25X1

TOP SECRET

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

232164

COPY NO. 113

..6..... PAGES

TOP SECRET

25X1

INSTALLATION OR ACTIVITY NAME	COUNTRY
Zhemkovka VLF Radiocommunications Transmitter Station	UR

UTM COORDINATES	GEOGRAPHIC COORDINATES
NA	53-17-18N 048-07-15E

MAP REFERENCE
ACIC. US Air Target Chart 200, Sheet M0165-16HL, 3d ed, Jan 63, scale 1:200,000 (SECRET)

LATEST IMAGERY USED	NEGATION DATE (If required)
	NA

ABSTRACT

This report provides a detailed imagery-derived analysis of the newly designated Zhemkovka East Slave MOON Station (Zhemkovka VLF Radiocommunications Transmitter Station). It includes a functional analysis, location map, mensuration, and photography of the facility.

This facility is one of two MOON slave facilities in the USSR which were previously identified as very low frequency (VLF) communications stations. The other facility is located at Slonim

The Zhemkovka facility has been identified as the eastern MOON (long-range navigation aid) station because of its similarity to other known MOON stations and a correlation between photography and for this facility.

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 3 system, an update of the original MOON system, is

The MOON system has been present in the Soviet Union since the late 1950s or early 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/west and north/south baselines. The northern slave station is at Pryazha at 61-45-35N 033-41-35E, the master station is at Karachev at 53-07N 034-55E, and the southern slave station is at Pochtovoye at 44-53-18N 033-52-23E. These facilities have been identified since the early 1960 s .

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.

[1,2] An identical antenna observed at the Slonim communications facility (53-08-12N 025-23-26E, has been confirmed to be the western MOON slave station. Both Slonim and Zhemkovka have balloon pads similar to the previously identified northern and southern slave stations and the master station.

Photography reveals that an antenna tower was dismantled at the Zhemkovka facility during the same period.

Zhemkovka East Slave MOON Station is located at an elevation of 800 feet, 2 nautical miles (nm) west-northwest of Zhemkovka, USSR. The surrounding terrain is relatively flat and quite low which makes it well suited for LF signal propagation. The facility (Figure 2) is secured by a single wire fence and contains approximately 325 acres. An adjacent secured 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.

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 [redacted] high. One of these towers is centrally located and the remaining five (perimeter towers) are [redacted] out from the 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 [redacted] is at a radius of [redacted] from the central tower.

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

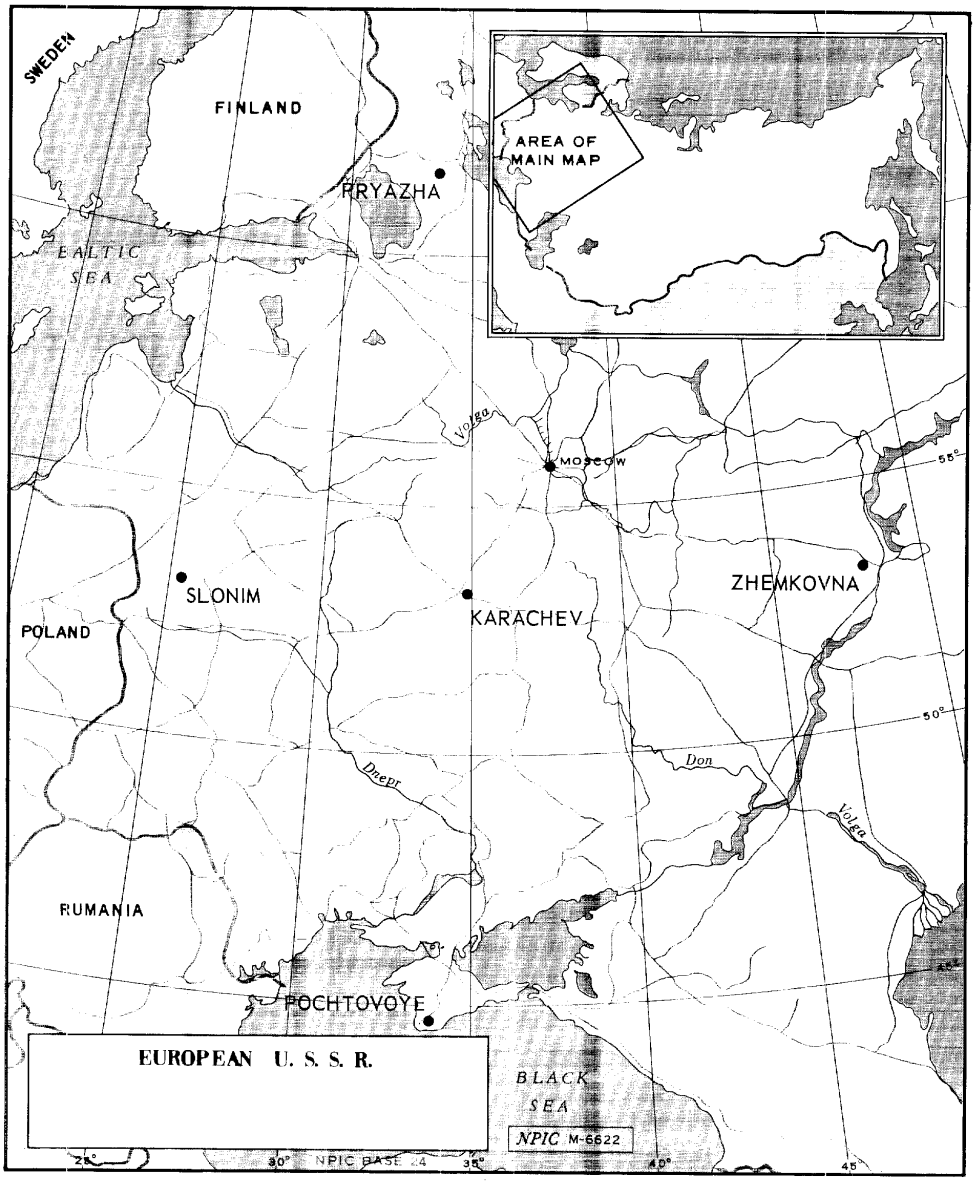

FIGURE 1. LOCATION MAP

(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

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.

Status and Activity

The Zhemkovka facility was first observed under construction in Although the pentagonal antenna array was probably complete on the initial photography of its completed configuration could not be confirmed until when it appeared to be operational. From the array remained unchanged. In the easternmost tower of the pentagonal array was disassembled and remained so until when it was re-erected at its original position and again became operational.

The pad for the balloon antenna was complete in but the balloon was not observed until

Table 1. Zhemkovka East Slave MOON Station

Item	Description	Dimensions (ft) L	W	H
1	Bldg			
2	Bldg			
3	Bldg			
4	Bldg			
5	Bldg			
6	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			
16	Bldg			
17a	Poss school (2 story)			
b	Section			
18	Apartment bldg (2 story)			
19	Apartment bldg (2 story)			
20	Apartment bldg (2 story)			
21-23	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			
39	Balloon pad			
40	Fenced areas			
41	Transmitting bldg (2 story			
a	Section			
b	Section			
42	Bldg (2 story)			
43	Bunker (1)			
44	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)			
53	Bldg at base of tower			
54	Masts			
55	Masts			
56	Small tower			
57	Barrage-type balloon			

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

REFERENCES

IMAGERY

MAPS OR CHARTS

ACIC. US Air Target Chart, Series 200, Sheet M0165-16HL, 3d ed, Jan 63, scale 1:200,000 (SECRET/

DOCUMENTS

1. Reports, 24 Jun 66 (TOP SECRET

3. US Naval Photographic Interpretation Center. 644/61-S, LF or VLF Radio Station at Zhemkovka, Near Syzran, USSR, Oct 61 (SECRET/

REQUIREMENT

COMIREX BC-C/005-69
NPIC Project 210668