RCA-03/0042/69

25X1

Basic Imagery Interpretation Report



NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

25X1

## ZHEMKOVKA VLF RADIOCOMMUNICATIONS TRANSMITTER STATION (ZHEMKOVKA EAST SLAVE MOON STATION)

25X1

DEPLOYED COMM/ELEC/RADAR FACILITIES

USSR

AUGUST 1969

25X1

ARCHIVAL RECORD

ARCHIVAL RECORD

FLEASE RETURN BLD

ACENCY ARCHIVES, BLD

23 2004 10 113

NSA review completed

Declassification by NGA/DoD

TOP SECRET

GROUP 1: EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

25X1



Salt7-18N 048-07-16E  CIC. US Air Target Chart 200, Sheet M0165-16HL, 3d ed, Jan 63, scale 1:200,000  SECRET  The Mochine 1966  NA  ABSTRACT  This report provides a detailed imagery-derived analysis of the newly designate Zhemkovka East Slave MOON Station (Zhemkovka VLF Radiocommunication Transmitter Station). It includes a functional analysis, location map, mensuration, an photography of the facility.  This facility is one of two MOON slave facilities in the USSR which were previouslidentified as very low frequency (VLF) communications stations. The other facility located at Slonin  The Zhemkovka facility has been identified as the eastern MOON (long-rang navigation aid) station because of its similarity to other known MOON stations and correlation between photography and In addition to the MOON antenna, the facility contains a support area and a barrage type balloon that probably supports an antenna, possibly for back-up or emergency use.  INTRODUCTION  This facility is one of five stations (Figure 1) in the MOON 3 navigational system MOON 3 is a long-range low frequency (LF) hyperbolic navigational aid system  The MOON system has been present in the Soviet Union since the late 1950s or ear 1960s and was known to consist of four slave stations, two on a north/south baseline and two on an east/west baseline with a master station located at the intersection of the east/we and north/south baselines. The northern slave station is at Prayaba at 6:14-53-18N 033-452-23E. These facilities have been identified since the earl 1960s.  Zhemkovka was not originally identified as the eastern slave station primarily because of the difference in its antenna configuration from the other known MOON facilities.  The Slonim communications facility (53-08-12N 025-23-28E, has been confirmed to be the western MOON slave station. Both Slonim ar Zhemkovka have balloon pads similar to the previously identified northern and souther slave stations and the master station.  Photography reveals that an antenna tower we dismantled at the Zh	This report provides a detailed imagery-derived analysis of the newly designat Zhemkovka East Slave MOON Station (Zhemkovka VLF Radiocommunication Transmitter Station). It includes a functional analysis, location map, mensuration, and photography of the facility is one of two MOON slave facility contents a support area and a barragupe balloon that probably supports an antenna, possibly for back-up or emergency use.  INTRODUCTION  This facility is one of five stations (Figure 1) in the MOON 3 navigational system MOON 3 is a long-range low frequency (LF) hyperbolic navigational aid system)  The MOON 3 is a long-range low frequency (LF) hyperbolic navigational aid system)  The MOON system has been present in the Soviet Union since the late 1950s or ear 1960s and was known to consist of four slave stations, two on a north/south baselines and to an a east/west baselines with a master station located at the intersection of the east/wand north/south baselines. The northern slave station is at Proxaba at 61.45-3518NO33-352-23E. These facilities have been identified since the eat 1960s.  Zhemkovka was not originally identified as the eastern slave station primarily becaution of the difference in its antenna configuration from the other known MOON facilities.  Like MOON 3 was the master station is at Prayaba at 61.45-3518NO33-352-23E. These facilities have been identified since the ear 1960s.  Zhemkovka was not originally identified as the eastern slave station primarily becaution from the other known MOON facilities.  Photography reveals that an antenna conserved the slave station and the master station.  Photography reveals that an antenna tower was dismanded at the Zhemkovka facility during the same period.  Zhemkovka East Slave MOON Station is located at an elevation of 800 feet, 2 nautimiles (nm) west-northwest of Zhemkovka, USSR. The surrounding terrain is relatively found quite low which makes it well suited for LF signal propagation. The facility (Figure is secured by a single wire fence and contains approximatel						
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Zhemkovka East Slave MOON Station is located at an elevation of 800 feet, 2 nautic miles (nm) west-northwest of Zhemkovka, USSR. The surrounding terrain is relatively flavored and quite low which makes it well suited for LF signal propagation. The facility (Figure is secured by a single wire fence and contains approximately 325 acres. An adjacent secure support area contains approximately 50 acres.  The mensuration in this report is accurate to within $\pm (5$ feet plus $1\%$ ) with a 95 confidence level.	Zhemkovka East Slave MOON Station is located at an elevation of 800 feet, 2 naution miles (nm) west-northwest of Zhemkovka, USSR. The surrounding terrain is relatively for and quite low which makes it well suited for LF signal propagation. The facility (Figure is secured by a single wire fence and contains approximately 325 acres. An adjacent secur support area contains approximately 50 acres.  The mensuration in this report is accurate to within $\pm$ (5 feet plus 1%) with a 96 confidence level.  -1-			Pho			ntenna tower wa
The mensuration in this report is accurate to within $\pm (5$ feet plus $1\%)$ with a 95 confidence level. $-1-$	The mensuration in this report is accurate to within $\pm (5 \text{ feet plus } 1\%)$ with a $98 \text{ confidence level}$ .	Zhemk	ovka East Slav west-northwes	ve MOON Statio t of Zhemkovka, es it well suited f	n is located at an USSR. The surre or LF signal prop	elevation of ounding terra pagation. The	ain is relatively fla e facility (Figure 2
-1-	-1-	and quite lo	y a single wire	fence and contai	'es		
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## **BASIC DESCRIPTION**

## **Operational Functions**

## Operations Area

Two antennas are located in the operations area. The major antenna is a low frequency (LF) pentagonal array and the second is a balloon-supported probable LF vertical wire, antenna.

The LF pentagon array contains six towers, each high. One of these towers is 25X1 centrally located and the remaining five (perimeter towers) are out from the 25X1 central tower forming a pentagonal configuration. The central tower is fed by two separate parallel overhead radio frequency (RF) feedlines, spaced 125 feet apart, that originate at the transmitting building (item 41, Figure 2 and Table 1). Each of the perimeter towers is fed via a buried cable emanating from the central tower. Small probable tuning buildings have been placed at the base of each tower. Each of the towers has four stories of guying. The easternmost tower of the pentagon array has a partial radial trench system around its base. A circle of 15 equally spaced masts with a chord distance separation of is at a 25X1 radius of from the central tower.

The balloon pad is on the north side of the facility (item 39). A probable winch house

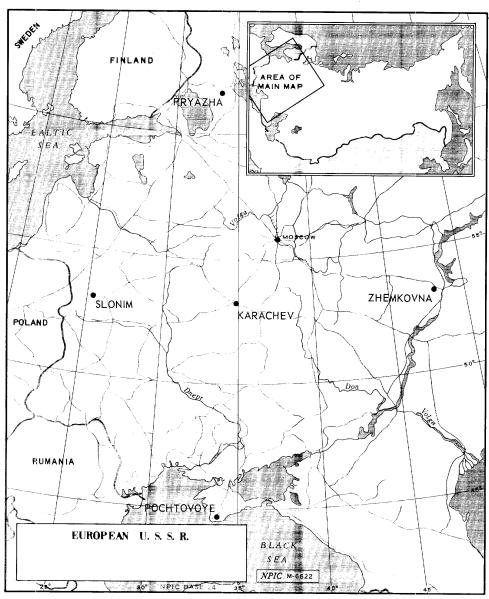


FIGURE 1. LOCATION MAP

- 2 -

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25X1 25X1

25X1

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(item 35) is approximately 400 feet north of the pad. The balloon (item 57) is in flight on Figure 2 with a vertical elevation of and a slant elevation of The vertical wire antenna is suspended between the balloon and the balloon pad. A single RF feedline emanating from the transmitting building terminates adjacent to the east side of the pad.  Other buildings in the operations area are general control support buildings. The total	25X1
1100rspace available in this area is	
Support Area  The separately secured support area contains 30 buildings with a total floorspace of approximately 104,200 square feet. The largest building in the facility is a two-story apartment building  All major buildings in the support area were complete in and only four small buildings have been added since that time.	
·	25X1
Although the pentagonal antenna array was probably complete on the initial	25X1
photography of its completed configuration could not be confirmed until when it appeared to be operational. From the array remained unchanged. In	25X1 25X1
the easternmost tower of the pentagonal array was disassembled and	
operational.	05)//
The pad for the balloon antenna was complete in but the balloon was not observed until	25X1
	(item 35) is approximately 400 feet north of the pad. The balloon (item 57) is in flight on Figure 2 with a vertical elevation of and a slant elevation of The vertical wire antenna is suspended between the balloon and the balloon pad. A single RF feedline emanating from the transmitting building terminates adjacent to the east side of the pad.  Other buildings in the operations area are general control support buildings. The total floorspace available in this area is



Table 1. Zhemkovka East Slave MOON Station

[tem	Description	Dimensi L W	ons (ft) H	
	Dlda			
1	Bldg Bldg			
2				
3 4	Bldg			
4	Bldg			
5 6	Bldg			
	Admin bldg (2 story)			
7	Bldg (2 story)			
8	Bldg			
9	Guardhouse			
10	Bldg			
11	Bldg			
12	Heating plant bldg section			
13	Heating plant bldg section			
14	Bldg			
15	Maint shop			
	Bldg			
16	Poss school (2 story)			
17a	Section			
ď	Apartment bldg (2 story)			
18	Apartment bldg (2 story)			
19	Apartment blug (2 story)			
20	Apartment bldg (2 story)			
21 <b>-</b> 23	Utility bldgs			
24	Structure			
25	Utility bldg			
26	Apartment bldg (2 story)			
27	Prob swimming pool			
28	Storage bldg			
29	Bldg			
30	Fenced area			
31	Recreational bldg			
32, 33	Storage bldgs			
34	Bldg			
35	Prob winch house			
36	Bldg			
37	Bldg			
38	Bldg			
	Balloon pad			
39	_			
40	Fenced areas Transmitting bldg (2 story			
41				
a	Section			
, b	Section			
142	Bldg (2 story)			
43	Bunker (1)			
7+7+	Cooling pond			
45	Bldg ,			
46	Control/support bldg			
	section			
47	Control/support bldg			
	section (2 story)			
48	Control/support bldg			
	section (3 story)			
49	Bldg			
50	Storage/maint bldg			
51	Storage/maint bldg			
52	Towers (6)			
	Bldg at base of tower			
53 5)				
54	Masts			
55	Masts			
56	Small tower Barrage-type balloon			
57	Rarrage-UVDE DALLOUII			

Note: The measurements given are accurate to within  $\pm$ (5 feet plus 1%) with a 95% confidence level.

- 5 -

TOP SECRET

25X1 \_\_\_\_\_25X1

25X1

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25X1

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TOP SECRET

25X1 25X1

