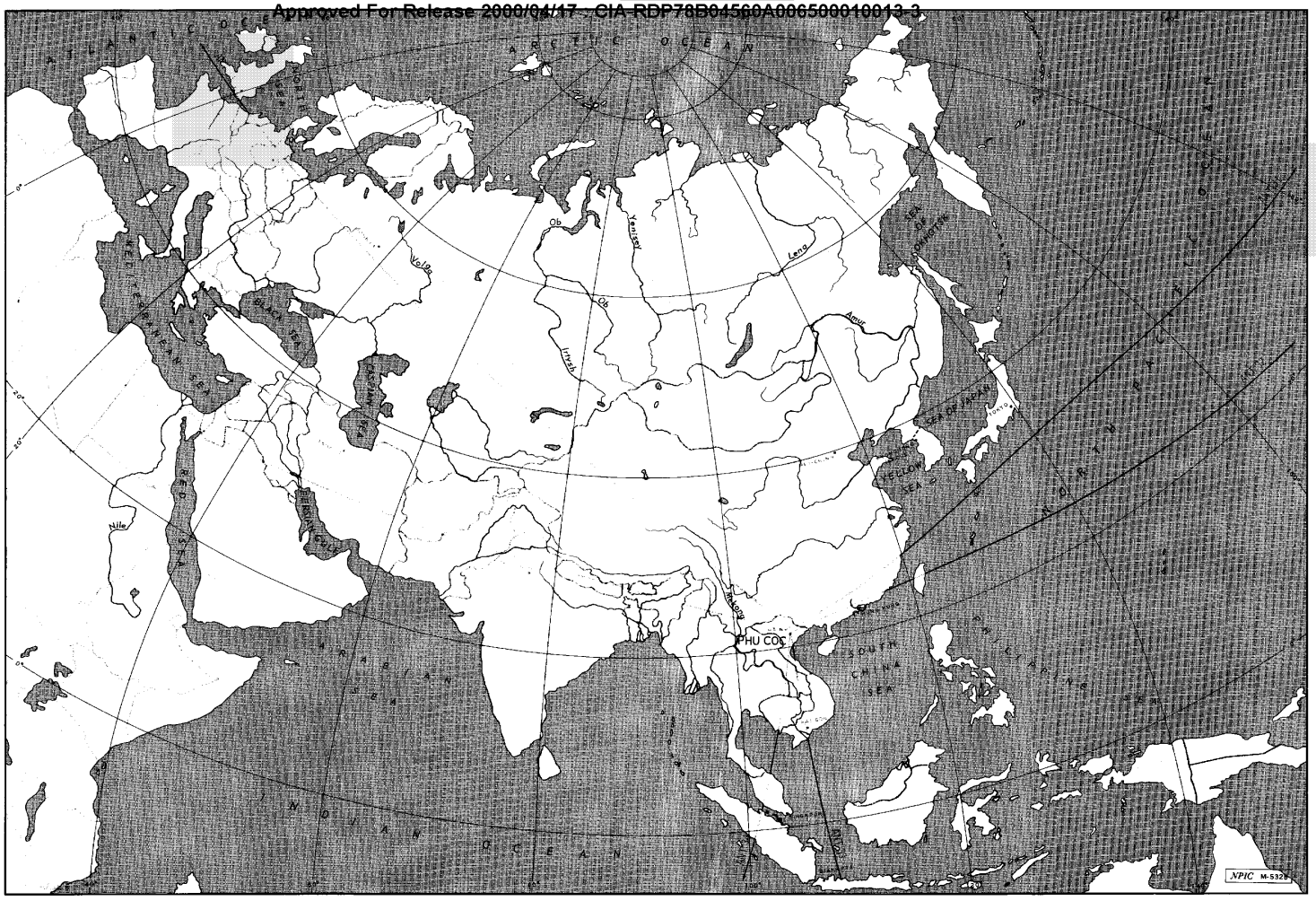


FIGURE 24. FORWARD AZIMUTH PROJECTIONS FOR FISHBONE ANTENNAS AT HANOI RADIO RECEIVER, PHU COC, NORTH VIETNAM.

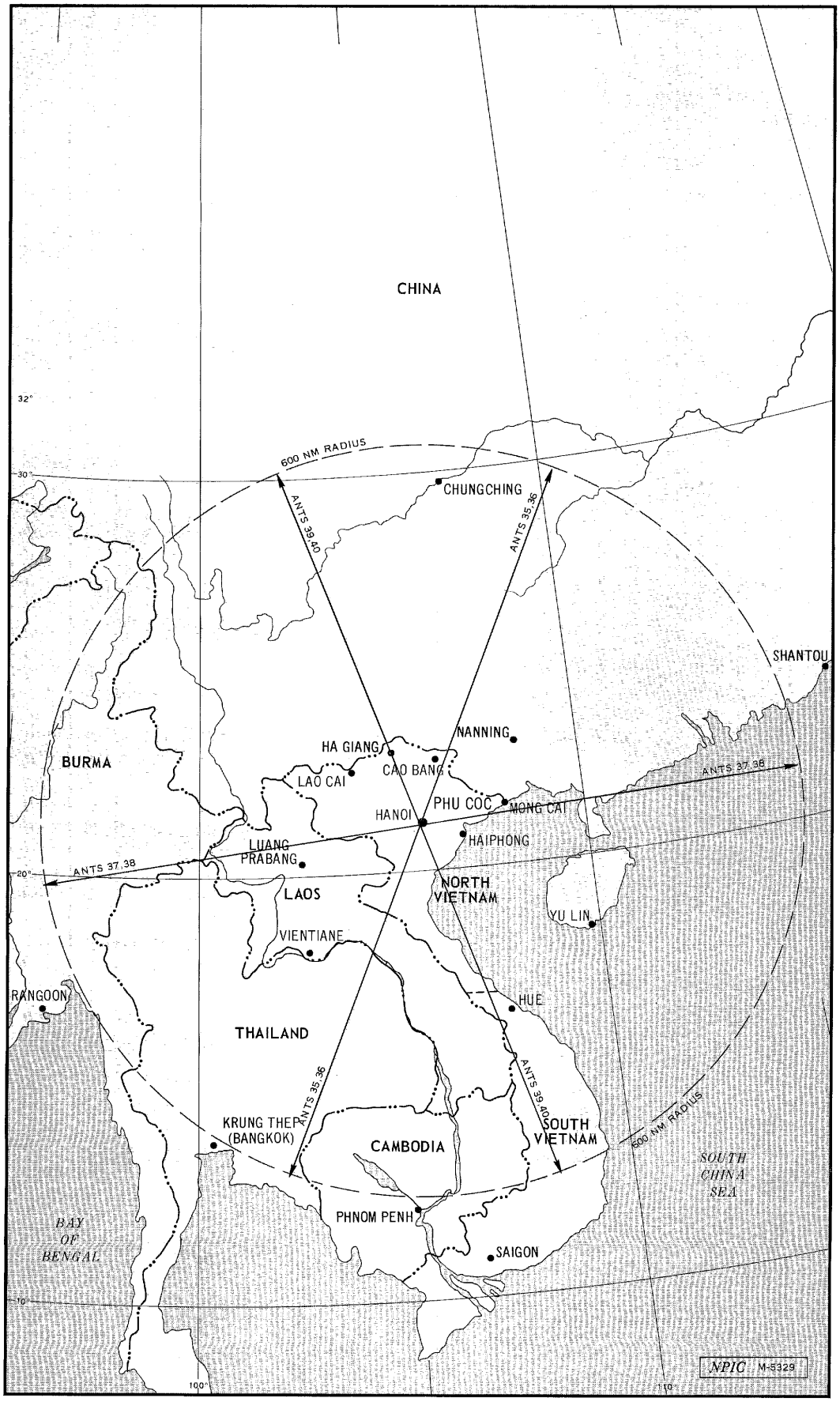


FIGURE 25. AZIMUTH PROJECTIONS FOR HORIZONTAL DIPOLE ANTENNAS AT HANOI RADIO RECEIVER, PHU COC, NORTH VIETNAM.

Next 2 Page(s) In Document Exempt

25X1C

REFERENCES (Continued)

25X1C

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REQUIREMENT

NSA. SOC/R 139-67

NPIC Project 250135AF