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NPIC/R-1047/63

January 1963

PHOTOGRAPHIC INTERPRETATION REPORT

SOVIET COMMUNICATIONS FACILITIES IN CUBA



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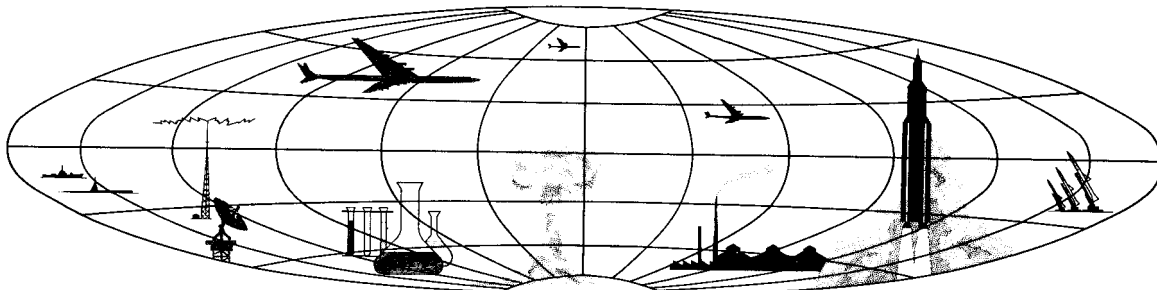
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SOVIET COMMUNICATIONS FACILITIES IN CUBA

PREFACE

This report was prepared in answer to a National Security Agency requirement requesting (1) the identification of the communications center serving as the Cuba terminal of the USSR-Cuba link and the control center for Soviet Rocket Forces (SRF) in Cuba and its related network (the Bauta Communications Station was considered by NSA to be the most likely choice for the location of this terminal); and (2) a description of all related communications equipment and its orientation. The urgency of the request necessitated a cutoff date for the project in early December 1962.

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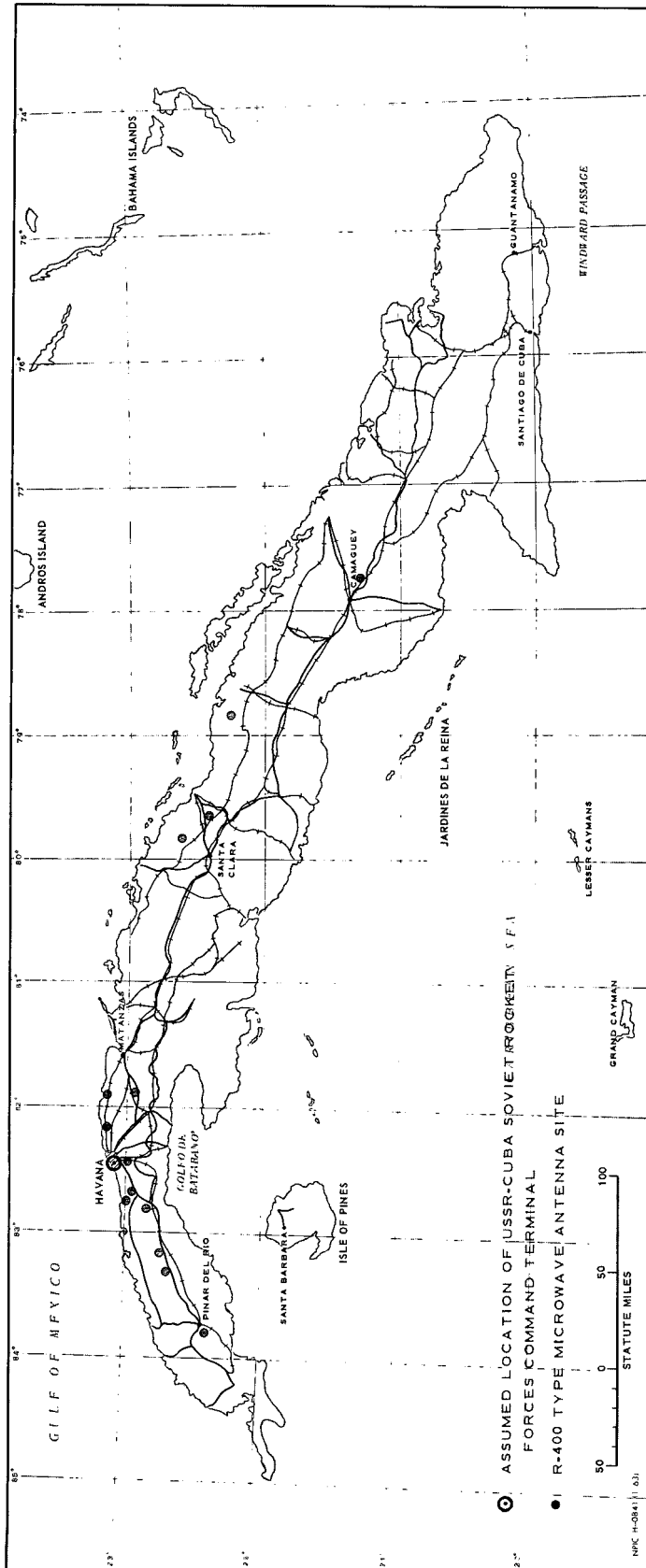


FIGURE 1. LOCATION OF MICROWAVE ANTENNAS IN CUBA.

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SUMMARY

The Bauta Communications Station is probably not the Cuba terminal of the USSR-Cuba link. This terminal could not be identified. However, a preliminary study of available photography suggests it may be located in the Havana-Torrens area.

During the Soviet missile buildup in Cuba, microwave relay equipment was located at five of the eight offensive missile sites. As of []

[] -- the cutoff date for this report -- relay equipment was still present at four of these sites, and at one cruise-missile site, two SA-2 SAM sites, and six military camps. This equipment fits the physical description of Soviet R-400 microwave relay equipment. At least-eight HF Soviet field communications sites have been identified, several of them in the Torrens area.

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INTRODUCTION

This study represents a concentrated search of recent limited [] photography of specific targets in Cuba located between Remedios and San Cristobal and including, especially, the Havana-Bauta area. It does not repre-

sent a complete search of available photography. Nor does it include a search for microwave antennas at all military areas in Cuba similar to areas where Soviet microwave equipment has been identified.

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BAUTA COMMUNICATIONS STATION

A detailed photographic search of the Bauta Communications Station (22-57N 82-32W) for new long-range transmitting rhombic antennas and for Soviet microwave equipment revealed that two transmitting rhombic antennas have been erected since []. Pole heights of these new rhombics could not be accurately determined.

appears to transmit toward [] The second new rhombic antenna has a tilt angle of [] a major axis of 870 feet, and a minor axis of []. It has an orientation of [] and appears to transmit toward South America.

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One of the new rhombics has a tilt angle of [] a major axis of 920 feet, and a minor axis of 360 feet. The antenna has an orientation of approximately [] and

The Bauta Station was eliminated as the command and control antenna link for Cuban offensive missile sites because no Soviet microwave antennas or associated equipment were identified at this facility.

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HAVANA-TORRENS AREA

The vicinity of Torrens reformatory (22-59N 82-28W), a center of Soviet military activity, contains several communications sites -- including one microwave station -- and may be the Cuba terminal of the USSR-Cuba link (Figure 1).

One of these sites -- located .4 nautical miles (nm) south-southeast of the reformatory and covered by low-level photography -- contains two transmitting rhombic antennas. One is for day operation and the other, for night. These antennas have an orientation of [] and transmit toward southeastern Europe.

A second area -- extending from a point 8 nm northeast of Torrens to a point 2.7 nm northeast of Calabazar and also covered by low-level photography -- contains two 3-wire transmitting rhombic antennas. One is for day operation and the other, for night. These antennas have an orientation of approximately [] and appear to transmit toward the central part of the

United States. This area does not appear to be of Soviet design and does not contain Soviet equipment, but could still be part of the overall Soviet command system.

A third site -- located 4 nm east-northeast of Torrens and 7 nm southwest of Havana at 23-00N 82-26W and covered by low-level photography -- contains four probable umbrella-type conical antennas, one probable VHF antenna, and eight stick masts of undetermined usage. Associated with the antennas are 11 communications vans and approximately 20 other vehicles, five permanent structures, and 13 large and 12 small tents.

A fourth area -- located approximately 3 nm northeast of Torrens and observed on high-level photography -- appears similar to the field communications center at Mariel (see below). The small scale of the photography precludes an exact identification of the types of antennas located at this facility.

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CALABAZAR

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Photography of [] revealed active construction work at Calabazar (23-01N 82-22W) on antenna guy-wire footings for two single-bay, traveling-wave, fishbone antennas, arranged in a frequency-diversity reception pattern. Both appear to be oriented toward southeastern Europe. Eleven rhombic antennas, five

of which are under construction, and a self-supporting tower are also located at the installation. The rhombics are oriented toward South America, southeastern Europe, and Africa. No direct connection is evident between this communications installation and the microwave links at the offensive missile sites.

MARIEL

A temporary field transportable communications station has been identified in the residential section of the Mariel harbor area .9 nm northeast of the center of Mariel at 22-59N 82-

45W. This station is composed of one omnidirectional umbrella-type HF antenna and numerous end-fed and center-fed horizontal wire HF dipole antennas. Ten communications and sup-

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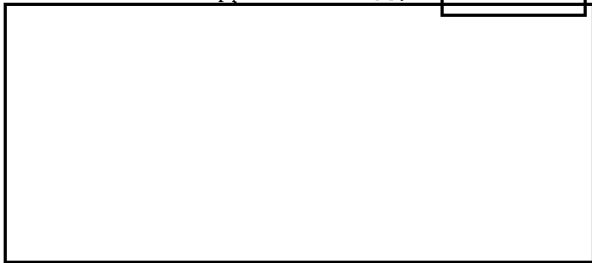
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port vans are visible throughout the area and others may be hidden under trees and netting. The orientations of the antennas have not been

precisely determined, but preliminary plotting shows that at least one group is beamed at San Cristobal and southwest areas of the island.

MICROWAVE ANTENNAS

The microwave antenna systems identified approximately 2.5 nm north of the Remedios IRBM site and at the Havana SAM site on low-level photography are typical of the 14 Soviet R-400 type field microwave sites observed in Cuba (Figure 1). Components at a typical site consist of one guyed tower approximately 75 to 85 feet high which supports one or two dish antennas about [redacted] two small personnel tents, two communications vans, and two possible support vehicles. [redacted]



Microwave antennas were observed at five offensive missile sites during the peak of the

Soviet missile buildup. These antennas -- located at Guanajay IRBM Site 1, Remedios IRBM Site, Sagua la Grande MRBMSite 2, San Cristobal MRBM Site 1, and San Cristobal MRBM Site 3 -- were identified on low-level photography and monitored on later high-level photography. Four of these sites -- Guanajay IRBM Site 1, Remedios IRBM Site, San Cristobal MRBM Site 1, and San Cristobal MRBM Site 3 -- still contained erected antenna towers and personnel tents and communications vans on [redacted]

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Similar microwave antennas have been observed at the Santa Cruz del Norte Cruise-Missile Site, Chambas SAM Site, Havana SAM Site, Mariel Naval Academy, and military installations in the vicinity of Artemisa, Camaguey, Madruga, Pinar del Rio, and Torrens. (For specific locations of these facilities, see the appended location guide.)

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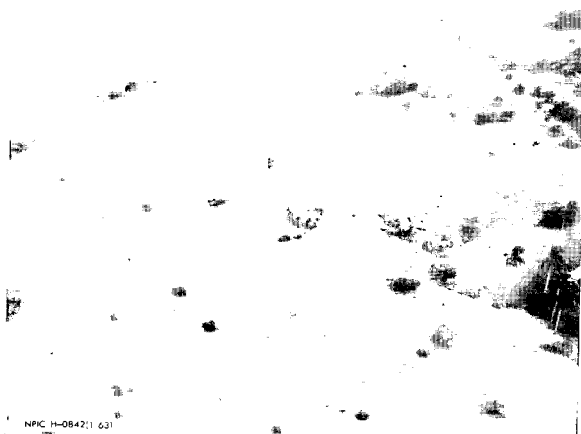


FIGURE 2. SOVIET MICROWAVE SITE AT REMEDIOS [redacted] The top of the tower is camouflaged with palm fronds.

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FIGURE 3. MICROWAVE SYSTEM AT HAVANA SAM SITE [redacted]

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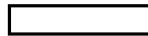
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Those microwave stations located in missile site areas appear to be mainly base relay stations of a primary trunk line, with an additional capability of serving a particular missile group. This would indicate that the station at San Cristobal MRBM Site 1 would serve that missile facility and San Cristobal MRBM Site 2. Likewise, the microwave station at San Cristobal MRBM Site 3 would probably serve that missile facility and possibly San Cristobal MRBM Site 4; the microwave station at Guanajay IRBM Site 1 would serve

that missile facility and Guanajay IRBM Site 2; the microwave station at Sagua la Grande MRBM Site 2 would serve that missile facility and Sagua la Grande MRBM Site 1; and the fifth microwave station would serve the Remedios IRBM Site.

The framework for a relay system may be established. However, this cannot be confirmed because the antennas can only be approximately aligned. No microwave antennas have been observed east of the Camaguey area as of early



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LOCATION OF MICROWAVE ANTENNAS

Site	Geographic Coordinates	UTM Coordinates
Artemisa Military Camp	22-50-47N 82-48-40W	17QLR143275
Camaguey Area, Military Installation 1	21-21-07N 77-51-07W	18QTU042637
Chambas SAM Site	22-13-16N 78-53-38W	17QQQ172587
Guanajay IRBM Site 1	22-56-55N 82-38-19W	17QLR319386
Havana SAM Site	23-09-08N 82-13-29W	17QLR747608
Madruga POL Storage	22-55-36N 81-50-00W	17QMR145356
Mariel Naval Academy	22-59-28N 82-44-56W	17QLR207435
Pinar del Rio, Military Concentration	22-24-05N 83-42-48W	17QKQ207797
Remedios IRBM Site	22-27-36N 79-34-36W	17QPQ464842
Sagua la Grande MRBM Site 2	22-39-06N 79-52-11W	17QPR162053
San Cristobal MRBM Site 1	22-40-28N 83-17-49W	17QKR642092
San Cristobal MRBM Site 3	22-42-39N 83-08-30W	17QKR800130
Santa Cruz del Norte Cruise-Missile Site	23-09-00N 81-56-20W	17QMR039603
Torrens Military Installation	23-00-39N 82-26-20W	17QLR525453

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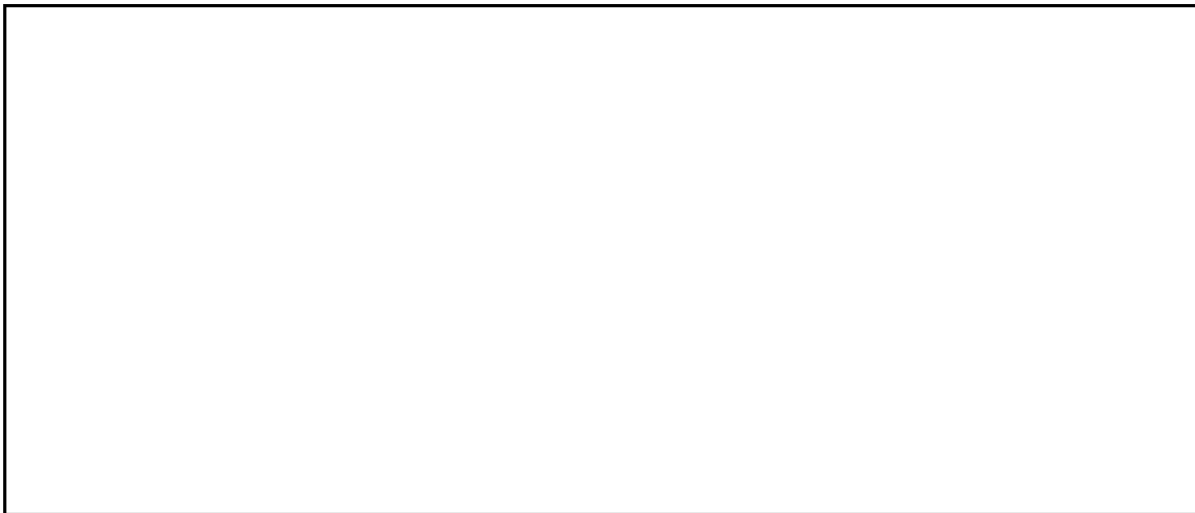
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REFERENCES

PHOTOGRAPHY

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MAPS OR CHARTS

CIA. 26657.1, Cuba, May 58, scale 1:1,500,000 (UNCLASSIFIED)

REQUIREMENT

NSA. A053/R-83

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NPIC PROJECT

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